

**SPECIAL REPORT**

BY THE

U. S. **BUREAU OF EDUCATION.**

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**EDUCATIONAL EXHIBITS AND CONVENTIONS**

AT THE

**WORLD'S INDUSTRIAL AND COTTON  
CENTENNIAL EXPOSITION,**

**NEW ORLEANS, 1884-'85.**

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**PART I.  
CATALOGUE OF EXHIBITS.**

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## LETTER.

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DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,  
*Washington, D. C., November 25, 1885.*

SIR: The accompanying papers,<sup>1</sup> which are hereby transmitted for publication, give the best view, doubtless, that it is possible to preserve of education at the World's Industrial and Cotton Centennial Exposition. It was early manifest that the exhibition would present a rare opportunity for the promotion of the advancement of education. The desire on the part of the Management to improve this opportunity to the utmost was expressed in the most explicit and emphatic terms by the Director-General, Hon. E. A. Burke, when he declared that they sought not only that the exhibition should be thoroughly national and international and in all its aspects educational, but that education itself, its systems, institutions, principles, methods, and results should be shown as far as possible by its literature and appliances, by models, by graphics, by actual class work, and by papers and discussions from the ablest educators. The following papers will make known how far the purposes of the Management have been realized, and their publication will preserve and extend the usefulness of whatever was accomplished in this behalf. The fullness of the papers and of the report of Lyndon A. Smith, Esq., my representative and chief assistant in immediate charge of the Department of Education at the exhibition, renders it unnecessary that I should here enter into details which would otherwise require more specific reference.

I desire to tender most hearty thanks to all those who have in any way aided in the work here reported, but it would require a catalogue larger than Homer's to specify each one by name.

I have the honor to be, very respectfully, your obedient servant,  
JOHN EATON,  
*Commissioner.*

The Hon. SECRETARY OF THE INTERIOR.

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<sup>1</sup> The proceedings and papers of the International Congress of Educators may be found in Part II of this Report; the proceedings of the Department of Superintendence and Education Day addresses in Part III.

# EDUCATIONAL EXHIBITS AT THE NEW ORLEANS EXPOSITION.

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## INTRODUCTION.

### EXPOSITION AUTHORITIES INTERESTED IN EDUCATION.

The World's Industrial and Cotton Centennial Exposition provided, in its earliest plans, for a department of education. The director-general, members of the Board of Management, and influential citizens believed it would be an interesting and profitable feature of the exhibition. They also desired that educational meetings should be held to unite the words of experienced men with the lessons of silent exhibits, and thus create a lasting impression upon the surrounding States in favor of popular education. The Department of Superintendence of the National Educational Association is accustomed to hold a winter session, and consequently this body was invited to meet at New Orleans during the continuance of the Exposition. This first public effort by the Management in behalf of education was in February, 1884, and the acceptance of the invitation was accompanied by the appointment of a committee to co-operate with the Bureau of Education in arranging for a suitable exhibition of education. The members of this committee were Hon. G. J. Orr, State school commissioner, Georgia; Hon. H. Clay Armstrong, State superintendent of education, Alabama; Hon. W. O. Rogers, superintendent of schools, New Orleans, La.; Hon. Aaron Gove, superintendent of schools, Denver, Colo.; Hon. J. H. Smart, president of Purdue University, La Fayette, Ind.; Hon. T. W. Bicknell, Boston, Mass., president of the National Educational Association; and Hon. B. L. Butcher, State superintendent of free schools, West Virginia, and president of the Department of Superintendence. The wishes of the director-general, Maj. E. A. Burke, were expressed in his first report to the President of the United States, dated April 19, 1884. He said: "Extensive preparations have been made for a national educational display. \* \* \* No subject claims greater attention on the part of our people, and the effect of this school of instruction will be to impart a healthy impulse to the cause of education and a better knowledge of methods. Already local educational societies are being organized throughout the State of Louisiana, and I am sure that the Exposition will secure for the cause of education a more liberal provision from all of the backward States."

### APPOINTMENT OF SUPERINTENDENT.

The Board of Management selected Hon. John Eaton, Commissioner of Education, as superintendent of the Department of Education, and urged him to accept the position. He consulted the Secretary of the Interior, and not only received permission to accept the appointment, but was encouraged to devote a portion of his own time and to assist the enterprise by the means at the command of his office. Preparatory work was immediately undertaken, and a preliminary circular issued to scatter information and stimulate activity. Scarcely more than this could be done until money had been appropriated and more definite knowledge of the inclinations of educators obtained.

### REPORT OF COMMITTEE TO CO-OPERATE WITH BUREAU OF EDUCATION.

The National Educational Association met in July at Madison, Wis. The subject was presented at one of its meetings by Director-General Burke and Commissioner Eaton. The former considered education the great need of the South; believed that its people realize that the peace, progress, and happiness of that section depend upon it, and expected much aid from a well-sustained exhibition of education. The committee appointed by the Department of Superintendence made a report which has been circulated by the Bureau of Education. This report enumerated the articles that could be contributed to an educational display, and gave rules for preparing material. Among its recommendations was one "that the State and city educational authorities act as agents of their respective States and cities in the preparation of the representation of the systems, institutions, and instrumentalities within the sphere and range of their official connection or authority." The principle recognized in this recommendation did much to determine the grouping of exhibits at the Exposition. Generous rivalry between States, localities, and institutions helped to improve the quality of their collections.

### ACTION OF SCHOOL OFFICERS.

The superintendents of public instruction for several States promptly began efforts to have their educational exhibits creditable and complete. Circulars were issued informing teachers and superintendents of the nature of material desired, inquiring what and how much could be supplied, and offering assistance in the work of preparation. The circular sent out by the Nebraska superintendent, Hon. W. W. Jones, illustrates the initiatory steps taken in some States. He divided the work of preparation into eight sections, and assigned the control of each section to a person familiar with the field given him. The divisions are best presented in his own words:

(1) A showing of the State organization of schools and the administration thereof, with statistics of growth, school funds, &c.

(2) The State university, its organization, growth, and present condition, and specimens of work.

(3) A complete showing of the normal school work, with history of the normal school; also, the *flora* and *fauna* of Nebraska.

(4) A statement of our normal institutes, with methods, courses of study, announcements, circulars, examinations, and general character.

(5) The work of the children of the State is of highest importance, and should occupy the most prominent place. The teachers of the State are especially requested to make this department most creditable.

Examinations, daily written work, map drawing, free-hand drawing, compositions, specimens of penmanship, which may be copies of several lines of prose or poetry, specimens of handiwork in or out of school, in fact, anything that shows what our children are doing in an educational way.

Ungraded, graded, and high school work will all be included in this department. The county superintendents, teachers, and principals are earnestly requested to lend their assistance and are urged to co-operate in making this department all it should be.

All pupils' work should be upon paper of uniform size, 8½ by 11 inches, with a margin of one inch, written only upon one side and neatly bound for preservation.

(6) A collection of kindergarten work; photographs and ground plans of our best public and private school buildings; plans and specifications for the lighting, ventilation, and construction of school houses; also, a collection of school literature and periodicals published in this State, school books, and educational addresses, and woman's work in connection with the public schools.

(7) Exhibits of technical work; industrial and other departments of schools for the deaf and dumb, the blind, and the feeble minded, and of reform schools.

(8) A department showing the plan, organization, curriculum, work, and history of the denominational schools of the State.

The action of city superintendents in carrying out the suggestions and recommendations of the committee of the National Educational Association is excellently illustrated by the course of Superintendent W. O. Rogers, of New Orleans. Already an appropriation had been made to meet necessary expenses. Public interest had been stimulated. Teachers' meetings were held to consider how best their work could be represented. The general directions issued by the Bureau of Education were adapted to the particular needs of the city schools, and circulars printed to show what to do, and how to do it. Examinations were conducted by means of questions prepared by the superintendent, and precaution exercised to have the true condition and work of the schools shown. Penmanship, map drawing, and composition received special attention, as affording very suitable material for exhibition. By such means not only New Orleans, but many other cities, collected representative exhibits from their public schools.

#### PLAN OF EXHIBIT OF BUREAU OF EDUCATION.

The end sought by the plans made for the exhibit of the Bureau of Education was the display of material illustrating the work of all classes of schools and as many phases of education as practicable. This was to be arranged according to the relations existing between the different articles. As museums, in general, ignore geographical boundaries and recognize only scientific classifications and relations, so an educational

display would be most effective in which the same rule prevailed. This idea was expressed by the committee of the National Educational Association in the following words:

It would seem wise to represent the education of the country as a whole, sections and State lines being disregarded, due credit being given for all contributions, whether from States, municipalities, institutions, or individuals, by the mode of installation, by appropriate labels, and otherwise.

The extent of the educational display and the feelings of the exhibitors made the logical arrangement of the entire department undesirable, and increased the importance of consecutive display by the Bureau of Education. Contributions were obtained from many sources, so that the principal branches of education were represented by suitable articles. The methods followed in collecting material are indicated by the following rules early adopted by the Bureau: (1) Contributions of furniture and appliances are to be solicited from manufacturers of school supplies; (2) text-books are to be asked from publishers; (3) gifts and loans may be accompanied by the owner's card or labeled so as to identify him; (4) practical and tested apparatus is to be preferred to costly instruments, and those having limited and infrequent uses; (5) available schools may be resorted to for pupils' work; and (6) purchases are to be made or aid given in cases when it is necessary in order to complete an exhibit or to insure the representation of a class of schools.

#### ALLOTMENT TO BUREAU OF EDUCATION.

An essential element in all plans was economy. The limits of the appropriation to the Interior Department for the preparation of its exhibits, and the many bureaus in the Department having close relations with the industry and progress of the country, reduced the amounts received by them respectively. Hon. Benjamin Butterworth, representative of the Interior Department for the exposition, said in his letter apportioning the fund at his disposal:

The amount appropriated for the Department of the Interior is grossly inadequate to defray the expense of making a full and creditable exhibit. We are compelled, therefore, to do the best we can with the money we have received. It was the desire of Congress that there should be shown at New Orleans that which is indicative of the resources of this country, embracing every department of field and forest, shops and factory, mills and mines, lakes, rivers, &c., to show the greatness of industrial art and its effect upon the general prosperity of our people, and also the progress that has been made in education and the means adopted for the general diffusion of knowledge among the people.

The amount assigned to the Bureau was \$15,000. This was done "with the intent to add to the sum so apportioned as we progress with the work."

The intention so expressed has been carried out by Marcellus Gardner, esq., the successor of General Butterworth as representative of the Department; for, though the plans of the Bureau, formed after the apportionment, did not contemplate an expenditure in excess of the

original apportionment, a slight excess became necessary. The amount accomplished by this comparatively small sum has been surprising to those acquainted with the facts.

#### TEXT-BOOKS AND APPARATUS.

The collection of text-books and apparatus was greatly facilitated by a circular letter from the Commissioner of Education to all the firms known to the Bureau as publishing school books, or dealing in or manufacturing educational appliances. The body of this letter was as follows:

In the course of preparation for the New Orleans Exposition it has become probable that this Bureau will display in its exhibit a considerable amount of school apparatus and many text-books. Some firms have offered to supply, free of charge, such articles of their manufacture or publication as I may wish to use in this exhibit. While intending to accept these offers, I desire to show no partiality, and would be glad to receive others of similar nature.

The response to this letter was very general on the part of publishers. Charts and maps, slates and black-boards, pencils and crayons were sent forward in suitable shape and quantity for exhibition. Only two manufacturers of school furniture responded, though others who received invitation to contribute regretted afterward their failure to do so. The same hesitancy to exhibit heating and ventilating apparatus existed. The catalogue of exhibits contains a list of these contributions, to which reference may be made.

#### PHYSICS AND CHEMISTRY.

Several dealers in physical and chemical apparatus expressed a willingness to exhibit their wares with the Bureau. The museum of the Bureau already contained a collection of valuable physical appliances. The amount of apparatus available suggested the equipment of laboratories for physics and chemistry. Prof. Isaac J. Osburn, of Dennison University, Granville, Ohio, was requested to furnish a plan of a model laboratory suitable for a high or normal school, and did so. It was intended to economize space in schools and be in itself an exhibition of a room adapted to the purposes of both a laboratory and recitations without either use diminishing its value for the other. The plan was adopted in a modified form, but there were difficulties in the way that prevented the free use of the laboratory for illustrating chemistry and limited the work in it to a few simple experiments. The physical apparatus was utilized for public instruction and entertainment. Every department of physics was illustrated, as the collection of apparatus was complete and adapted to the purpose. The Bureau secured from an expert a list of articles necessary to illustrate all the leading divisions of physics, such as heat, light, acoustics, magnetism, and electricity. The Commissioner put Mr. Charles H. Richardson, a gentleman of experience, in charge of the collected material, and placed at his disposal means

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for making his section intensely interesting. The finest apparatus showing the wonders and curiosities of electricity contributed to the attractions. Later a solar microscope was fitted up and drew the attention of visitors to the revelations of processes and products of nature. Thus the Bureau furnished simple chemical experiments, illustrations of peculiar electrical phenomena, representations of the laws of physics, and the display of objects by a solar microscope, as the fulfillment of its plan for chemical and physical laboratories.

### EXHIBITS ILLUSTRATING SCHOOLS OF SCIENCE.

Instruction in science is accompanied by not only the use of apparatus, but also other illustrations that attract notice. Drawing and the construction of models are taught, especially in institutions where engineering is a principal subject of study. Classical colleges have much less to exhibit that is of popular interest than have schools of science. Consequently an effort was made to have the latter make exhibits in accordance with their possibilities in that direction. A collection of drawings from them was desired, and a letter sent to them asking each institution for two specimens. By these efforts, and the use of material from the museum of the Bureau, a good display of the means and methods of instruction in various departments of engineering was secured. English exhibits added much to the display in mechanical engineering, and other displays not with the Bureau contained material representing every feature of instruction in science.

### MANUAL TRAINING.

Closely allied to instruction in mechanical engineering is training in mechanic arts. It is but a few years since this was systematically attempted by American schools. Already the experiment has met with such success as to assure the usefulness of schools of manual training. The instruction imparted in them is of a kind needed by the South at this time, when its resources are being developed and its industries multiplied. It seemed of utmost importance that this kind of instruction should be adequately represented at the Exposition. Tulane University, in New Orleans, was at the point of organizing a school for manual training, and the Bureau secured its co-operation in establishing and conducting it in the gallery of the Government building adjoining the exhibits of the Bureau of Education. In this way a full exhibit was set conspicuously before the visitors at a comparatively small expense, and the hopes of Commissioner Eaton for such a display fully realized. Drawing-tables, work-benches, and tools were supplied and arranged for the use of students, and daily instruction given in drawing and wood-working. The more elaborate processes of metal-working were not attempted, as no pupils were prepared to undertake their difficulties, and the equipment for them could not readily be set up in an exposition. The classes were occupied with their lesson from



3 to 5 each afternoon except Saturday, when earlier hours were preferred. Carpentry and wood-turning were taken up in turn, and some excellent specimens of work done by the students were presented for public inspection toward the close of the Exposition. People were greatly interested in this novel feature of an exhibition, and watched the work and progress of the boys to find the proofs of the value of manual training.

#### HOUSEHOLD INDUSTRY AND KINDERGARTEN.

An object to be promoted by an exhibition of education is the suggestion of means by which the prevalent system of instruction may be broadened and perfected. The criticism is often made that our schools do not prepare pupils for the duties and labors they are to meet and perform after leaving school. Manual training schools have sprung up partially in response to this sentiment, and are fitting boys to enter fields of usefulness not likely to be overcrowded. The question has arisen whether there is not a corresponding course of training needed in duties peculiar to girls. A majority pass from the school into the family, and find their life-work as sisters, wives, and mothers; on their skill depends the health of the child and the comfort of the grown person. Skill may be increased not only by practice, but also by information and instruction. Several societies have this work in hand, and they desired to have it displayed effectively at the Exposition. Four means of representing it commanded attention: First, a nursery showing the appliances, aids, and methods of saving infant life, and making it comfortable and healthful; second, a kindergarten to illustrate the most approved system of developing normally the mind of a child; third, a kitchen-garden, applying the principles of the kindergarten to preparation for housework; and, fourth, a school of household industry carried on in a "model home" and giving instruction in cooking, sewing, &c. The limited time for preparation did not permit the execution of this plan by co-operative action, and it was left for the Bureau of Education to do what it could in these directions. The kindergarten and kitchen-garden were put in operation. Children came in from homes near the Exposition. The kindergarten was under the instruction of Mrs. Anna B. Ogden, and afterwards Miss May Crosby, both of Washington; had its sessions in the forenoon; and was in operation during nearly the entire length of the Exposition. Miss Olivia Tracy, of New York, taught the kitchen-garden, having afternoon sessions four days in the week during March and April. A kitchen-garden class from Leland University had one exercise a week in the Department of Colored Exhibits. The exhibition of a nursery was found impracticable. Much material similar to that which would have constituted such a display was contained in the exhibit of the Fitch crèche. Exhibits of sewing from public and normal schools and Miss L. J. Kirkwood's sewing box were other principal displays of the Department of Education in the line of household industry.

## REFORMATORY EDUCATION.

The introduction of industrial education into reformatory and penal institutions has been successful in promoting the virtues and suppressing the vices of the inmates. It may determine whether a person shall go out to become a valuable citizen or a hardened criminal. The trades and pursuits that can be utilized were well represented at the Exposition. Boots and shoes, brooms and brushes, woodwork and clothing, these and many other articles showed the work done in reform schools. Photographs illustrated the difference of arrangements in the congregate and family systems. The Wisconsin Industrial School for Girls, aided by the Bureau of Education, made a fine display, including photographs, publications, kindergarten work, sewing and fancy work.

## EDUCATION OF THE DEFECTIVE CLASSES.

Prof. F. Louis Soldan, principal of the St. Louis Normal School, in a report on the educational exhibits at the Exposition, uses the following language:

Beside the main stream of public education which runs in the direction of the common schools, there are strong side currents in education, and the fresher impulse of the main stream seems to have affected them. One of these side currents tends toward the thorough training of those whom some natural defect renders more helpless than others.

It was the extensive collection of exhibits from schools for the deaf and dumb, the blind, and the feeble-minded that elicited this remark. Preparations for the exhibits in the section for deaf-mutes was commenced by the adoption of the following resolutions by the National Conference of Principals and Superintendents of Institutions for Deaf-Mutes, held in July, 1884:

*Resolved*, That it is the sense of this Conference that the interests of deaf-mutes and the subject of their education have assumed such proportions and demand such attention that it is deemed proper and desirable to secure space and arrange for a deaf-mute department in the Cotton Centennial Exposition to be opened in the city of New Orleans, December 1, 1884.

*Resolved, further*, That a committee of three superintendents of institutions be appointed to consider the feasibility of such a plan, and, if found practicable, to make the necessary arrangements.

*Resolved, further*, That we will lend such a movement all the aid in our power, and give it our hearty co-operation.

The committee appointed was J. R. Dobyns, of Mississippi, David Greenberger, of New York City, and J. L. Noyes, A. M., of Minnesota. They prosecuted their work in harmony with the Bureau of Education, and received from it pecuniary aid and satisfactory space on condition that they should locate with the Bureau and form its exhibit of deaf-mute education. The prominent features of deaf-mute instruction and specimens of the work done after leaving school united in forming an instructive and noteworthy display. The interest in it on the part of deaf-mutes was increased by the presence of a deaf-mute in the Chatau-

qua alcove, not far distant, who took pleasure in showing its several articles and conversing with deaf-mutes in their own peculiar way. The collection of exhibits of schools for the blind was under the charge of a committee, consisting of William B. Wait, of New York, P. Lane, of Louisiana, and Prof. John T. Sibley, of Missouri. This class of exhibits was not extensive, but fairly representative of so much of the work of the blind, in school and out, as could be presented readily.

#### MEDICAL EDUCATION.

The arrangements of the medical section were aided greatly by Dr. J. M. Toner, LL.D., who helped to secure a large collection of photographs of instructors in medicine, and by Prof. A. F. A. King, M.D., dean of the National Medical College, Columbian University, Washington, who secured from his associate professors lists of articles that could be exhibited advantageously in illustration of several branches of instruction, viz: medical chemistry, anatomy, physiology, surgery, theory and practice of medicine, obstetrics and gynecology. This was the foundation for building a medical exhibit, but modifications were necessary here also. The chemical laboratory was so near that its material was not duplicated for the medical exhibit. Pathological specimens were not secured to the full extent suggested. The departments of anatomy, obstetrics, gynecology, and surgery were excellently represented. Several microscopes, with slides for the use of the student of medicine, were exhibited. Several medical journals were on file; and pictures of nurse-training schools made up a very interesting portion of the Bureau exhibit.

#### PHYSICAL CULTURE.

Physical culture adapted to produce sound bodies is neglected in many schools. Its importance increases with the progress of civilization and the consequent filling up of cities and diminution of opportunities for out-door sports and exercise. Three kinds of apparatus were shown by the Bureau of Education, namely, home gymnasiums, complete in themselves and serviceable for the use of families and small schools; special pieces of apparatus, as poles, ropes, horses, wall-ladder, horizontal bar for more violent exercises, and elaborate pieces selected from those devised by Dr. D. A. Sargent, of Harvard University. The instruments for testing the strength of certain groups of muscles and for ascertaining height, chest dimensions, weight, &c., were procured and kept accessible to visitors interested in anthropometric measurements. Mr. Hartvig Nissen, of Washington, and afterward his assistant, Mr. Klaus Olsen, were in charge of the displays of gymnastic apparatus. They gave lessons and illustrations several times a day, using not only the apparatus already mentioned, but a large Swedish gymnasium exhibited by Th. Nordenfeldt, of London. The purposes

served by their efforts were, first, to show the manner of using the apparatus; second, to interest visitors in the more general introduction of gymnastics into schools; and third, to illustrate, not the method of training athletes and acrobats, but the possibilities of developing the body and endowing it with health and vigor.

#### LIBRARY.

The library was to be represented at the Exposition by a well-furnished room, ornamented by selections from the art displays, equipped with the appliances useful in conducting a library, and containing books representing the classes of literature of peculiar importance to teachers and school officers. Casts and drawings from schools of industrial art adorned the section set apart for library purposes. Appliances from the Library Bureau at Boston were exhibited. School laws; reports of school officers in the United States and foreign countries; bound volumes of educational publications; treatises on teaching, discipline, education, &c.; books of reference and for general culture, and the text-books of higher instruction, were arranged near each other; and with the miscellaneous volumes contributed by publishers and not ranked as text-books, they constituted the library. Text-books suitable for public schools were displayed in connection with school-work and apparatus.

#### STATISTICAL CHARTS.

Statistical charts were prepared for use in the library section and with exhibits from classes of schools whose statistics were given. The statistics graphically represented showed the increase in number of institutions, instructors, and students in nearly all classes of schools; the location of those schools; school population, enrollment, and attendance, represented so as to aid comparisons; ratio of students to teachers; illiteracy, and the distribution of the Peabody fund. These charts were prepared by Mr. H. M. Waitt, S. B., a graduate of the Massachusetts Institute of Technology, assisted by Miss E. Anna Hanson, from the Philadelphia School of Design for Women, and under the direction of Dr. Charles Warren, statistician of the Bureau of Education. Nearly all statistics may be presented in a way to attract notice by a suitable arrangement of large areas of distinct colors. Some admirable charts showing distribution and location of school-houses were shown by States.

This introductory statement is intended to be rather a recital of things done than a full report of results. The exhibit of the Bureau of Education, as it appeared after its completion, is described in connection with the catalogue proper. By reference to it the reader can ascertain the cities, institutions, and individuals contributing most extensively, obtain an idea of their arrangement, and see the ultimate result of plans and efforts made with care and due deliberation, but sometimes

thwarted or seriously modified by lack of time and money. The private schools giving instruction superior to that of the ungraded public school and inferior to that of the full college, were represented more poorly than any other classes of institutions whose courses of instruction are accompanied by the use of appliances or produce evidences of progress suitable for exhibition.

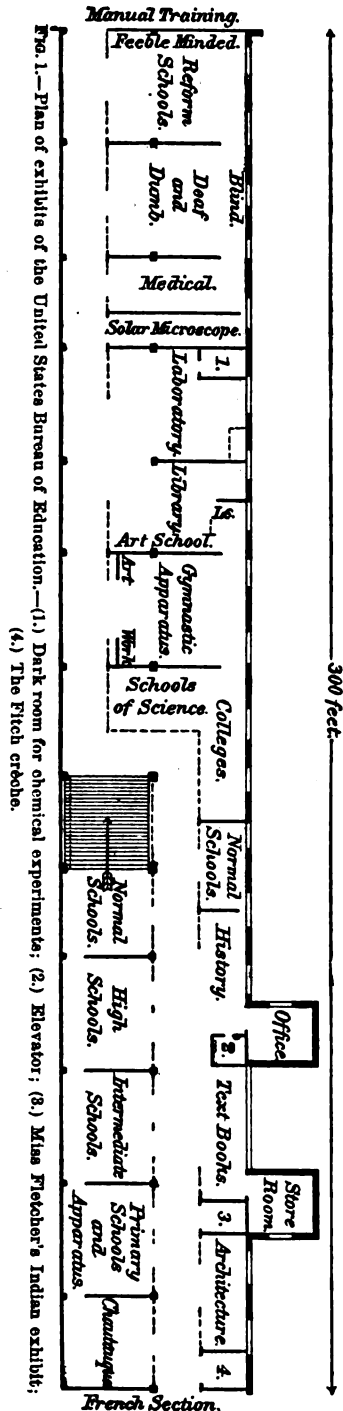
#### AID TO EXHIBITORS.

States and institutions were aided in the preparation of their exhibits by the exposition management. This aid was rendered through different channels and in different ways. Direct apportionments of money were made to some, upon an understanding or contract that a specified exhibit should be presented. Several of the educational exhibitors were aided through General Eaton, as chief of the Department of Education. Installation was aided by assignments of laborers, gifts of lumber and nails, and, occasionally, small contributions of money. Close economy was required in the expenditure of money and the use of material furnished by the Exposition. All decoration in excess of that necessary for the proper display of material was at the expense of persons exhibiting or represented by exhibitors.

#### BUREAU OF EDUCATION.

The exhibit of the Bureau of Education was installed at as little expense as was consistent. It occupied the eastern portion of the southern gallery of the Government building. A plan of the space occupied is herewith given. The partitions were wooden framework covered with inexpensive brown or maroon cloth. Solid board partitions were made where wall space for heavy exhibits was needed. Tables were made upon the ground, and covered to correspond with

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adjoining screens. Such material as required protection was arranged in counter or upright cases, the latter being fitted with shelves or partitions to make a surface on which the several exhibits could be displayed to best advantage. The dark room, for electrical experiments, and the room for the solar microscope were of wood, and were lined with black cloth. The screen on which the pictures were thrown was of white cloth, and placed near the main aisle. The decorations of the exhibit were few and plain. The posts of the building passing up through the gallery were covered with alternate strips of red and white cloth, with a band of blue at the top of the decoration. The wall of the building was covered with white cloth, with a border of red at the top. The ceiling was not covered, and because of this some exhibits were injured by material from the roof. The only exhibits included among those of the Bureau of Education that were installed with a view primarily to artistic effect were those of the Chautauque Literary and Scientific Circle, arranged by Mr. E. A. Spring, and the Institution for the Instruction of the Deaf and Dumb, New York City, arranged by Prof. A. Le Prince. The kindergarten room and exhibits were located apart from the other exhibits of the Bureau, in the southwest corner of the building. The room was comfortably furnished and tastefully decorated under the supervision of Mrs. Ogden, the kindergartner.

#### STATE EDUCATIONAL EXHIBITS.

The State educational exhibits, located in the northern portion of the eastern gallery, formed one of the most interesting features of the educational department. The intelligent visitor could not fail to observe the excellent quality of the material gathered in them; the ingenious construction of tables, stands, and screens for exhibiting purposes; the positions selected for them so as to make the best use of space and take advantage of the best lights; and the arrangement of the articles to harmonize with those around them and to conform to the relations existing between them. To these State exhibits belongs a large share of the compliment paid by the Hon. W. T. Harris, LL. D., to the educational department in the remark that "A great variety of things and processes that we had despaired of showing in an exposition are instructively displayed here."

#### NEW HAMPSHIRE AND PENNSYLVANIA.

A person passing from the main entrance of the building up to the State exhibits found at the head of the stairs two small exhibits, one from Wilkes Barre, Pa., and the other from the cities of New Hampshire. The former displayed material completely illustrative of a city school system. It was neatly arranged by the city superintendent, Prof. A. W. Potter. The New Hampshire exhibits were rather specimens from different cities than a collective State exhibit. Some particular feature was prominent in the exhibit of each city, as, for instance, work in chemistry from Nashua, and plans of school buildings from Manchester.

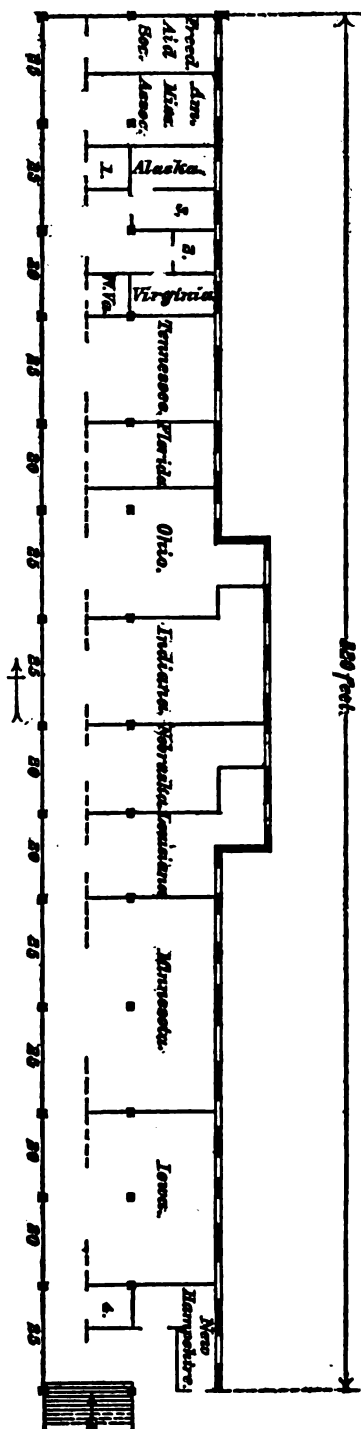


FIG. 2.—Plan of State educational exhibits.

## IOWA.

The first of the great exhibits reached by the visitor after those just mentioned was that of Iowa. It had a frontage of forty-five feet on the main aisle and extended back thirty feet.

It was installed by State Superintendent John W. Akers, and Prof. T. H. McBride, of the State University. Much of the material was placed on tables and on screens rising vertically from the middle of the tables. The effect of the exhibit was greatly increased by the papering of the walls and ceiling, the prevailing tint of the paper being such as to produce pleasing effects in its contrast with the white paper used for drawings and school work. The distinguishing feature of this exhibit was the large amount of graded school work collected from nearly all of the larger cities and towns of the State, and bearing testimony to the efficiency of their graded school system.

## MINNESOTA.

The next exhibit was that of Minnesota, occupying about the same space and arranged in somewhat the same way as that of Iowa. The stands on which the exhibits were placed were made with wings that could be folded and feet that could be removed, so that the whole could be readily transported, a pattern that can be recommended for more extensive use. An interesting part of the exhibit was the apparatus for regulating clocks put up in various parts of the building. This exhibit was to illustrate primarily the work of the Carleton College observatory at Northfield, Minn., Prof. W. W. Paine, director, in regulating the clocks of the Chicago, Milwaukee and St. Paul Railroad, and incidentally the common practice of regulating time by electric connection of clocks with some standard time-piece. A chief excellence of the Minnesota exhibit lay in the fact that it represented in a comprehensive and symmetric manner the educational system and institutions of the State. No class was admitted, nor did the exhibit of any class have a relative importance in the entire display greatly out of proportion to its actual place in the educational system of the State. The exhibit was arranged under the immediate direction of the State Superintendent, Rev. D. L. Kiehle, assisted by Prof. Irwin Shepard, of the normal school at Winona, and Supt. W. F. Phelps, of that city. The exhibit was cared for by a relay of prominent Minnesota educators, each remaining two weeks.

## LOUISIANA.

The Louisiana exhibit was largely from the city of New Orleans. Among the things that visitors would notice most quickly were a large case of slates containing work from the primary schools, an exhibit of the botanical collections made by pupils in the high school, and a bound volume of views of the McDonogh school buildings erected and to be erected in accordance with the provisions of the will of John McDonogh,



who left a fund, the interest of which was to be used in the construction of public school buildings in New Orleans.

#### NEBRASKA.

By the side of the Louisiana exhibit came that of Nebraska, which contained a very valuable display from its State normal school at Peru, and many others of more or less interest. An important suggestion was given by the display of apparatus for determining the atmospheric condition of a school-room.

#### INDIANA.

Indiana occupied a large section at the center of the State exhibits. Its space was well filled with exhibits, chiefly from rural schools, tastefully arranged by Mr. A. E. Buckley. These exhibits were elementary in their character, but, with some others contributed by private institutions in different parts of the State, made up a very excellent exhibit, although it is to be regretted that the wealthier institutions of the State and those under its special control did not make exhibits to correspond with their resources.

#### OHIO.

Beyond the Indiana exhibit was that of Ohio. It contained very extensive displays from colleges arranged by Prof. A. H. Tuttle, of the Ohio State University, and a fine exhibit of drawing prepared by the schools of Columbus under the direction of Prof. W. S. Goodnough. The other exhibits were such as to make the Ohio space one of the most instructive to visitors. It was arranged and cared for by Professor Goodnough, Hon. John Hancock, of Dayton, and State Superintendent Leroy D. Brown.

#### TENNESSEE.

The exhibits from the State of Tennessee were made principally by private institutions. Several of those making the largest displays were institutions for the superior instruction of women. Drawing, painting, and the decoration of china, which form a part of the studies pursued in these schools, furnished material for making the Tennessee section one of the most attractive in the whole line, though it was not so well filled with exhibits. Still, representations of public school work and of that of universities were not wanting. The exhibits from other Southern States were interesting principally as showing the progress of newly inaugurated systems of public education, and were full of promise for the future of these systems.

#### NEW JERSEY.

The New Jersey exhibit arrived too late to be installed with the other States, but was placed in the southern part of the same gallery. It contained more bound volumes of school work and photographs of

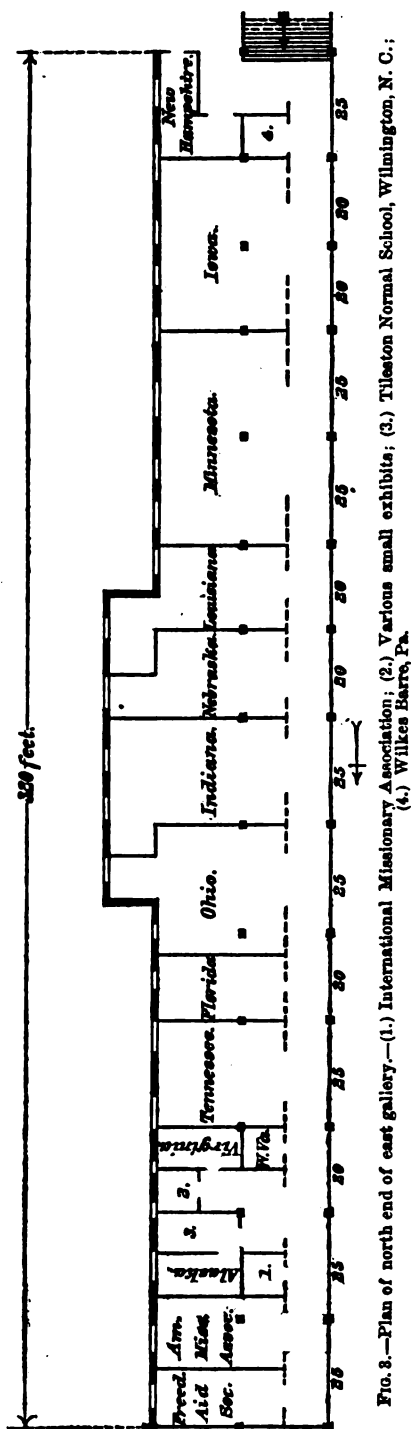


FIG. 3.—Plan of north end of east gallery.—(1.) International Missionary Association; (2.) Various small exhibits; (3.) Tliffeston Normal School, Wilmington, N. C.; (4.) Wilkes Barre, Pa.

school buildings than any other State exhibit. Its exhibits of drawing, especially of maps, was most excellent.

## MISSIONARY SOCIETIES.

At the northern end of the eastern gallery were the exhibits of the Freedman's Aid Society, the American Missionary Association, and the International Missionary Association, all of them denominational societies. The exhibits of the Freedman's Aid Society were principally examination papers and other written work from the various schools for the colored race over which it had control. There were a few specimens of industrial work. A portion of the material for this exhibit was diverted from its intended place and scattered among State exhibits and in the Colored Department. The exhibits of the American Missionary Association were more varied, containing, besides examination papers, drawing, and fancy work, many articles made in the Hampton (Va.) Normal and Agricultural Institute, and the Santee Normal Training School, Santee Indian Agency, Nebraska. Exhibits indicative of Rev. Sheldon Jackson's efforts for education in Alaska and the work of Miss Amy M. Bradley at Wilmington, N. C., were located near by.

**WARD'S MUSEUM.**

Ward's Museum of natural history was located immediately south of the State educational exhibits. It was an extensive and accurately classified collection of specimens representing the several departments of science. The representa-

tion (restoration) of the mammoth, occupying a central position at the front of the gallery, was one of the most conspicuous objects in the entire building. Visitors spent much time in examining the stuffed animals and other articles, and gave evidence of the popular interest in an exhibit eminently scientific in character. The extent to which the museum is described in the catalogue obviates the necessity of its more extended notice in this place. A ground plan of the space occupied by it at the center of the gallery gives an idea of its extent and completeness.<sup>1</sup>

#### CHRISTIAN BROTHERS.

The Christian Brothers, with the New York Catholic Protectory, occupied ninety feet of the gallery next to the exhibit of natural science. Economy of space, systematic arrangement, and the observance of artistic requirements marked the installation of their exhibits. Tables, shelves, and screens were placed as near each other as consistent with the free passage of visitors in and out among the exhibits. Two normal schools, eleven colleges, twelve academies, thirty-seven parochial schools, two industrial and training schools, and two orphanages contributed material. An exhibit of the educational books and charts of which members of the brotherhood were authors, included the historical works of the order, charts for teaching writing and drawing, textbooks, literary and scientific works, and normal manuals. A choice part of the collection was the display of models and casts for instruction in drawing, designing, and architecture. The exhibit was under the care of Brother Maurelian, president of Christian Brothers College, Memphis, Tenn. He was assisted from time to time by various members of the order, all of whom displayed zeal and unwearying interest in the exhibit, so that it never failed to be a model of cleanliness and order, and to show an increasing attractiveness in arrangement. The exhibit of the New York Catholic Protectory was composed chiefly of shoes, suits of clothes, books and printing, electrotyping, chairs, socks and stockings, and silk, from the male department; lace work, plain

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<sup>1</sup> During a display of the Ward collection at the Milwaukee Exposition, and before its contents and their excellence had become fully known, an opinion was asked from Prof. Spencer F. Baird, the director of the National Museum at Washington, as to Mr. Ward's work in general, and this present collection in particular. Professor Baird promptly returned a reply, from which we have been kindly allowed by the gentleman to whom it was addressed to make the following extract:

"We occasionally buy specimens from Professor Ward, and are constantly having specimens mounted and skeletons prepared at his establishment.

"Professor Ward's specimens are uniformly well prepared and preserved, and we have found them thoroughly satisfactory. \* \* \*

"His establishment is probably the largest and best conducted of the kind in the world, and he has done much service to the cause of museum education in this country, and by his own efforts has greatly raised the standard of excellence in the class of objects in which he deals."

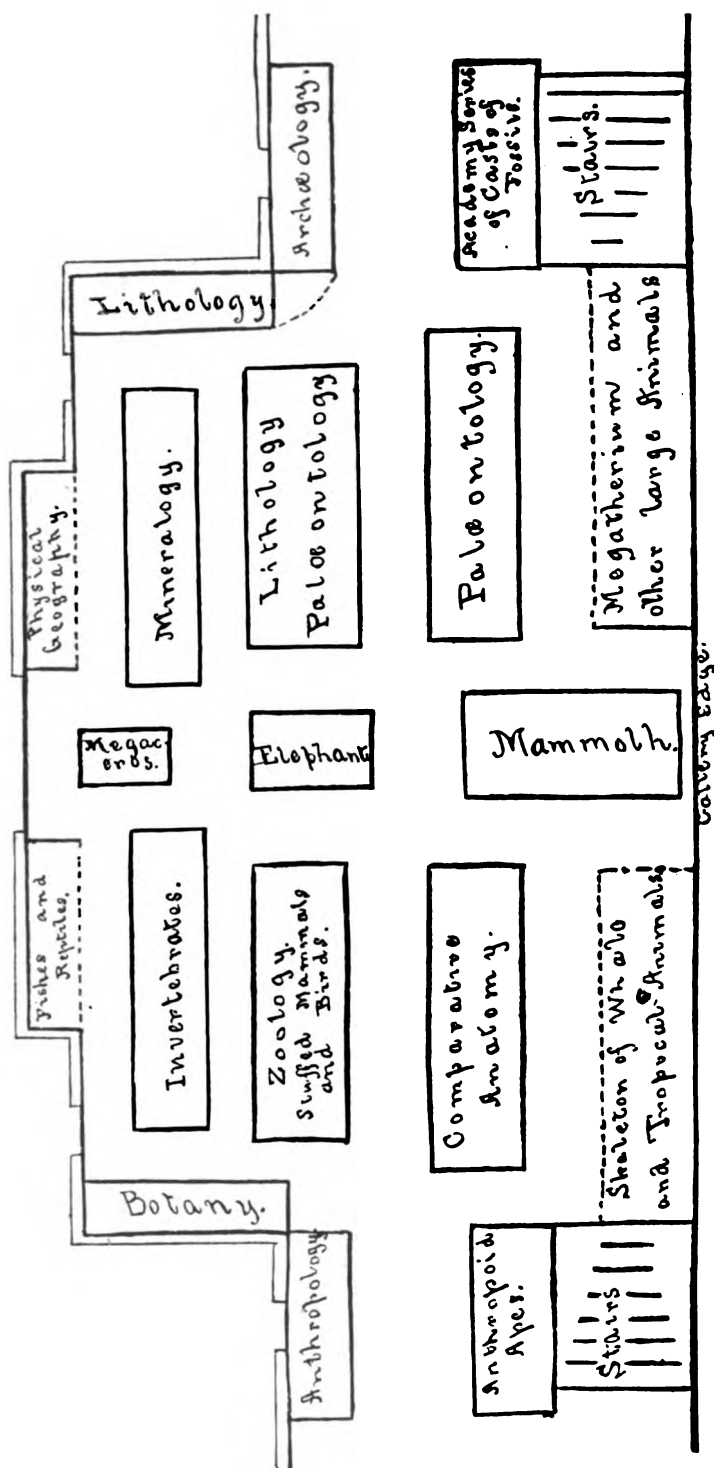


FIG. 4.—Plan of exhibit of Ward's Natural Science Establishment, Rochester, N. Y. Length, 165 feet; average width, 48 feet.

and fancy sewing, embroidery, and kid gloves, from the female department. The articles were of excellent quality and tastefully displayed.

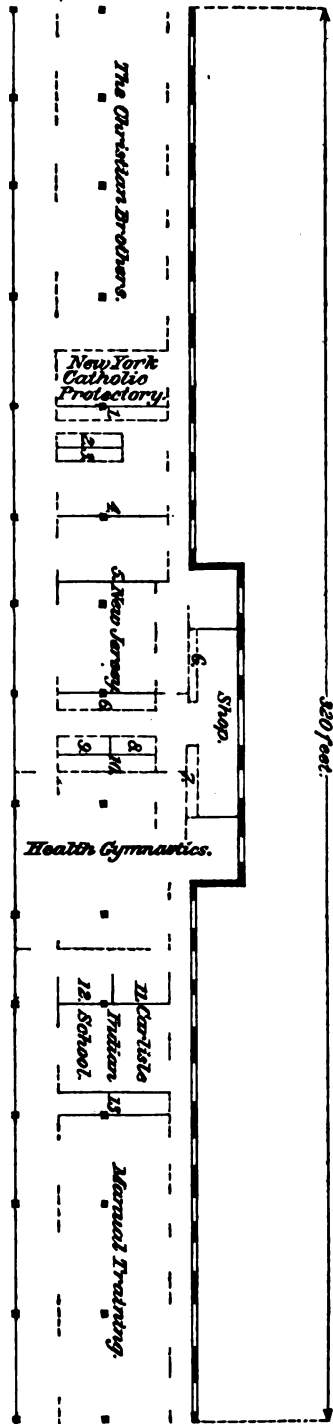
#### MISCELLANEOUS EXHIBITS.

The other exhibits in the eastern gallery possessed no peculiarities not suggested by the catalogue lists of their articles. Most of them were installed by the Exposition and were without special decoration. The exhibits of Judson Institute, Marion, Ala., and the Indian Training School, at Carlisle Barracks, Pa., were exceptions, the former being installed under the supervision of its principal, Robert Frazer, A. M., and the latter by Mr. A. J. Standing, assistant superintendent. The art work in the former and the industrial work in the latter enabled them to make excellent displays. The plan of this part of the gallery gives a general idea of the positions and extent of the exhibits.

#### FOREIGN EXHIBITS.

Japan, France, Belgium, England, Jamaica, Mexico, and Honduras were represented by exhibits of greater or less extent. Their presence was in nearly if not quite all cases due to the solicitation and encouragement of the Commissioner of Education. For this purpose he visited the Health Exhibition in London and several cities in Belgium, France, and Great Britain. The exhibits of Japan, Jamaica, Belgium, and Honduras were installed in the main building of the

FIG. 5.—Plan of south end of east gallery.—(1.) St. Alphonsus School, New Orleans; (2.) Commercial School, Kentucky University; (3.) Business College, Quincy, Ill.; (4.) Soutle's Business College, New Orleans; (5.) Judson Institute, Marion, Ala.; (6.) School Board, Birmingham, England; (7.) Deaf-mute printing, England; (8.) Henry Stayne's models, England; (9.) School Board, Sheffield, England; (10.) James Rife's models, London; (11.) Workingmen's school and kindergarten; (12.) New York trade schools, New York City; (13.) Wood-work from Swedish schools.



Exposition, out of the domain of the department of education. The Mexican educational exhibits were partly in the main building and partly in the Women's Department. A small portion of the English and French educational exhibits were placed in the sections set apart for the commercial exhibits from those countries. It is to be hoped that the proper reports will do justice to the exhibits outside of those over which the Bureau of Education had supervision, whether they were State, national, or individual.

#### ENGLAND.

The exhibits from England were sent by cities or individuals, and included a display from (1) Birmingham School Board; (2) Sheffield School Board; (3) James Rigg, Engineer, London, E. C.; (4) Prof. Henry Stayne, Technical College, Finsbury, London; (5) British and Foreign Blind Association; (6) Association for the Oral Instruction of the Deaf and Dumb; (7) T. Nordenfeldt (Swedish gymnasium); and (8) Bath. The Birmingham exhibit consisted of a model of a school house built on the class-room system; pieces of physical apparatus made by pupils; needle-work; and folios and volumes of school work. The Sheffield exhibit illustrated by woodwork and mechanical drawings a course of study devised for the purpose of making a "proper connection between the theoretical instruction of the class-room and the practical instruction of the work-shop."

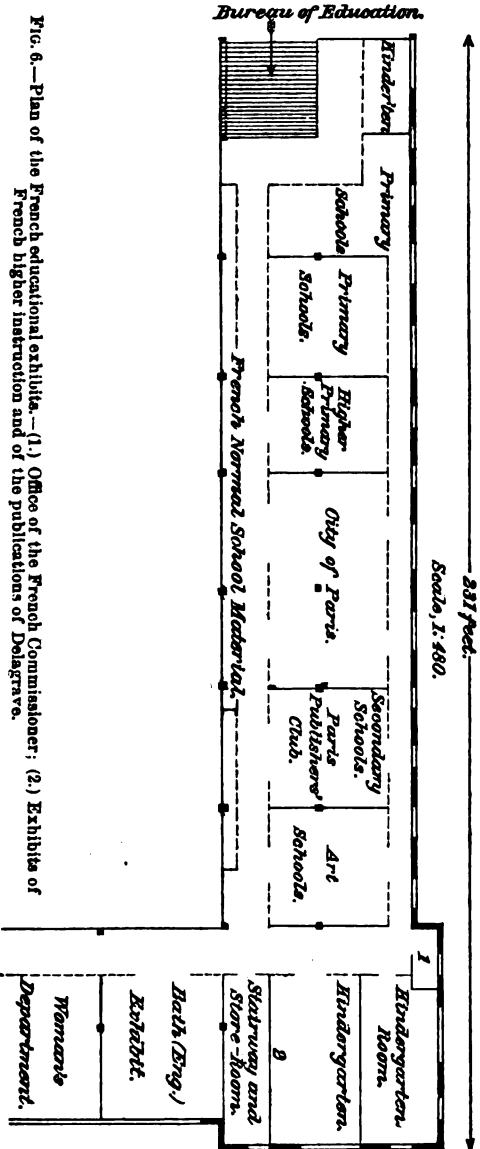
The Swedish gymnasium occupied a square 39 feet on the side. It was necessary to put it up so as to include the exhibits of Professor Stayne, Mr. Rigg, and the Sheffield School Board within its outer limits. This was done in such a way as not to do injury to the effect produced by these displays, nor hinder free access to them, nor render them liable to injury from the exhibition of the gymnasium. The use of the gymnasium was restricted, but not sufficiently to prevent the testing of its merits. The system on which the gymnasium was constructed was designed to be productive rather of health than strength, and was understood and approved by the persons employed by the Bureau of Education to call attention to gymnastic apparatus and the methods and value of physical culture.

The Bath exhibit was located at the south end of the western gallery, occupying a space fifty by thirty feet. It consisted of models of ancient Roman and modern baths, with drawings and photographs representing the baths and their surroundings, and antiquities, such as historic flagstones, pottery, and lead pipe from the Roman baths. The exhibit was put in place by Mr. and Mrs. George Morris, of Bath, under the direction of Lieut.-Col. Eugene Hay Cameron, who lost his life on the passage back to England. This exhibit illustrated the use of mineral baths and the aid rendered to history by the excavation of ancient cities.

## FRANCE.

The French exhibit was extensive, complete, and systematic. It occupied most of the western half of the southern gallery. Its divisions are shown by the accompanying plan of the space occupied. Normal school material was arranged along the front of the gallery. The arrangement was such as to produce the best impression and to command the admiration of visitors. "The genius of the French," said Dr. Harris, "wide-reaching as it is, is especially manifest in that very quality for which the whole Exposition is distinguished—the art of arranging and disposing things so as to make them display themselves. One can say truly that the apparatus of the French educational exhibit actually makes things into teachers." The French exhibit was under the immediate charge of Mons. B. Buisson, assisted by Mr. A. Duvall; and, therefore, its history is rather to be given by him in the catalogue than in a report of the Department of Education, whose officers only assigned space, secured privileges, and exchanged courtesies. One quotation may be appropriately added, in which Mr. E. V. Smalley aptly describes to the readers of the *Century* the French educational exhibit:

It covers the whole field of educational effort in France, from the crèche for infants and the primary school to the cottages, the medical schools, the schools for manual labor, and the national schools of decorative arts. The American teacher visiting the crowded gallery containing this exhibit will be struck, first, by the way in which the French carry their love of system into their school work; next, by a certain



artistic feeling and indefinable touch of taste in the work of the pupils; and then, most of all, by the many evidences that instruction is carried outside the text-book, as far as possible, to objects and their relations, teaching theories by things and not by sentences learned by rote.

## SPECIAL OCCURRENCES.

### TEACHERS' VISITS.

The first special event connected with the Department of Education worthy of notice was the visits of teachers to the Exposition at the Christmas holidays. It is to be regretted that the educational exhibits were not all in order and completeness at the time. Those that were ready for inspection were examined by hundreds of teachers whose only opportunity of visiting New Orleans was their holiday vacation. One gathering of teachers at the Exposition was particularly worthy of note. It was a meeting of two hundred from Texas, to listen to an address by Hon. John Eaton, Commissioner of Education, and to be introduced by him to persons in charge of educational exhibits. The line of march was through Ward's Museum, which was described in popular language by its proprietor; to the Christian Brothers exhibit, where Brother Noah, of Amawalk, N. Y., was in charge, and spoke to them of the qualities and lessons of exhibits received, and mentioned others that were expected; to the display of manual training under Prof. John M. Ordway; to the exhibit of physical culture under Prof. Hartvig Nissen; and to the Chautauqua alcove, the exposition home of Prof. E. A. Spring. Teachers did not cease to visit the Exposition during its continuance, and frequently brought their schools or classes with them. The interest shown by New Orleans teachers in the educational exhibits was most commendable. They frequently came, either alone or in groups, often with pupils, and examined the scholars' work, the specimens of drawing and writing, the apparatus and text-books suitable for their schools, and other exhibits of peculiar value to actual teachers.

### INTERNATIONAL CONGRESS OF EDUCATORS.

An International Congress of Educators was held in connection with the Exposition. The arrangements for it were made by a committee consisting of Hon. M. A. Newell, State superintendent of public instruction, Maryland; Hon. W. T. Harris, LL.D., Concord, Mass.; William H. Payne, A. M., professor of the science and art of teaching, University of Michigan; Hon. Le Roy D. Brown, State commissioner of common schools, Ohio; and Hon. A. Coward, State superintendent of common schools, South Carolina. Abundant reason for holding it existed in the universal interest felt in the Exposition, the natural movement of intelligent people toward it, the facilities for illustration and instruction it possessed, and the great value of combining educational exhibits and theories to produce the most permanent results. The Department of



Superintendence held its winter session at the same time. Both meetings were successful and may be reckoned among the events of the Exposition. Committees were appointed to examine minutely the educational exhibits and to report on them, that their valuable lessons might be given to the teachers and educators, not only of this country, but also of foreign nations.

#### CHILDREN'S JUBILEE.

A "Children's Jubilee" was celebrated on April 10. It consisted of songs by the white school children of New Orleans. The program was: (1) "Let us with a gladsome mind"; (2) patriotic song from the Swiss; (3) Summer, by the girls' high school; (4) America; and (5) Auld Lang Syne, by the young ladies of the high school. The preparation of the children for singing was supervised by Prof. Luther W. Mason. The prime movers in the project were Rev. D. L. Mitchell and Ulric Bet-tison, Esq., superintendent of city schools. The Management admitted free all who were to participate in the singing. It was estimated that 120 teachers and 4,500 children were present.

#### EDUCATION DAYS.

Education days were celebrated on May 12 and 14. The earlier was an occasion for a review of the educational field represented by the exhibits of an educational nature, and afforded an opportunity for expressing the gratitude the friends of education had for the support given that department by the Exposition. The latter education day was in the interests of colored education. Its orators were Southern men who had a practical realization of the need and means of educating the colored race. The occasion was enlivened by the songs of some 1,600 pupils of institutions in the city. A careful examination of the addresses of this day is recommended to students of the race problem in the South.

#### RETURN OF EXHIBITS.

At the close of the Exposition the educational exhibits were packed up either by those directly interested in them or by employes of the Department of Education. A circular letter had been sent to the owners of exhibits asking for the address to which each should be returned. Answers to nearly all were received and the exhibits were shipped according to direction, advantage being taken of contracts for the free return of goods on which full freight to the Exposition had been paid. As in collecting exhibits for the Bureau of Education part had been shipped through the Bureau and part direct to New Orleans, so in returning those exhibited by the Bureau there was a choice made between these two methods. Few errors in shipment occurred, and these were remedied when brought to the attention of the proper officials.

Many of the foreign exhibits were contributed to the Bureau of Education for its museum. All the Japanese exhibit, large portions of the

French and the English exhibits, except those of Professor Stayne, the Sheffield School Board, Th. Nordenfeldt, and Bath, went to the Bureau. The Bath exhibit was given to the museum of hygiene of the United States Navy Department. The exhibits of Professor Stayne, the Sheffield School Board, and Th. Nordenfeldt were packed, marked, and turned over to the officers of the Exposition to be returned to their owners.

#### FAVORS RECEIVED.

It would be impossible to enumerate in full those persons and institutions that have placed the Department of Education under obligations by reason of favors granted and kindness shown. It may not be amiss to mention a few from whom the Department has received great assistance. William O. Rogers, Esq., and Rev. D. L. Mitchell, of New Orleans, were especially helpful. The Louisiana Educational Society placed its convenient rooms at the disposal of the head of the educational interests of the Exposition and his assistants. Tulane University opened its doors to the friends of education, whether they came as individuals or in bodies, and they received a most cordial welcome from Col. William Preston Johnston, the eminent president, and his assistants. The Bureau of Education had at all times the sympathy and co-operation of officers of the Interior Department exhibit, and its thanks and those of the Educational Department of the Exposition are due to its secretaries, Hon. H. M. Teller and Hon. L. Q. C. Lamar; to its representatives, Hon. Benjamin Butterworth and Marcellus Gardner, Esq.; and to its chief clerk at the Exposition, Col. H. W. Coffin.

# CATALOGUE OF EXHIBITS.

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## LETTER OF TRANSMISSION TO THE COMMISSIONER OF EDUCATION.

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DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,  
*Washington, D. C., November 21, 1885.*

DEAR SIR; I have the honor to transmit herewith a catalogue of educational material exhibited at the World's Industrial and Cotton Centennial Exposition. A few exhibits not in the Department of Education either were not catalogued or the catalogue was not furnished; therefore they do not appear in these pages.

### ARRANGEMENT.

The arrangement of the catalogue corresponds nearly with the order required by the logical relations of exhibits and the preferences of State school officers. The unclassified exhibits of the National Bureau of Education are presented at the beginning, prefaced by a statement of the work of the Bureau, and of the special exhibits displayed under its immediate control. Catalogues of State educational exhibits follow. These preserve, usually, the peculiarities wrought into them by their authors. Generally they are prefaced by an outline of the school system of the State. The lists of text-books and school appliances follow immediately the catalogue of city school exhibits. The reason of this is that city school exhibits represent the public school system, and the public schools are the principal purchasers and users of school books and appliances.

From this point onward the arrangement conforms approximately to the classification of schools in your annual report. Museums, cabinets, models for technical instruction, laboratory and gymnastic appliances are brought into relation with the exhibits of colleges and schools of science. The enumeration of articles exhibited by societies, or from foreign countries, completes the catalogue.

### COLLECTION.

The lists of articles have been obtained from persons in charge of exhibits whenever practicable. Endeavors to obtain them were begun

even before the opening of the Exposition. Personal solicitation often renewed failed sometimes to produce satisfactory response. By the use of your circular letter of February last much was accomplished. That this catalogue is not complete is not the fault of the compilers or the Bureau; for some who have been asked many times for their portion have never supplied it. The work of collecting and preserving the data and preparing certain sections of the catalogue was performed by Henry H. Piper, A. B., with painstaking and accuracy. Mr. Charles H. Richardson prepared the material for the section relating to chemical and physical apparatus.

#### ARRANGEMENT.

If excuses are needed because the entries in the catalogue do not conform to a single standard, they are found in the variety and amount of the material to be catalogued, the number of persons unused to cataloguing engaged necessarily in the work, and the limited time at the disposal of any one concerned. An alphabetical arrangement has predominated. Departure from it has been made whenever clearness of explanation or correctness of impression required. The lack of uniformity is compensated by the introduction of excellences characteristic of different cataloguers. A study of these would aid materially in the preparation of a set of rules for future use in expositions and pedagogical museums.

#### HISTORICAL MATTER.

The historical and statistical matter presented at intervals is of much value in enabling the reader to judge correctly of the significance of exhibits. The work of schools newly established and still struggling against prejudice and indifference possesses an interest not existing in case where material is sent from schools long established and generously supported. The statistics of education formed in many cases distinct and attractive exhibits, useful in indicating to the emigrant or capitalist the intelligence and social condition of communities offering homes or investments. They also stir up the educational laggards and the unwilling tax-payers. They enlighten and direct the teachable citizen of ignorant but aspiring communities, and furnish him arguments for the support of schools and the promotion of education.

#### FOREIGN EXHIBITS.

Catalogues, more or less complete, of exhibits from foreign countries are appended. A few small exhibits, as those of Belgium and Honduras, and the material included with the Mexican exhibit and not separately arranged in it, do not appear. The catalogue of the Japanese exhibit is very complete, being a description rather than an enumeration. These catalogues are full of information of the educational condition and peculiarities of the countries the exhibits represent. Nothing can show the drift of the French Republic, the rapid modification of the

Japanese people, better than the display of the material and methods used in the preparation of their children for industry, influence, and citizenship. These exhibits are produced by the same instrumentalities that are producing the history of these nations for the next fifty years.

The omissions from the catalogue can be supplied, in cases where the material unmentioned is meritorious, from the list of awards made by the educational jury. Few exhibits of value escaped its notice, or, being noticed, did not receive recognition.

Altogether the catalogue fairly represents the great collection of educational material at the recent Exposition. The opportunity to see it is past; the chance to know of it, to study its lessons, and to refer to it for information, will remain indefinitely, and become more advantageous than the temporary exhibition of the articles themselves.

Very respectfully, your obedient servant,

LYNDON A. SMITH,

*Representative, Bureau of Education,*

*W. I. and C. C. Exposition.*

Hon. JOHN EATON,

*Commissioner of Education.*

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# DEPARTMENT OF THE INTERIOR,

## BUREAU OF EDUCATION.

JOHN EATON, COMMISSIONER.

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### DESCRIPTIVE SKETCH OF THE BUREAU.

The Bureau of Education was created "for the purpose of collecting such statistics as shall show the condition and progress of education in the several States and Territories, and of diffusing such information respecting the organization and management of school systems and methods of teaching as shall aid the people of the United States in the establishment and maintenance of efficient school systems, and otherwise promote the cause of education."

It will be perceived that the chief duty of the office under the law is to act as an educational exchange. Exercising and seeking to exercise no control whatever over its thousands of correspondents, the office occupies a position as the recipient of voluntary information which is unique. European ministries require paid subordinates to furnish the information needed for the compilation of their official reports; but at considerable expense of time and trouble the great body of intelligent educators of this country gratuitously furnish a mass of information concerning their work, which in character and extent is believed to surpass what is brought together anywhere else. In collecting this information, the main reliance is placed, as has been intimated, upon correspondence; but the exchange of publications and appliances and the purchase of books, pamphlets, and educational apparatus are also resorted to. The results have been a very large and continually increasing correspondence, an educational library of great value, and the rudiments of a most interesting museum.

The language of the law already quoted authorizes the Bureau to enter upon a wide field of research, sends it to the study of school systems elsewhere prevalent, and leads to inquiry as to the ministries of instruction in the several European states, as to the useful suggestions in foreign educational reports and journals, and as to the systems of training in the universities, gymnasien, realschulen, schools of architecture and drawing, and the various institutions for primary education in every civilized community or state, in order that whatever is peculiar or excellent in each may be collected, with a view to the assistance of our educators in their work.

All this, with the educational collections from our country, is presented by the Bureau in annual reports, each giving abstracts of the various classes of instruction (such as primary, secondary, superior, professional, and special), with lists and statistics of all noticeable institutions and a general summary of the whole educational field; in occasional circulars of information, of which 68 have been published since 1870, besides special reports on topics of particular importance and smaller publications on topics of minor moment; and in written answers to inquiries on school matters from a great variety of sources, both in this country and abroad.

The amount of information conveyed by these means with respect to educational systems, school laws, and important institutions is such as has never previously been made

generally accessible in the United States, such as no agency belonging merely to a single State could possibly have gathered, and such as private persons could not have obtained, even with vast labor and at great expense.

In obedience to the law requiring the Bureau of Education to diffuse information respecting the organization and management of schools and school systems, and methods of teaching, it has sought to reach people where they congregate in large masses. It has made a display, at expositions of national or international importance, of such evidences of improved methods and appliances as could be shown either from the collection it has made for permanent use, or from institutions and individuals choosing to display through the medium of the Bureau. The Bureau has not only displayed articles from its own material, but has also superintended collective exhibits of educational material and appliances. The following circular gives a correct idea of the logical representation of education made under the immediate charge of the Bureau:

#### EXHIBIT.

*Plan.*—The intention of the exhibit of the Bureau of Education was to show in logical sequence the material of education in all grades and forms. States and institutions seemed to have a less wide field to draw from, and to have peculiarities best shown by separate exhibits. Then, too, there is much material sent to a great exposition which is valuable and instructive, and which cannot be shown advantageously unless grouped with other similar articles. The arrangement of the Bureau exhibit enabled those in charge of it to bring into harmonious relations and appropriate surroundings many pieces of apparatus and much scholar's work. Charts of history are hung around a model of that center of American history, the National Capitol. The various devices for instruction in number find a place on the same shelf. Maps and globes are gathered for the most part around a single center.

*School architecture.*—In the logical arrangement of the exhibit school architecture holds a fundamental place. The child of tender years, susceptible to every injurious influence from impure atmosphere and unequal heating, needs a school-room with accessories that will not impair its health or implant germs of future disease. Such a school building is shown as a crown-piece among the models of school-houses. The model is of wood, constructed so as to show the location of all air passages, the flues used in ventilation, the dressing rooms, the stairways, and the means of lighting. The building from which the model is taken is one recently erected in the city of Washington, and embodies the results of years of study by the school officials, especially the superintendent. It combines excellent ventilation, suitable heating, lighting in sufficient amount and from the right direction, convenience of ingress and egress, and economy of construction. The plans of the building and a diagram of a cross-section accompany the model. The other representations of school buildings are designed to unite with this in showing the progress in school architecture, from the log house of the newly settled regions and days fast going by, to the more modern and convenient rural and village schools.

Photographs and plans of schools in Denver, Colo., show admirable arrangement and appropriate architecture. The plans of the Whittier and Emerson buildings are especially elaborate. The fresh-air passages are colored blue; those for the pure air after it is heated are red; and those for the impure air are black. The heating is a system of indirect radiation. The plans approved by the Maryland educational authorities for country school-houses are also found in this section.

*Early child life.*—The early education of the child and his care before entering the public school are shown by the kindergarten and kitchen-garden displays and a collection of photographs and articles from the Fitch crèche, at Buffalo, N. Y. This institution is a home for little children whose mothers are away from them at work. The children are taken care of, and those of suitable age are instructed in a kindergarten. Photographs of the pound, the dining-room, the wardrobe, and dormitories are interesting. Infants' clothing and toilet sets, and cribs and cradles are shown.

*Kindergarten.*—The kindergarten display is located apart from the main portion of the Bureau exhibit, in a room at a sunny corner of the gallery. Here a class is instructed five times a week by Mrs. Anna B. Ogden, a teacher now employed by the Bureau. The class is comprised of children from homes near the Exposition grounds, and attracts a considerable circle of parents and visitors. Much interest in the class is manifested by those passing through the gallery, and many return for a second view of the busy children. The exhibits of kindergarten work are from schools in distant portions of the country, Washington, San Francisco, Indian Territory. Much of the material displayed has been

furnished by the manufacturers, and has been wrought into designs illustrative of the system, by a skillful teacher and student of kindergarten principles.

*Kitchen-garden.*—The kindergarten room is occupied in the afternoon four days in the week, Mondays, Wednesdays, Thursdays, and Saturdays, by a class in kitchen-garden. This system of instruction is an application of kindergarten methods to the instruction of girls in household duties. "It is a combination of songs, exercises, and plays designed in a thoroughly practical way to train a child in simple housework." It is divided into six parts or occupations, including such operations as kindling fires, waiting on the door, the care of rooms, laundry work, and cooking. The class is conducted by Miss Olivia Tracy, a pupil and assistant of the founder of the system. The music for the exercises is supplied from a fine Weber piano, loaned by the manufacturers.

*Primary schools.*—The primary section includes apparatus directly adapted to the younger classes of scholars and material produced by them. The apparatus includes charts to be used in teaching reading, spelling, and arithmetic, slates in frames and in covers, crayons used in blackboard work, blackboards, a dissected map, outline maps, and object-lesson cards of various kinds. Seats of sizes used in primary schools are arranged with the exhibit, and some text-books are put here on account of their special use by young children.

The scholars' work for all the grades was furnished by the public schools of Washington, as that city was most accessible to the Bureau of Education and has excellent schools. The primary material from these schools represents actual work done in the lower grades, when the pupil first enters upon study. It consists of copy-books, movement exercises in penmanship, samplers (collections of miscellaneous school work), compositions, slate work, and map drawing. The material, except that of the last two classes, is in bound volumes, placed on desks representing those actually used in Washington. The slate work is partly in a counter case and partly on the wall, where the map drawing is displayed.

*Grammar schools.*—The grammar school section contains much of the apparatus and material contributed by manufacturers and publishers. The collections of text-books common to public schools are displayed in counter cases. The globes and maps are most appropriately located here. The material for teaching sewing and articles of clothing made by pupils in the Winthrop School, Boston, fill one case. Another contains home-made physical apparatus and models to be used in teaching drawing. A most noticeable feature of this section of the exhibit is the putty maps made by children under instruction. They show countries in relief and indicate natural productions and resources by little pieces of minerals or grains of wheat, rice, or corn. A child knows a country well after he has made a miniature of its coast, rivers, and mountains, and located its principal cities. The other work from Washington consists of bound volumes of samplers, copy-books, drawing-books, compositions, examinations, and the like. Photographs of school buildings and interiors, a map showing the location of schools in the District of Columbia, and astronomical charts, are on the walls of this section.

*High schools.*—The high school exhibit includes the text-books used in the Washington High School; photographs of the building, the cadets, the chemical and botanical laboratories, the library, drill hall, drawing-room, and physics lecture room; bound volumes containing catalogues, examination papers, essays, observation papers (botany), and miscellaneous exercises in the languages, sciences and mathematics, history and political science, and business training.

Across the aisle from the high school exhibit, or between it and the normal displays, are collections of bound volumes of school work from Atlanta, Ga., and Leavenworth, Kans.; drawing from Oak Park, a suburb of Chicago; a model of the National Capitol, surrounded by historical charts and photographs of historic interest; and a collection of drawings representing the work of each grade of the Washington public schools. It was put in its present form and orderly arrangement by the special teacher of drawing. Furniture suitable for high schools is shown in the vicinity.

*Normal schools.*—The normal school exhibits are from the Maryland State Normal School, at Baltimore, and the Washington Normal School. While these displays are alike in many respects, they are sufficiently unlike to aid each other in making a complete exhibit. The normal exhibit from Washington contains much material designed for the education of quite young children. Seed cards for number lessons, word-steps for color lessons, tin coins for trading, mounted leaves to teach their forms and sizes, linen tracings for story making, and minerals to illustrate this department of natural history, are skillfully prepared for use in the school-room. One hundred mounted botanical specimens are placed on screens and covered with glass. Portfolios of drawings and designs from plant and geometrical forms, frames of designs shaded and in colors, and photographs of the school-room are exhibited.

The exhibit of the Maryland State Normal School has portfolios of maps, reading charts, history charts, original designs, rapid crayon drawings, examination papers, bo-



tanical specimens, etc. Leaves from these portfolios are shown on wall space so as to illustrate the nature of the covered exhibit. Books of sketches and drawings, photographs of blackboard work, a picture of the building, and views of its interior are presented. The distinctive feature of the display is the work in sewing. A portfolio of pieces shows the different steps in teaching sewing. Two cases are filled with hand-sewing, embroidery, and similar evidences of woman's handiwork, all attractive in appearance and creditably executed.

*Colleges and universities.*—Colleges and universities occupy a space adjacent to normal schools, and have a varied but not large display. Photographs of buildings, plans of grounds, and the literature of the institutions make up a large part of the collection. Conspicuous among the objects are models of engineering construction (bridge, wharf, tunnel, etc.), from the University of Pennsylvania. The museum of the Bureau of Education is represented by a series of miniature ploughs showing the improvements made in this instrument, which might justly be termed an index of agricultural progress; and also by a set of models for use in teaching descriptive geometry. Surveying instruments and cabinets of minerals add to the completeness of the college exhibit.

*Gymnasium.*—Physical culture, instruction in art, and the use of the library, accompany, or should accompany, every grade of instruction. They are therefore grouped in the space beyond the college exhibit, which represents the culmination of public and general education. The collection of gymnastic apparatus is chosen so as to represent such physical training as will make of students, not acrobats or athletes, but healthy men and women. Much of the apparatus is of recent design and prepared after a long experience with gymnasiums and college students. Weight, height, strength of hands, and strength of lungs, are noted, and such measurements may be made as will indicate the strong and weak points of each individual.

*Art instruction.*—The art display is peculiarly industrial, and is from the public schools of Chicago, the Philadelphia School of Design for Women, and the Pennsylvania Museum and School of Industrial Art. The Chicago exhibit includes specimens from all the grades of instruction usual in public schools; that of the Philadelphia School of Design for Women has a preponderance of designs for wall papers, cloths, and carpets, and includes specimens of carpets in which the design is wrought out; and that of the Pennsylvania Museum and School of Industrial Art is accompanied by ornamental work in plaster. These institutions are not neglectful of fine art, although their purpose is to prepare their students for earning their livelihood in the industries; and many pieces exhibited are the product of high artistic skill, and merit notice and close examination as such.

*Library.*—The library section contains material customarily found in an educational library and reading room—educational reports, higher text-books, pedagogical literature, educational periodicals, and the like. The reports of the Bureau of Education and the publications of Hon. Henry Barnard are conspicuous by their number. The most numerous collection of literary publications, including an elegant edition of Longfellow's works, is from Houghton, Mifflin & Co. A set of the registers, records, cases for card catalogues, and other appliances, useful in conducting a library, is worthy of the inspection of all connected with library management or desiring information on the subject.

*Physical and chemical laboratory.*—A combined laboratory for physics and chemistry was contemplated in the first plans for an exhibit by the Bureau. A gentleman who had given much study to the most convenient arrangement of a school-room for laboratory work commenced the plan for this section, but died before its completion. This and the limitations of space caused a modification of the plan. The present arrangement is suggestive, and the equipment of the laboratories excellent. Many experiments can be shown by the gentleman in charge, and electrical phenomena are given prominence. The solar microscope shows in a most interesting manner the same things that can be seen by an ordinary microscope; and the curiosities of polarized light are shown to visitors. A fine exhibit of optical goods from Bausch, Lomb & Co. is included in the laboratory space; and E. B. Benjamin, of New York, James W. Queen & Co., of Philadelphia, and E. S. Ritchie & Sons, of Boston, are large contributors to the display.

*Medical and nurse-training schools.*—Medical education is represented by anatomical models, obstetrical instruments, chemical apparatus, and professional literature. The photographs of many faculties of medicine are collected. An interesting portion of this display is that furnished by nurse-training schools. Their exhibits are photographs of hospitals, hospital wards, interiors and exteriors of homes for nurses, and the nurses themselves. The strength of mind and body of nurses, made obvious by their photographs, indicates partially the severe course of training and experience which sifts out weak material from the sisterhood of trained nurses and insures the quality of those who are allowed to graduate at these schools.

*Schools for the blind.*—The collective exhibit of schools for the blind is the first of a series of displays of the education of the defective and delinquent classes. The books used by them and printed in raised letters of several varieties; the blocks and other ap-

pliances used in mathematical study, the fabrics knit by their sensitive hands, and the forms of industry they are able to pursue are here represented as far as possible. Comparatively little is present to show the musical opportunities and capacities of the blind, except some compositions from a blind boy of Mississippi. Among the institutions largely represented are those of New York, Ohio, and Louisiana.

*Schools for the deaf and dumb.*—The education of the deaf and dumb is well illustrated by the objects collected from their schools, and by specimens of their handiwork after leaving school. The largest exhibits are from the Institution for the Instruction of the Deaf and Dumb, New York City; the Illinois Institution for the Education of the Deaf and Dumb, Jacksonville, and the Mississippi Institution for the Deaf and Dumb, Jackson. The first-named institution prepared its display at home and sent a gentleman of rare artistic ability to place it. The products of the art and industrial departments are displayed to the best advantage, the paintings, metal work, tiles, and art needle-work being made to contribute to the appearance of the ruder constructions of the shop. The Illinois institution has a varied exhibit, including bound volumes of examination papers, sketches and portraits in pencil and crayon, shoes, and the like. Many institutions and individuals are represented by the works of art and mechanism displayed. The collection owes its extent and quality largely to Prof. J. R. Dobyns, superintendent of the Mississippi institution.

*Reform schools.*—Reformatory education is shown by various exhibits, chiefly from industrial departments. Clothing from the Colorado State Industrial School, sewing from the Wisconsin Industrial School for Girls, wood-work from the Minnesota Reform School, and brushes from the Newark City Home are prominent exhibits. The photographs from the Connecticut State Reform School give indications of the enlightened methods of dealing with young offenders, by giving them homes instead of congregating them in prison-like buildings.

*Schools for the feeble-minded.*—Two institutions for the instruction of the feeble-minded, those in Kentucky and Minnesota, present exhibits of the work of this class of youth. The work is not shown because of its superiority, but because it proves that much may be accomplished in the way of preparing those low in intelligence to become useful men and women.

*Publications.*—Report of the Commissioner of Education, with circulars and documents accompanying the same, 1868. Special Report of the Commissioner of Education on the condition and improvement of public schools in the District of Columbia, 1868.<sup>1</sup>

Annual reports of the Commissioner of Education for the years 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882-'83.

Contributions to the annals of medical progress and medical education in the United States before and during the war of Independence, by Joseph M[eredith] Toner, M. D., 1874. Public libraries in the United States of America; their history, condition, and management, special report, 1876. Contributions to the history of medical education and medical institutions in the United States of America, 1776-1876, special report, by N. S. Davis, A. M., M. D., 1877. Industrial education in the United States, special report, 1883.

Circular of Information of the Bureau of Education for August, 1870. *Contents:* Illiteracy of 1860; educational statistics; Virchow on school-room diseases; education of French and Prussian conscripts; school organization, &c.

Circular of Information of the Bureau of Education for July, 1871. *Contents:* Public instruction in Sweden and Norway; the folkehoiskoler of Denmark. *Same* for November, 1871: Methods of school discipline. *Same* for December, 1871: Compulsory education. *Same* for January, 1872: German and other foreign universities. *Same* for February, 1872: Public instruction in Greece, the Argentine Republic, Chili, and Ecuador; statistics respecting Japan and Portugal; technical education in Italy. *Same* for March, 1872: Vital statistics of college graduates; distribution of college students in 1870-'71; vital statistics in the United States, with diagrams, &c. *Same* for April, 1872: Relation of education to labor. *Same* for June, 1872: Education in the British West Indies. *Same* for July, 1872: The kindergarten. *Same* for November, 1872: American education at the Vienna Exposition of 1873.

Circulars of Information of the Bureau of Education for the year 1873. *Contents:* No. 1. Historical summary and reports on the systems of public instruction in Spain, Bolivia, Uruguay, and Portugal. No. 2. Schools in British India. No. 3. Account of college commencements for the summer of 1873, in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania. No. 4. Lists of publications by members of certain college faculties and learned societies in the United States, 1867-1872. No. 5. Account of college commencements during 1873 in the Western and Southern States.

<sup>1</sup> Valuable reports on Technical Education and Education in Europe were also prepared, but were not ordered to be printed.

Circulars of Information of the Bureau of Education for the year 1874. *Contents:* No. 1. Proceedings of the Department of Superintendence of the National Educational Association, January, 1874. No. 2. Drawing in public schools. The present relation of art to education in the United States. No. 3. History of secondary instruction in Germany.

Circulars of Information of the Bureau of Education for the year 1875. *Contents:* No. 1. Proceedings of the National Educational Association, 1875. No. 2. Education in Japan. No. 3. Public instruction in Belgium, Russia, Turkey, Servia, and Egypt. No. 4. Waste of labor in the work of education. No. 5. Educational exhibit at the Centennial in 1876. No. 6. Reformatory, charitable, and industrial schools in the United States. No. 7. Constitutional provisions in regard to education in the several States. No. 8. Schedule of students' work for the Centennial Exhibition, 1876.

Circulars of Information of the Bureau of Education for the year 1877. *Contents:* No. 1. Education in China. No. 2. Public instruction in Finland, the Netherlands, Denmark, Württemberg, and Portugal; the University of Leipzig.

Circulars of Information of the Bureau of Education for the year 1878. *Contents:* No. 1. The training of teachers in Germany. No. 2. Elementary education in London.

Circulars of Information of the Bureau of Education for the year 1879. *Contents:* No. 1. Training-schools for nurses. No. 2. Proceedings of the Department of Superintendence of the National Educational Association in 1877 and 1879, and of the conference of State college presidents held in Ohio in 1877. No. 3. Value of common-school education to common labor. No. 4. Training-schools of cookery. No. 5. American education as described by the French Commission to the International Exhibition of 1876.

Circulars of Information of the Bureau of Education for the year 1880. *Contents:* No. 1. College libraries as aids to instruction. No. 2. Proceedings of the Department of Superintendence of the National Educational Association in 1880. No. 3. Legal rights of children. No. 4. Rural school architecture. No. 5. English rural schools. No. 6. Teaching of chemistry and physics in the United States. No. 7. The spelling reform.

Circulars of Information of the Bureau of Education for the year 1881. *Contents:* No. 1. Construction of library buildings. No. 2. Relation of education to industry and technical training in American schools. No. 3. Proceedings of the Department of Superintendence of the National Educational Association in 1881. No. 4. Education in France. No. 5. Causes of deafness among school children and the instruction of children with impaired hearing. No. 6. Effects of student life on the eyesight.

Circulars of Information of the Bureau of Education for the year 1882. *Contents:* No. 1. Inception, organization, and management of training-schools for nurses. No. 2. Proceedings of the Department of Superintendence of the National Educational Association for 1882. No. 3. The University of Bonn. No. 4. Industrial art in schools. No. 5. Maternal schools in France. No. 6. Technical instruction in France.

Circulars of Information of the Bureau of Education for the year 1883. *Contents:* No. 1. Legal provisions respecting the examination and licensing of teachers. No. 2. Co-education of the sexes in the public schools of the United States. No. 3. Proceedings of the Department of Superintendence of the National Educational Association at its meeting at Washington, February 20-22. No. 4. Recent school-law decisions.

Circulars of Information of the Bureau of Education for the year 1884. *Contents:* No. 1. Meeting of the International Prison Congress at Rome, in October, 1884. No. 2. The teaching, practice, and literature of shorthand, by Julius Ensign Rockwell, stenographer. No. 3. Illiteracy in the United States in 1870 and 1880, with diagrams and observations, by Charles Warren, M. D., with an appendix on national aid to education, by J. L. M. Curry, L. L. D., general agent of the Peabody Education Fund. No. 4. Proceedings of the Department of Superintendence of the National Educational Association at its meeting at Washington, February 12-14, 1884. No. 5. Suggestions respecting the educational exhibit at the World's Industrial and Cotton Centennial Exposition. No. 6. Rural schools: progress in the past; means of improvement in the future. No. 7. Aims and methods of the teaching of physics, by Prof. Charles K. Wead, A. M., of the University of Michigan.

Circulars of Information of the Bureau of Education for the year 1885. *Contents:* No. 1. City school systems in the United States, by John D. Philbrick, LL. D.

Bulletins: A manual of the common native trees of the Northern United States, 1877. The Brussels congress, 1880. The Indian school at Carlisle Barracks, 1880. Industrial education in Europe, 1880. Vacation colonies for sickly school children, 1880. Progress of western education in China and Siam, 1880. Medical colleges in the United States, 1880. Educational tours in France, 1880. Comparative statistics of elementary education in fifty principal countries, 1881. Fifty years of freedom in Belgium, education in Malta, &c., 1881. Library aids, 1881. Recognized medical colleges in the United States, 1881. The discipline of the school, 1881. Education and crime, 1881. Instruction in morals and civil government, 1882. Comparative statistics of elementary, secondary, and superior

education in sixty principal countries, 1882. National Pedagogic Congress of Spain, 1882. Natural science in secondary schools, 1882. High schools for girls in Sweden, 1882. Planting trees in school grounds, 1883. Comparative statistics of elementary, secondary, and superior education in sixty principal countries, sheet. The Bufalini prize, 1883. Education in Italy and Greece, 1883. Statistics regarding national aid to education, 1884. Preliminary circular respecting the exhibition of education at the World's Industrial and Cotton Centennial Exposition, 1884. Building for the children in the South. Report of the director of the American school of classical studies at Athens, for the year 1882-'83. Planting trees in school grounds and the celebration of Arbor Day.

Miscellaneous: Free-school policy in connection with leading Western railways. 1872. A statement of the theory of education in the United States of America, as approved by many leading educators, 1874. The National Bureau of Education; its history, work, and limitations, 1875. Educational conventions and anniversaries during the summer of 1876. The International Conference on Education, held in Philadelphia July 17 and 18, in connection with the international exhibition of 1876. Sketch of the Philadelphia Normal School for Girls, 1883. A historical sketch of the State Normal School at Albany, N. Y.; and a history of its graduates for forty years, 1884. Answers to inquiries about the U. S. Bureau of Education; its work and history, 1883.

*Building occupied by the Bureau.*— Plan of basement, showing laboratory, document rooms, &c. Plan of first floor, showing document and mail-room, room for revising and proof-reading, and rooms for tabulation of statistics, accessions to museum, and art education. Plan of second floor, showing rooms of commissioner, chief clerk, correspondence and files, special research, copyists, and abstracts. Plan of third floor, library. Plan of fourth floor, museum. Photographs of exterior of building, rooms of commissioner, chief clerk, statistics, files and correspondence, and rooms in basement, library, and museum.

*Plans.*— Eighteen plans showing statistical summary of institutions, instructors, and students. Fifteen plans showing the location of the institutions reporting to the Bureau of Education, except "city schools," "institutions for secondary instruction," "industrial schools." One plan: Statistics of United States public schools, showing school population, enrollment, average daily attendance, and proportion of male to female teachers. One plan showing ratio of students to teachers in the various schools, except "industrial schools." Five plans showing illiteracy: (1) Total illiteracy of persons ten years old and upwards; (2) illiteracy of white persons ten years old and upwards; (3) illiteracy of colored persons ten years old and upwards; (4) illiteracy of white adults; (5) illiteracy of colored adults.

*Charts.*— Charts showing illiteracy, patents, and postal receipts for 1880: (1) Number of illiterate adults per 100,000 of adult population; (2) the number of patents per 100,000 of adult population; and (3) the number of dollars deficit or excess per 100,000 of adult population in the United States postal service. Chart showing the distribution of the Peabody fund.

*Models.*— Models illustrating progress in school architecture: Log house, country school-house, village school-house, Dennison School, Washington, D. C., with floor plans and transverse section.

## OFFICE OF INDIAN AFFAIRS.

HIRAM PRICE, SUCCEEDED BY J. D. C. ATKINS, COMMISSIONER.

### INDIAN INDUSTRIAL SCHOOL AT CARLISLE, PA.

#### EXHIBIT A.

- Case 1.*—Specimens of darning and patching by Indian girls from 9 to 13 years of age.  
*Case 2.*—A child's dress made by Nelly Aspenall, a Pawnee girl, aged 17 years.  
*Case 3.*—Specimens of pottery painting by Carlisle students, original designs.  
*Case 4.*—Specimens of joiner work by Amos Lone Hill, a Sioux, aged 20 years.  
*Case 5.*—Girl's uniform dress worn by the Carlisle students, made by Louise Cornelius, Oneida, aged 16 years.  
*Case 6.*—Boy's uniform suit worn by Carlisle students, cut and made by Webster, Osage, aged 18 years, under instruction two and one-half years, working half day of each.  
*Case 7.*—Child's dress made by Rosa White Thunder, a Sioux girl, aged 17 years, under instruction one year.  
*Case 8.*—Small uniform suit cut and made by Abe Sommers, a Cheyenne, aged 18, under instruction two years, working half days.  
*Case 9.*—A pair of breast chains made by Frank Conroy, a Sioux, aged 19 years, worked at his trade half-time for one year.  
*Case 10.*—Specimens of welding and forging by Edgar Fire Thunder, a Sioux, aged 18, three years under instruction, working half-time.  
*Case 11.*—Contains pair of boots made by Van Horn, a Cheyenne, aged 20 years, wholly instructed at Carlisle, and now employed as shoemaker at the Government Indian School, Lawrence, Kansas. Pairs of girls' shoes by Luke Phillips, Nez Percé, and Frank Engler, Cheyenne.  
*Case 12.*—Pillow sham made by Nancy McIntosh, a Creek Indian girl, aged 17 years.  
*Case 13.*—Skirt made by Ida White Face, Apache, aged 17 years, at school ten months.  
*Case 14.*—Boys' shirts made by Emma Hand, Sioux, and Sarah Sitting Bull, Arapaho girl.

#### EXHIBIT B.

- No. 1.*—A set of English coach harness, made by Kias, a Cheyenne, aged 20, under instruction at Carlisle 4 years.  
*No. 2.*—Heavy wagon harness, regular government pattern, 200 double sets made for Indian Department yearly.  
*No. 3.*—Articles of tinware, made by Carlisle students, consisting of coffee boilers, buckets, pans, cups, etc. The school makes tinware for about sixty Indian agencies.  
*No. 4.*—Specimens of boys' and girls' shoes made and worn by Carlisle students. The school makes all the girls' shoes and a large part of the boys' shoes and boots, and repairs 150 pairs per month.  
*No. 5.*—Specimens of Indian art in leather, by the harness-makers' apprentices in their odd moments.  
*No. 6.*—A carriage axle welded at one heat by Edgar Fire Thunder, Sioux, mounted by William Ayawat, Comanche.  
*No. 7.*—A panel door and table top by John Dixon, a Pueblo, aged 18.  
*No. 8.*—A footstool, made by John Menaul and Henry Kendall, Pueblo boys of 16 years.

## EXHIBIT C.

No. 1.—Specimens of map drawing by Carlisle students, from memory; also original drawings and copies.

No. 2.—A set of photographs, illustrating the Carlisle school, its buildings and students; also some contrast pictures showing the changes produced by school-training; also pictures of Indian parents visiting the school contrasted with those of their children at school, giving possibilities for the coming generation of Indians.

No. 3.—Exhibit of school-room work, specimens of all grades from three and a half months in school to five years, embracing writing from copy, original composition, examples in arithmetic, questions in geography and history, specimens of monthly home letters, exercises in language, analysis and parsing, book-keeping, &c.

No. 4.—Copy of the "Morning Star," an eight-page monthly, published at Carlisle Indian School in the interest of Indian education and civilization. The type-setting and all the mechanical work of the paper are done by Indian apprentices. From 3,000 to 5,000 copies are printed monthly.

## ILLUSTRATION OF INDIAN PROGRESS.

Prepared by

MISS ALICE C. FLETCHER.

This exhibit sets forth the progress and present status reached by the Indians, by showing their past life and present condition. For the sake of clearness, one tribe, the Omahas, was selected to exemplify the general feature of primitive Indian life and present industrial progress. They have recently reached the stage of self-support upon land granted in severalty, and their history presented no scenes calculated to arouse unpleasant memories. The exhibit contained the following articles:

No. 1.—Photograph of ancient sod dwelling. The chief in full dress approaching the lodge, followed by his wife, showing the manner in which man and wife walk together according to Indian custom.

No. 2.—Photograph of sod dwelling, giving a view of the long, projecting entrance. The chief lying down smoking, while his wife stands at the door talking with him.

No. 3.—Photograph of sod dwelling and of the rack on which the braided ears of corn are hung up to dry, preparatory to storage for winter use. Two women seated in the foreground, one braiding the corn husks so that the corn can be hung up, and the other pounding the corn in a large wooden mortar with a long wooden pestle.

No. 4.—Photograph of poles fastened to a pony, showing how tents and household goods were transported when the tribe moved out on the hunt.

No. 5.—Photograph showing the setting of the tent, stretching of the tent-cloth, women carrying wood, and the hunter returning from the chase.

No. 6.—Photograph of the tent when set up, the Indian man in full regalia, and the wife seated at the tent door.

No. 7.—Pen and ink drawing giving a bird's-eye view of the tribal circle, showing the division and location of the *gentes*, and the position of the sacred tents.

No. 8.—Tracing of a plan of the reservation as it appeared in 1862, with the legend showing the villages, individual and government breakings, and the one military road through the country.

No. 9.—Pen and ink drawing from the sketch made by an Indian of the village of the "make-believe white men," as these progressive Indians were stigmatized by the rest of the tribe.

No. 10.—Photograph showing the present mode of conveying corn by the wagon load to the grist-mill, marking a great change since the day of braiding the corn husks, and pounding the maize in the mortar.

No. 11.—Photograph setting forth the story of one man's labor and accomplishment in ten years, showing his home, out-buildings, and part of his farm.

No. 12.—Photograph of a group of Omaha Indians with the agent and his assistants, as they appear to-day, one Indian in ancient costume to mark the contrast with the past.

No. 13.—Photograph of the agent's house.

No. 14.—Map showing the reservation as now held in severalty.

No. 15.—Photograph of the mission building erected in 1858 by the Presbyterian Board of Foreign Missions.

No. 16.—Photograph of Omaha girls at the mission school, with the missionary corps.

No. 17.—Photograph of the government school with the scholars and the teachers.

No. 18.—Photograph of an Indian carpenter at work in his own shop.

No. 19.—Photograph of 31 Omaha boys and girls placed at Carlisle School, Pennsylvania, in 1882.

No. 20.—Photographs: First, of the two cottages built at Hampton Institute, Virginia, by two ladies interested in the experiment, suggested by the experience of Miss Fletcher among the Omahas, for the combined home and school training of young married couples; second, one of the cottages with the mother seated at the window and her little child standing at the door; third, interior of the cottage, showing the table with lamp and books and the general aspect of neatness and refinement.

There were small exhibits in the Pacific Slope division of the Woman's Department from the Indian training schools at Forest Grove, Oreg., and Albuquerque, N. Mex.; and, in the exhibit of the American Missionary Association, from the normal training school at Santee Agency, Nebraska.

## STATE SYSTEMS

### FLORIDA.

The exhibit from Florida was entirely from her common schools, from the primary school through the graded grammar schools and the high schools, and consisted of the work of the pupils written in response to questions submitted at the time at which the work was done, and embracing the worst as well as the best, the design being to make a truthful display of the actual status of her educational progress.

The Florida Agricultural College and the Deaf-Mute Institute were of so recent organization as to prevent an exhibit, even had it been thought wise to make one.

In addition to the work of the common schools proper, two seminaries, one located at Tallahassee, the capital, for the west half of the State, and one at Gainesville for the east half of the State, each made an exhibit of their work.

The schools represented are as follows:

*West Florida Seminary*, academic course.—Examinations in spelling, grammar, geography, history, mathematics to trigonometry. Special work in surveying and commercial arithmetic and computation.

*East Florida Seminary, Gainesville*.—Examinations in spelling, grammar, geography, mathematics to trigonometry, book-keeping, and special essays on subjects relevant to school study.

*East Jacksonville graded school*.—Written work in answer to questions submitted upon the course of studies arranged for that school, embracing the rudiments and advancing through the usual studies of a common school.

*Jacksonville graded grammar school, white*.—Written work in accordance with the course of study adopted for schools of such grade, and map and ornamental drawing, together with composition.

*Jacksonville graded grammar school, colored*.—The same as the above white school, with essays from the teachers relative to the work of the teacher.

*Duval high school, Jacksonville*.—Written work in accord with the course of study for that school and compositions by the pupils.

*Pine Level, Manatee County, school*.—Written work, embracing a common school course, composition, map drawing, etc.

*Oakland graded school, colored*.—Exhibit the same as the East Jacksonville school for the white children.

*Orlando, Orange County, public school*.—Written work based upon questions submitted as in the case of the grammar schools, composition, map drawing, etc.

*St. Joseph's Convent school, St. Augustine* (this school is operated under the laws of the State for public schools).—Written work based upon a course of study similar to that arranged for the grammar schools, and compositions, map drawings, etc.

*Sanford, Orange County, public school*.—Written work based upon questions submitted, embracing a grammar school course, composition, and map and ornamental drawing.

In addition to the above there were several exhibits from schools of a similar character in the rural districts of Marion, Duval, Putnam, and Volusia Counties.

Large charts in print of the full course of study for the grammar schools and high schools of the State were also included in the exhibit.

Several thousand pamphlets descriptive of the Florida school system, setting forth permanent and annual resources, number of school population, and essential points of school law, were provided for distribution.



## ILLINOIS.

## CITY EXHIBITS.

The school system of Illinois is well illustrated by an exhibit from the public schools of Aurora, Prof. W. B. Powell, superintendent. This exhibit gives a very excellent idea of the public school system in its most advanced state.

An exhibit somewhat smaller in size, but excellent in quality, is made by the public schools of Peoria, Professor Dougherty, principal.

The Voice and Hearing School for the Deaf at Englewood made a creditable display of work by pupils.

## ILLINOIS INDUSTRIAL UNIVERSITY.

*School of art and design.*—Crayon.—Studies: Mask; head of Juno; Laocoon; arranged drapery; enlargement from copy; Thorwaldsen's Cupid. Time studies: Man's head, from life; young lady, from life.

Charcoal.—Landscapes.

Water color.—Jar and drapery; Indian skull and buffalo robe; Psyche; Cupid; lilacs; oranges; lemons, etc.; brass kettle, and vegetables; bronze lamp; military belongings; group of Japanese objects; moonlight; sunset; autumn; summer. Time studies: Heads, vegetables, fruit, etc.; memorial window; mantel clock; octagon tile; dado for wood carving.

Pen and pencil finish.—Designs: Chair; fireplace; wall cabinet; upright iron gate; upright iron fence; four designs from same elements.

Oil color.—Silver vase, inlaid and enameled; cottage lamps; fan; tea set.

Clay (terra cotta and plaster).—Rosette; finial; keystone emblem; State arms; three tiles; capital; Youth and Age; architectural ornaments; sketch (Learning and Labor); Painting, Music, and Sculpture; crocket (unfinished); copy from flat; horse and tiger; winged head from cast; acanthus leaf; two enlargements from casts, from nature.

*School of architecture.*—Case 1.—Elementary woodwork.—First term, Nos. 1 to 28, inclusive. Second term, Nos. 1 to 10, inclusive. Third term, brass cutting, eight examples. Fourth term (platform A), models of staircase; grand staircase; roof truss; truss bridge.

*School of mechanical engineering.*—Case 2.—Elementary shop practice, consisting of numerous patterns and examples of lathe work, planer work, filing, and chipping.

Case 3.—Advanced pattern work—complete set of patterns for an upright drill press; carved work, &c.

Case 4.—Principles illustrated—shock models, Nos. 1, 2, and 3; equilateral cam; sun and planet combination; Watt's crank substitute; cut-off valve motion; slotted link motion; intermittent gearing; heart cam; hypocycloidal coupling; adjustable link connection; Peansellier's straight-line motion; intermittent and variable bevel gearing; eccentric cam; chain gearing; twisted belt; windlass motion; Stephenson's link motion; slotted link motion; treadle motion; elliptic motion; teeth of spur gear.

*School of botany and horticulture.*—Cases 5, 6, and 7.—Specimens of the woods of Illinois, with leaf, flower, and fruit of each as far as obtainable when the collection was procured.

*School of agriculture.*—Cases 8 and 9.—Samples of corn, wheat, rye, barley, &c., grown in all parts of the State; arranged and labeled at the Industrial University.

*School of chemistry.*—Case 10.—Analysis of farm products, including several specimens of corn; also wheat, oats, rye, barley, buckwheat, millet, rice, beans, peas, potatoes, red clover, prairie hay, straw, sorghum, oil cake, &c., showing the number of grams of oil, ash, albuminoids, water, fiber, and starch, respectively, in 1,000 grams of each article enumerated. Also two hundred and nine jars and bottles containing chemicals from the laboratory of the Industrial University (students' work).

Case 11.—Technological exhibits, embracing the following series: Flax—(1) flax tow from breaker; (2) sliver from breaking card; (3) sliver from finishing card; (4) yarn from spinning frame; (5) flax bagging. Hemp—(1) hemp stalk; (2) hemp tow from breaker; (3) hemp tow from breaker card; (4) hemp tow from finisher card; (5) sliver from first drawing card; (6) sliver from second drawing card; (7) yarn from roving frame; (8) yarn from spinning frame; (9) 3-ply hemp twine for self-binder.

## IOWA.

The educational system of Iowa includes common schools, graded and ungraded, high schools, one State normal school, one agricultural college, one State university, one college for the blind, one college for deaf-mutes, and nearly fifty colleges and academies. In the exhibit, of which the catalogue is herewith appended, all these institutions have been more or less completely represented. As will be readily seen, by far the larger part of the exhibit came from the common schools, private institutions contributing least.

The following is the list of exhibitors contributing, with a brief list of the articles contributed by such exhibitor:

*Ackley public schools*<sup>1</sup>.—Manuscript work in grammar and history from the seventh grade. Physiological drawings from the seventh grade. Drawings illustrating problems in physics. Map drawings.

*Albia public schools*<sup>1</sup>.—Manuscript work from various grades. Penmanship. Copy-books bound in volumes. Map drawings.

*Atlantic public schools*<sup>1</sup>.—Manuscript work in arithmetic and history from the eighth grade. Manuscript work in language from the sixth grade. Manuscript work in arithmetic from the fourth and seventh grades. Penmanship from map drawing from the sixth grade.

*Banes, J. de, Dubuque*.—Display-card of photographic work.

*Ballingall, P. G., Ottumwa*.—Silk banner with Iowa coat of arms.

*Bell Plains public schools*.—Manuscript work of all grades from first to eleventh. Drawings from sixth, seventh, and eighth grades. Map drawings from the same grades. Worsteds maps of Iowa. Map weaving from first grade. Box of clay models.

*Blackburn, Miss S., Vinton, Iowa*.—Teachers' examination questions. Teachers' examination manuscripts. Circulars showing the work of county normal institutes during a period of ten years.

*Burlington public schools*<sup>1</sup>.—Manuscript work in arithmetic, language, grammar, history, geography, music, from all grades. Penmanship from all grades. Manuscript work in algebra, geometry, trigonometry, Latin, German, natural science, book-keeping, &c., from the high school.

*Cass County public schools*<sup>2</sup>.—Drawings from the country schools. Map drawings from the graded schools of Marne. Map drawings from the country schools.

*Cedar Rapids public schools*<sup>1</sup>.—Manuscript work in arithmetic and language from the first, second, and third grades. Manuscript work in arithmetic, geography and grammar, from fourth, fifth, and sixth grades. Manuscript work in arithmetic, grammar, and history from seventh grade. Manuscript work in political economy, English literature, algebra, botany, physics, from the high school.

*Charles City public schools*.—Manuscript work in arithmetic from all grades from third to eighth inclusive. Penmanship from third to eighth inclusive. Manuscript work in geography and language from the grades fourth to eighth inclusive. Manuscript work in history from the eighth grade. Manuscript work in physical geography, algebra, and word analysis from the ninth grade. Manuscript work in physics and word analysis from the tenth grade. Manuscript work in physiology and geometry from the eleventh grade. Manuscript work in political economy, Latin, and English literature from the twelfth grade. Slate work, drawings, and pencil work from the primary grades. Map drawing from fifth and sixth grades.

*Clinton public schools*<sup>2</sup>.—Manuscript work from the first and third grades. Manuscript work in language and arithmetic from the fourth and fifth grades. Manuscript work in arithmetic and geography from sixth and seventh grades. Manuscript work in arithmetic, grammar, and history from the eighth grade. Manuscript work in English literature, geometry, algebra, physiology, modern history, German, and Latin, from the high school. Charts of kindergarten work from the primary grades. Boxes of kindergarten material. Drawings from primary grades. Library blanks filled by pupils.

*Columbus Junction*.—Manuscript work in arithmetic, grammar, geography, history, physiology, and algebra, from grammar grade. Manuscript work in grammar and geography from the intermediate grade. Map drawings from intermediate grades.

*Cornell College*.—Framed cut of the buildings and grounds. Photographs of president and professors. Manuscript sketch of the institution.

*Creston public schools*.—Manuscript work in language and arithmetic from the first and second grades. Manuscript work in language and arithmetic from the third, fourth, fifth, and sixth grades. Manuscript work in history from the seventh and eighth grades.

<sup>1</sup>All the work bound.

<sup>2</sup>All the work in portfolio.

<sup>3</sup>Manuscript work all bound.

Drawings from the fourth grade. Map drawings from the fifth, seventh, and eighth grades. Manuscript work in civil government and geometry from the high school. Charts, "Outlines of Grammar" from the high school.

*Davenport public schools.*<sup>1</sup>—Manuscript work in language, arithmetic, and geography from third to seventh grades, inclusive. Manuscript work in language, arithmetic, geography, and history from the eighth and ninth grades. Manuscript work in zoology, geometry, and botany from the high school. Manuscript work in German from several grades and from the high school. Manuscript from the city training school. Miscellaneous manuscript work. Drawings from grades four to nine, inclusive, and from the high school. Slates from primary grades. Teachers' charts for instruction in primary grades. Color charts for instruction in primary grades. Box of colors corresponding to the item last mentioned. Charts for instruction in music. Charts for elementary work in numbers. Program of daily exercises.

*Des Moines public schools.*<sup>1</sup>—Manuscript work in language, arithmetic, and geography from primary and grammar grades. Inventions in paper-cutting and paper-folding from primary grades. Original designs in paper-cutting from the fifth grade. Manuscript work in history from the eighth grade. Herbaria from the high school. Map drawing from the seventh and eighth grades. Slates from primary grades. Charts for primary instruction from the training school. Worsteds maps of Iowa from primary grades. Worsteds maps of Polk County, Iowa, from primary grades. Clay relief maps of Iowa from primary grades.

*Dubuque.*—Chart of ornamental penmanship from Baylies' Commercial College.

*Eldora public schools.*—Manuscript work in language and arithmetic from the grammar grades. Manuscript work in arithmetic, history, and geography from the high schools. Book-keeping from the high school. Manuscript work in commercial arithmetic from various grades. Drawings illustrating physiology from the high school.

*Fort Madison public schools.*—Penmanship third to eighth grades inclusive. Primary drawing. Map drawing.

*Grand Junction public schools.*—Penmanship from the primary grades. Manuscript work in grammar from the grammar grades. Manuscript work in arithmetic, ancient history, physical geography, United States history, from the high school. Drawings from the grammar grades and from the high school.

*Green County public schools.*—Manuscript work from the country schools of Bristol Township. Manuscript work from the country schools of Cedar Township. Map drawings from the country schools of Cedar Township. Miscellaneous work in manuscript from the country schools of Franklin Township. Map drawings from the country schools of Franklin Township. Manuscript work from the country schools of Grant Township. Map drawings from the country schools of Grant Township. Manuscript work from Hardin Township country schools. Manuscript work from Highland Township country schools. Manuscript work from the country schools of Junction Township. Manuscript work from the country schools of Paton Township. Manuscript work from the country schools of Washington Township. Map drawings from the country schools of Washington Township. Manuscript work from the country schools of Willow Township.

*Hackney, W. F.*—Plans and elevation for a five-room school-house.

*Hardin County public schools.*—Manuscript work in language, arithmetic, and history, from the country schools. Drawings from the country schools. Map drawings from the country schools.

*Huiscamp, J. C.*—An oil painting—fruit-piece.

*Iowa Agricultural College.*—Herbaria from the sophomore class of 1884.

*Iowa College for the Blind.*—Manuscript work in geometry. Two volumes, "raised letter." Numerous samples of bead-work. Five brooms. One hair mattress. One husk mat. One piece rag carpet. Numerous pieces of fancy knitted work. One cane chair-bottom. Samples of thread lace. One doll and hammock. Maps (cloth) of Iowa and Louisiana.

*Iowa Falls public schools.*<sup>2</sup>—Manuscript work in geometry and physiology from the high school.

*Iowa Institution for the Deaf and Dumb.*—Two crayon portraits, enlarged from photographs. Four crayon art pieces. One pen-and-ink sketch. Eleven pairs boots and shoes. One walnut office-desk.

*Iowa State Normal School.*<sup>1</sup>—Manuscript work in English literature, geometry, English analysis, algebra, arithmetic, and penmanship. Theses of graduating classes, 1878-'83. Notes of lectures on didactics. Notes of work in botany. Notes of laboratory work in physics. Set of drawing-books. Herbaria. Set of relief maps made in putty. Charts of physiological drawings. Charts for primary teaching. Charts of drawings from various grades.

<sup>1</sup>All manuscript work bound.

<sup>2</sup>All the work bound.

*Jefferson public schools.*—Manuscript work from all grades and from the high school. Drawings illustrating problems in physics from the high school. Map drawings from the grammar grades and the high school.

*Jesup public schools.*<sup>1</sup>—Manuscript work in history. Map drawings.

*Kingsley public schools.*—Manuscript work, reading, arithmetic, geography, history, and civil government.

*Kossuth County public schools.*—Map drawing from Greenwood Township.

*Le Claire public schools.*<sup>1</sup>—Manuscript work in language, &c., from fifth and sixth grades.

*Le Ma's public schools.*—Primary work in arithmetic and penmanship. Manuscript work in language and arithmetic, from grades second to fourth, inclusive. Manuscript work in geography, from the seventh grade. Manuscript work in German and political economy, from the high school.

*Lewis public schools.*—Manuscript work in geography and history, from the eighth and ninth grades.

*Lyons public schools.*—Manuscript work in botany and rhetoric, from the high school.

*Marble Rock public schools.*<sup>1</sup>—Manuscript work in arithmetic and language, from the second, third, sixth, and eighth grades. Manuscript work in geography, from the fourth grade. Manuscript work in grammar and algebra, from the fifth grade. Manuscript work in history, English grammar, and arithmetic, from the seventh grade. Map drawings from the grammar grades.

*Marengo public schools.*<sup>1</sup>—Manuscript work in language and arithmetic, from fifth, sixth, and seventh grades. Manuscript work in history, from the eighth grade. Manuscript work in rhetoric, botany, Latin, and German, from the high school grades.

*Marshall County public schools.*<sup>1</sup>—Manuscript work in geography, arithmetic, language, physiology, and history, from district No. 1, Timber Creek Township; drawings from the same school; map drawings from the same school.

*Marshalltown public schools.*<sup>1</sup>—Manuscript work in language, from grades second to seventh, inclusive.

*McGregor public schools.*<sup>1</sup>—Manuscript work in arithmetic, geography, and history, from the grammar grades. Report of the public schools for the term ending December 21, 1883.

*Monroe public schools.*—Manuscript work in arithmetic and language from the first and second grades. Manuscript work in geometry and English literature from the high school.

*Nora Springs public schools.*<sup>1</sup>—Manuscript work in language and arithmetic from the sixth grade.

*Norris, H. W.*—Herbaria, representing the Iowa flora.

*Oskaloosa public schools.*<sup>1</sup>—Manuscript work in all branches, representing one day's work in all grades from first to twelfth inclusive. Map drawings, a series of memory maps of continents. Drawing-books illustrating the work of all grades. Copies of the *High School Register*, a monthly journal published by pupils of the high school. Ten copies "Course of Study for Oskaloosa Public Schools." School blanks of various kinds showing forms of reports, diplomas, etc.

*Ottumwa public schools.*<sup>1</sup>—Manuscript work in arithmetic and language from first and second grades. Manuscript work in music and language from the third and fourth grades. Manuscript work in music, arithmetic, history, and language from the fifth grade. Manuscript work in music, language, and geography from the sixth grade. Manuscript work in arithmetic, geography, and language from the seventh grade. Manuscript work in arithmetic and language from the eighth grade. Manuscript work in history, English literature, Latin, geometry, physics, and botany from the high school. Drawing from all grades above the second.

*Plack, W. L.*—Architectural designs for school-houses (three).

*Pocahontas public schools.*—Manuscript work from the primary and grammar grades. Map drawing from the primary and grammar grades.

*Rockford public schools.*—Manuscript work in arithmetic from the first, second, third, and fourth grades. Manuscript work in physical geography and arithmetic from the fifth grade. Manuscript work in arithmetic, physiology, history, and language from seventh, eighth, ninth, and tenth grades. Oil painting, by Anna Lyon, high school.

*Sandborn, W. W.*—Architectural designs for school-houses (five). (Buildings erected in Clinton, Sabula, and elsewhere.)

*Seranton public schools.*—Manuscript work from the primary grades. Manuscript work from the intermediate grades. Manuscript work in arithmetic, history, and penmanship from the high school.

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<sup>1</sup>All work bound.

*Searsborough public schools.*<sup>1</sup>—Manuscript work in arithmetic, grammar, physiology, and history from the eighth grade. Manuscript work in geography from the eighth grade. Map drawing from the eighth grade.

*Sheldon public schools.*—Manuscript work in geography, physiology, and arithmetic from the grammar grades.

*Shenandoah public schools.*<sup>1</sup>—Manuscript work in language from first, second, third, and fourth grades. Manuscript work in penmanship from the fifth grade. Manuscript work in grammar from the sixth and seventh grades. Manuscript work in history, geometry, and penmanship from the high school. Map drawing from the second, seventh, and eighth grades. Course of study.

*Shimek, B.*—A collection of the land and fresh-water mollusks of Iowa.

*Shoup, George E., Dubuque*—Crayon sketches and oil paintings.

*Sidney public schools.*—Manuscript work in geography, language, arithmetic, and history from grammar grades. Manuscript work in language, arithmetic, geography, and penmanship from the intermediate grades. Manuscript work in arithmetic, physiology, grammar, Latin, algebra, and physical geography from the high school.

*Sioux City public schools.*—Manuscript work from the primary grades. Set of copy-books from the intermediate grades. Drawings from intermediate grades and from the grammar schools. Drawings from the high school. Map drawing from intermediate grades.

*Spirit Lake public schools.*—Manuscript work and map drawing.

*Springfield public schools.*—Manuscript work from various grades. Map drawing from various grades.

*Springville public schools.*—Drawings from the grammar grades. Map drawing from the grammar grades.

*State Department.*—Four glass charts displaying (1) Organization and growth of the county normal institutes for a period of ten years; (2) a graphic representation of the relation of the school population to the entire population, school population to enrollment, enrollment to average attendance, daily attendance to daily absence; (3) the school statistics of the State from 1848; (4) the organization of the Iowa State school system.

Six linen charts illustrating graphically the increase in the number of teachers employed, in school population, in number of schools, in permanent school fund, in valuation of school property, in total annual expenditure for school purposes.

Blank teachers' certificates of four grades. Blank high school diploma. Blank State certificate. Sample lithographs from Des Moines.

A bound set of Iowa school reports. A bound set of Iowa school laws and decisions. The report of the censuses of Iowa, 1835-'80. Bound volumes of various school journals. Bound volumes of miscellaneous State documents. One volume of blanks for reports of district secretaries. One volume of blanks for reports of county superintendents. One volume of blanks for reports of district treasurers.

A school-house map of the State, showing number and distribution of school-houses. Photographs of public school buildings and colleges throughout the State.

*State University of Iowa.*—One illustrative paleontological cabinet. Laboratory notebooks in biology, botany, conchology, and paleontology. Theses in zoology, botany, and civil engineering. Five photographs of drawings, illustrations for a work on paleontology. Sets of drawings illustrating three terms' work in instrumental drawing. Drawings illustrating first and second terms' work in free-hand drawing. A set of topographical maps. Drawings in India ink and water colors. Box of mounted microscopical slides.

*Steamboat Rock.*—Charts of kindergarten work. Charts of primary drawing. Charts of physiological drawings. Charts of various work from the grammar grades. Map drawings.

*Stich, John M., Clinton.*—A set of crayon sketches and drawings.

*Tama County public schools.*—Manuscript work in language from the ungraded schools of Oneida Township. Manuscript work in language from Gladbrook graded schools and high school. Drawings from the country schools of Columbia Township. Map drawings from Howard, Carroll, Lincoln, Crystal, Highland, York, and Columbia Townships. Worsteds maps of Tama County and of the State.

*Union public schools.*—Manuscript work in language from the intermediate grades. Manuscript work in arithmetic, language, physiology, and history from the grammar grades. Drawings from the grammar grades.

*Waterloo public schools, East Side.*—Photographs of free-hand drawings. Photographs of school buildings. Program of daily exercises. Floor plans of school buildings. Map drawings. *West Side.*—Penmanship from the fourth grade. Manuscript work in

<sup>1</sup>All work bound.

grammar and arithmetic from the seventh grade. Manuscript work in history from the eighth grade. Manuscript work in algebra, history, geometry, analysis, and physical geography from the high school. Map drawing from the primary grades.

*West Liberty public schools.*—Manuscript work in grammar, arithmetic, composition, and physiology. Dissected maps illustrating anatomy. Map drawing.

*Witter, F. M.*—A collection of the land and fresh-water mollusks of Iowa.

The following Iowa authors contributed to the State's exhibit: Jerome Allen, T. H. Benton, C. E. Bessey, Finley Burke, W. E. Crosby, A. N. Currier, W. R. Fisher, W. N. Friesner, C. H. Gurney, J. B. Harris, J. D. Hornby, W. N. Hull, J. H. Jackson, O. J. Laylander, J. Macy, G. F. Magoun, Marvin and Morrisey, T. H. McBride, Emlin McClain, W. McClain, J. L. McCriary, J. N. Ross, Wm. Salter, A. J. Stevens, P. W. Sudlow, B. F. Tillinghast, G. Wedgewood, C. A. White, D. S. Wright.

## LOUISIANA.

### STATE EDUCATIONAL EXHIBIT (INCLUDING NEW ORLEANS).

*Alexandria.*—13 writing books, 3 sets of composition, 1 set each of grammar, arithmetic, history, and geography, 1 portfolio of maps.

*Clinton Academy, East Feliciana Parish.*—Nine pencil drawings, 3 water colors, clay models, specimens of composition.

*Mansfield Female College, De Soto Parish.*—67 writing books, 7 drawing books, portfolio of work in drawing and music, volume of pencil drawings, 13 pencil drawings, 9 oil-paintings, 4 paintings on porcelain, 4 packages of examination papers in grammar, 2 packages of examination papers in Latin, 1 package each in algebra, spelling, trigonometry, geometry, and physiology.

*Monroe.*—Portfolio of pencil drawing and map drawing, 2 portfolios of pencil drawing and arithmetic, 2 volumes examination papers in algebra, 3 volumes examination papers in penmanship, 2 volumes examination papers in algebra.

*New Iberia (parish).*—Portfolio of sewing-work and embroidery.

*New Orleans.*—The Boys' High School exhibited 10 framed astronomical drawings, 3 framed philosophical drawings, 6 framed balance sheets, 2 framed specimens of shorthand, 2 framed specimens of ornamental penmanship, 3 framed maps, framed letter to students in shorthand, 1 bound volume each examination papers in Latin, mental philosophy, geometry, penmanship.

The Girls' High School furnished 6 framed botanical drawings, 3 astronomical drawings, 13 framed charcoal drawings, 2 pencil-drawings, 1 set geometrical drawings, 22 mounted botanical specimens, 2 bound volumes examination papers in botany, 1 each in arithmetic, astronomy, physics, and composition.

The grammar school exhibit consisted of 3 framed water-color paintings; 55 framed maps; 26 maps, not framed; 9 framed samples of ink drawing; 5 framed specimens of penmanship; 3 framed copies of teachers' certificates and diplomas; framed written statement of Louisiana industries; 3 framed mottoes; framed photograph of school building and scholars; framed drawing of "Castle Brun"; 72 sets of examination papers in arithmetic; 32 sets examination papers in grammar; 58 sets examination papers in penmanship; 31 sets examination papers in composition; 33 portfolios of maps; 6 volumes examination papers in composition, arithmetic, and penmanship; specimen of work in etymology; 668 writing books; 100 specimens of slate work; Hill's Map of History.

Chestnut Primary School exhibited 24 specimens kindergarten work; 13 specimens of designs; 13 specimens of white ink drawing; 12 specimens of map drawings.

A bound volume containing plan of McDonogh Schools, Nos. 1 to 20, was also exhibited.

*Opelousas.*—Two volumes of penmanship composition.

*St. Charles (parish).*—Specimens of penmanship and composition.

*St. James (parish).*—Specimens of penmanship composition.

*Shreveport.*—Portfolio miscellaneous school work.

*Southern Art Union, New Orleans.*—Seven crayon drawings; 13 studies in oil.

*Southern University.*—Three framed maps; 16 samples of slate work in penmanship and arithmetic; volume of maps; bound volume examination papers in preparatory department; bound volume examination papers in high school department.

*State Superintendent's Office, Hon. Warren Easton, superintendent.*—Two copies of report for 1882-'83, of State superintendent; bound volume of school laws.

## MICHIGAN.

The educational exhibit from Michigan consisted principally of work from all grades of the Grand Rapids public schools, charts representing the studies pursued in the State University, photographs of charitable and reformatory institutions, and a forestry collection from the State Agricultural College.

## MINNESOTA.

His Excellency LUCIUS F. HUBBARD,  
President of Board of Collective Exhibits for State of Minnesota.  
Hon. OLIVER GIBBS, jr.,  
U. S. Commissioner for Minnesota.  
Hon. D. L. KIEHLE,  
Superintendent of Minnesota Educational Exhibit.  
Supt. WM. F. PHELPS,  
Pres. IRWIN SHEPARD,  
Prof. WM. W. PAYNE,  
Committee of Installation.

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## LETTER OF TRANSMITTAL OF THE SUPERINTENDENT OF THE MINNESOTA EXHIBIT.

ST. PAUL, MINN., *March 1, 1885.*

SIR: I have the honor herewith to submit a report of the material constituting the Educational Exhibit of Minnesota at New Orleans, La., together with a brief sketch of the organization of our school system.

I desire to recognize the cordial spirit in which the educators of the State have responded to our call and have co-operated in presenting a comprehensive display of the work of the State in all grades from the kindergarten to the university.

The State is under special obligations to the Committee of Installation, who have spared neither time nor labor in aiding to perfect plans for the display of our exhibit and in completing its careful installation.

Very respectfully submitted.

D. L. KIEHLE,  
*Supt. Educational Exhibit, Minnesota.*

Hon. JOHN EATON,  
*U. S. Commissioner of Education,  
Washington, D. C.*

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## BRIEF SKETCH OF THE PUBLIC SCHOOL SYSTEM OF MINNESOTA.

## I. NATIONAL EDUCATIONAL ENDOWMENT.

On the 19th of February, 1851, it was enacted by the Senate and House of Representatives in Congress assembled, "That the governors and legislative assemblies of the Territories of Oregon and Minnesota be, and they are hereby, authorized to make such laws and needful regulations as they shall deem most expedient to protect from injury and waste, sections 16 and 36 in said Territories, reserved in each township for the support of schools therein."

And it was further enacted, "That the Secretary of the Interior be, and he is hereby, authorized and directed to set apart and reserve from sale out of any of the public lands within the Territory of Minnesota to which the Indian title has been or may be extinguished, and not otherwise appropriated, a quantity of land not exceeding two entire townships, for the use and support of the University of said Territory, and for no other purpose whatever, to be located by legal subdivisions of not less than one entire section."

When Minnesota was by her population entitled to admission into the Union, Congress in an act of February 26, 1857, authorizing her to form a State government, made the following provision:

"That sections numbered 16 and 36 in every township of public lands in said State shall be granted to said State for the use of schools."

"That 72 sections of land shall be set apart and reserved for the use and support of the State University, to be selected by the governor of said State, subject to the approval of the General Land Office, and be appropriated and applied in such manner as the legislature of said State may prescribe, for the purpose aforesaid, but for no other purpose."

But still further and still better: on the 2d of July, 1862, Congress passed an act "donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts."

This act is limited to States not in rebellion, and donates 30,000 acres for each Senator or Representative in Congress to which the States are entitled by the apportionment of the census of 1860. Section 4 of this act provides that all moneys derived from the sales of these lands, directly or indirectly, shall be invested in stocks yielding not less than 5 per cent. upon the par value of such stocks. "That the money so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished, and the interest thereof shall be inviolably appropriated by each State which may claim the benefit of the act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanical arts, in such manner as the legislature of the State may respectively determine, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The act is further detailed, both as to the time of building and the use of the fund, and when States neglect to comply with the provisions, the amount received by them shall be paid back to the United States. The recipients shall make an annual report as to the progress and experiments made, with their costs and results, and all necessary and useful statistics connected with the institutions, and transmit one copy free to all other colleges under the act, and one to the Secretary of the Interior.

Under this act Minnesota was entitled to select 150,000 acres of land to aid in teaching the branches named in said act, in the State University, making the endowment fund of the Government of the United States to the State of Minnesota for educational purposes as follows:

1. For common schools, in acres.....	3, 000, 000
2. The University of Minnesota.....	208, 360
<b>Total.....</b>	<b>3, 208, 360</b>

Of the "Agricultural College" grant, amounting to 208,360 acres, 94,439 acres have been selected, and 72,700 acres under the two university grants, making 167,147 acres realized for university purposes out of the entire grant.

The permanent school fund derived from the national domain by the State of Minnesota, at a reasonable estimate, can not vary materially from the following:

1. Common schools, in acres, 3,000,000; value.....	\$18, 000, 000
2. University grants, in all, in acres, 223,000; value.....	1, 115, 000



Out of these government appropriations of 3,223,000 acres may be realized an annual revenue for schools and university:

1. For common schools.....	\$1, 000, 000
2. For university instruction .....	60, 000

## II. PROVISION MADE BY THE STATE.

The State constitution confirms in all respects the requirements of the Congressional grant. It reaffirms the importance of a provision for popular education; it provides for the sale of school lands, the safe investment of the income, the distribution of interest received from the school fund, and requires the legislature to provide by taxation or otherwise a sufficient amount to "secure a thorough and efficient system of public schools in each township in the State."

The organization of the university was confirmed by the State constitution, and the Congressional land grants were severally passed to that corporation. The system of common schools was formally articulated with the university by statute, approved in 1881, appropriating \$20,000 for the encouragement of higher education in high schools. This statute appoints a State high school board consisting of the governor of the State, the superintendent of public instruction, and the president of the university, which has supervision of all high schools operating under this law. Each school fulfilling the conditions of the law receives \$400 annually to be used for the support and improvement of the high school.

## PROFESSIONAL INSTITUTES.

Three normal schools have been established, viz: at Winona, 1857; at Mankato, 1865, and at Saint Cloud, 1869.

The following summary presents in more orderly manner the organization and support of our system of public instruction:

## THE SYSTEM OF EDUCATION.

The system of education which is now supported by the State is comprehended in the following:

- (1) The schools.
- (2) The supervision of instruction.
- (3) The supply and improvement of instruction.
- (4) The financial support of education.

The leading features and facts of the system according to the above arrangement are as follows:

### I. THE SCHOOLS.

- (1) *Common schools*.—Organized and numbered as subdivisions of the county by the county commissioners.

Courses of study include common English branches.

Terms of schools not less than four months each year.

Teachers must be qualified by holding a certificate of the first, second or third grade, issued by county superintendents upon personal examination.

Free to all residents of the district between the ages of five and twenty-one years.

Officers: director, treasurer, and clerk. Term of service three years.

Present number, 4,802.

- (2) *Independent and special districts*.—Organized under general statute as independent, or under special act as special; generally adopted by cities and towns.

Courses of study, as directed by board of education.

Teachers to be qualified by certificate of examining board.

## 54 EDUCATIONAL EXHIBITS AT THE NEW ORLEANS EXPOSITION.

Free to all residents of the district between the ages of five and twenty-one years.

Officers, board of education, consisting of five members: term, three years.

Present number, 100.

(3) *State high schools*.—Organized as a department of the schools of the independent and special district.

Course of study, three years, prescribed by the State high school board; prepares for the State University. Final examinations are taken upon the completion of subjects on questions prepared by the State board. Certificate of passing in any subject is accepted in lieu of an entrance examination in that subject at the State University, and to the professional course of the State normal schools.

Teachers must hold the certificate of State high school board.

Reports of condition to be made to the board each term.

Present number, 56.

(4) *State University*.—Organization, by special charter, 1868.

Officers: Board of regents, consisting of the governor, *ex officio*, and superintendent of public instruction, *ex officio*, and president of the university, *ex officio*, and seven persons appointed by the governor; term, three years.

Departments:

Collegiate Department.

College of Science, Literature, and the Arts.

College of Mechanic Arts.

College of Agriculture.

College of Medicine.<sup>1</sup>

Geological Survey.

Tuition free in all departments; first two literary, others professional and technical.

Course of study in literary departments, classical, scientific, and modern.

### II. SUPERVISION OF INSTRUCTION.

(1) *Superintendent of Public Instruction*.—Appointed by the governor, confirmed by the senate; term, two years.

Duties: general supervision (*vide* boards of control of the several departments and institutions); reports to legislature biennially. Salary, \$2,500 per annum.

(2) *County superintendents of schools*.—Elected by the people; term, two years.

Duties: examination of teachers, visitation of schools, providing for institutes and teachers' meetings; reporting annually to superintendent of public instruction.

Minimum salary, \$10 for each organized district.

Present number, 75.

(3) *Superintendents and examiners of independent and special districts*.—Appointed; term and salary determined by the board of education.

Duties: examination of teachers and general supervision.

(4) *State high school board*.—Organized by statute. Officers: the governor, president; the superintendent of public instruction, secretary; and the president of the State University, examiner.

Duties: to accept high schools to supervision, to visit and inspect, to prepare questions for, and to conduct final examinations, to examine teachers of State high schools, to appropriate \$400 to schools complying with law.

Annual appropriation, \$23,000.

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<sup>1</sup> The faculty of this is for examination. No instruction offered.

## III. THE SUPPLY AND IMPROVEMENT OF INSTRUCTORS.

- (1) *State normal schools*.—At Winona; organized, 1859; at Mankato, 1865; at St. Cloud, 1869.

Courses of study: Uniform, elementary course, three years; advanced course, four years; academic, professional in theory and history of education, with practice teaching in model school.

Officers: Board of directors, consisting of superintendent of public instruction, secretary *ex officio*, one resident director at each school, treasurer, and three members at large; all appointed by the governor; term, three years.

Free to all pledging to teach in the State two years.

Present number of graduates, 1,044.

Present enrollment, 672.

- (2) *State institutes*.—Directed by superintendent of public instruction.

Instruction by three permanent conductors from the normal schools, the county superintendent, and assistants by special appointment.

Number: One every year for each county, usually one week in length. Free to all teachers.

## IV. FINANCIAL SUPPORT OF SCHOOLS.

- (1) *Permanent funds*.—(a) General school fund, \$6,246,321.15.

Two sections in each township set apart by Congress to be sold at not less than \$5 per acre; sales to be invested and interest apportioned in March and October to districts upon school enrollment.

Present annual revenue, \$363,046.

Annual apportionment per scholar, \$1.72.

Lands unsold, 2,093,478 acres.

(b) University fund, \$663,630.25.

Present annual revenue \$30,000.

- (2) *State annual appropriations*.—State University, \$35,000; normal schools, \$48,000; high schools, \$400 each, to the amount of \$23,000; State institutes, \$6,000.

One-mill tax, to be returned to the school districts in the amounts paid by each.

Present amount, \$316,900.79.

- (3) *Special district tax*.—In common school districts, voted at annual or special meeting; in independent and special districts, voted by the board of education. Present amount, \$1,513,288.44.

## CATALOGUE OF EDUCATIONAL EXHIBITS.

*Albert Lea city schools*, E. Chilcoat, superintendent.—1 volume of examination papers.

*Brown's School and Six Oaks*.—Pupils' work in composition. Pupils' work in reproduction.

*Cambridge village schools*.—1 volume of public school examination papers.

*Chatfield village schools*, J. F. Giles, superintendent.—1 volume of examination papers by high school.

*Carleton College, Northfield*, James W. Strong, D. D., president.

[This institution was organized in 1867. The course of study is both preparatory and collegiate—classical, literary, scientific, English, and musical. It has a corps of sixteen professors, a productive endowment fund of nearly \$100,000, six buildings, and a campus of thirty-five acres. The college supports an extensive public Time Service for railway and city uses, and is now organizing a Weather Service for the State, and also a State Magnetic Survey.]

One volume college catalogue. 10 charts of comets. 1 view Saint Paul Chamber of Commerce, with time ball. 1 view Saint Paul, showing city time service. 1 map Minnesota, showing State weather service. 1 map, showing time system of Northwest. 9 volumes Herbaria, from Biological Department. 4 volumes of field work in elementary surveying. 1 volume of computation, lunar eclipses. 1 thesis for degree of A. M. 1 volume

of U. S. Signal Station reports. 2 volumes of class work in trigonometry. 2 volumes of examination papers. 3 volumes of "Siderial Messenger." 1 Howard clock, No. 285. 9 P. H. Dudley clocks. 2 time balls in actual operation. 2 relays. 6 sounders. 3 switches. 15 photographs: college buildings and apparatus, in frames. 1 photograph: Ladies' Hall. 16 pieces painting in oil and water colors. 6 pieces crayon. 1 piece sketching in pencil. 7 colored plates college buildings. 2 volumes of examination papers. 1 volume of college catalogues. 10 volumes of notes from Biological Department. 1 large botanical map. 10 large physiological charts. 5 large birds and animals.

*Curtiss' Business College, Minneapolis.*—1 set Curtiss' writing charts.

*Duluth city schools, Wm. H. Stultz, superintendent.*—1 volume of examination papers, public schools. 2 volumes examination papers, high school. 1 photograph public school buildings.

*Detroit village schools, B. L. Bennett, principal.*—1 volume of examination papers.

*Dodge Center village schools, J. M. Richardson, principal.*—1 volume of examination papers.

*Eyota village schools.*—9 maps. Pupils' work in geography. Pupils' work in performing. Kindergarten work. Pupils' work in composition, grammar, spelling, arithmetic, history, physiology, drawing, reproduction.

*Farmington city schools, C. H. Welch, principal.*—1 Photograph school building.

*Fergus Falls city schools, B. M. Reynolds, superintendent.*—1 volume examination papers. High school.

*Glencoe village schools, E. V. W. Brokaw, superintendent.*—Grammar school. 2 volumes of examination papers.

*Hamline University, Saint Paul, Rev. Geo. H. Bridgman, D. D., president.*—3 photographs university building. 1 photograph laboratory. 1 photograph apparatus room.

*Hastings city schools, J. H. Lewis, superintendent.*—High school. Surveying: 50 plats of field work by pupils in mensuration, with solutions; 50 plats of field work by pupils in triangulation, with solutions. Botany: 4 herbaria by class of '84. 1 volume of examination papers from all grades. 9 geographical maps. 41 primary slate work in reading, writing, drawing, and numbers.

*Hennepin County (county schools), C. W. Smith, superintendent.*—1 volume of exams ination papers. Pupils' work in map drawing and industrial drawing. 12 photograph-school buildings. 1 model of log school-building in 1852. 1 model of frame school-building in 1885. 1 large plate-glass tablet showing plans of organization, enrollment, etc.

*Hutchinson village schools, H. L. Merrill, principal.*—1 volume of examination papers.

*Kindergarten, Saint Paul, Miss Alice Boyden, teacher.*—6 framed mounts of the work of children from 3½ to 8 years of age, viz: 1 chart of sewing in colors; fundamental forms and forms of life. 1 chart of weaving in colors; fundamental forms and inventions. 1 chart of paper-folding in primary and secondary colors. 1 chart of interlacing with slats; dictations and inventions. 1 chart of pricking; outline forms of life. 1 chart of parquetry; dictations employing squares.

*Lake City schools, Wm. Moore, superintendent.*—1 volume of examination papers.

*Litchfield city schools, Angus Haines, principal.*—2 volumes of examination papers. 1 photograph of school building.

*Lanesboro city schools, K. W. Buell, principal.*—1 volume of examination papers.

*Mantorville village schools, L. Bliss, principal.*—1 volume of examination papers.

*Mankato city schools, R. E. Denfeld, superintendent.*—1 volume of examination papers, high school. 1 photograph of school building.

*Medford village schools.*—Pupils' work in arithmetic. Examinations in history, in geography, in physiology, algebra, and language.

*Minneapolis city schools, O. V. Tousley, superintendent.*—5 charts crayon sketches, illustrating physiology and botany. 8 photographs of buildings and interiors. 1 large picture of high school building and two architects' plans of interior of high school. 1 large tablet containing photographs of buildings and history of schools. 39 charts and folios in pencil and crayon drawings. 1 patented desk and chair. 1 volume of examination papers of high school. 1 volume of specimens in writing. 1 volume of "questions" submitted to teachers and pupils in 1883-'84. 1 volume of public-school reports. 1 volume of business forms, blanks used in public schools.

*Moorhead city schools, F. S. Hotaling, superintendent.*—1 volume of examination papers from public schools. 1 cabinet containing 24 double slates. Work of primary pupils in spelling, numbers, language, penmanship and drawing. 1 volume of maps furnished by fifth and sixth grades. Maps drawn freehand from copy. 1 map of New England, on rollers; work of seventh-year pupils, freehand.

*Ormstead County (country) schools, F. L. Cook, superintendent.*—District No. 4—Exercises prepared by pupils with the hektograph, examination papers, pupils' work in composition; No. 7—Examination papers; No. 9—Work of pupils in reading, spelling, rhet-

oric, essays, also examination papers; No. 10—Pupils' work in composition, examination papers; No. 19—Examination papers; No. 22—Pupils' work in map drawing; No. 24—Pupils' work in map drawing; No. 28—Examination papers; No. 37—Pupils' work in map drawing; No. 47—Pupils' work in map drawing; No. 49—Pupils' work in map drawing; No. 52—Examination papers; No. 54—Examination papers; No. 56—Specimen examination papers prepared with lithogram; No. 58—Examination papers; No. 60—Pupils' work in composition; No. 62—Examination papers; No. 72—Pupils' work in composition, pupils' work in reproduction, examination papers; No. 74—Pupils' work in map drawing; No. 75—Pupils' work in map drawing, pupils' work in composition, specimens of drawings, examination papers; No. 86—Specimens of perforating, work in map drawing, work in botany; No. 87—Pupils' work in writing and map drawing; No. 88—Pupils' work in geography, map drawing, composition; No. 93—Pupils' work in map drawing, original designs, drawings from nature; No. 96—Pupils' work in map drawing; No. 97—Pupils' work in reproduction, examination papers; No. 103—Examination papers, work in map drawing; Nos. 100, 115, 121, 130, 132—Examination papers; No. 124—Pupils' work in map drawing; No. 134—Pupils' work in map drawing.

*Oronoco village schools.*—Pupils' work in composition. Pupils' work in perforating. Examination papers and maps.

*Plainview village schools,* M. A. Robinson, principal.—1 volume of examination papers.

*Pleasant Grove schools.*—Pupils' work in composition, drawing, arithmetic, grammar. Examination papers.

*Parr, Superintendent S. S.*—3 volumes "Minnesota Journal of Education," 1881-'84.

*Payne, Professor W. W.*—5 volumes of "Minnesota Teacher," Vols. 1, 2, 4, 5, 6.

*Phelps, Superintendent William F.*—2 volumes of "Teacher's Handbook"; 1 volume of Short Course in Astronomy.

*Red Wing city schools,* O. Whitman, superintendent.—1 volume of examination papers; 54 mounted freehand drawings, representation and design; 1 photograph high school building.

*Redwood Falls,* F. V. Hubbard, principal.—1 photograph of school building.

*Rochester city schools,* S. S. Parr, superintendent.—Drawings from natural foliage and flowers, accompanied by objects. Relief maps in putty of continents, Mexico and United States. Peg work illustrating primary numbers. Slate work from youngest pupils. Drawings from copy. Work in arithmetic from B grammar-grade. Photographs of school buildings.

*Rushford city schools,* W. J. Schmitz, principal.—Primary, intermediate, high school. Pupils' work in map-drawing, geography, botany, composition. 1 volume of examination papers.

*Shepard, Principal E. R.*—1 folding seat and desk.

*Stillwater city schools,* V. G. Curtis, superintendent.—Home-made apparatus, made in the workshop of the high school.

*Mechanics*—Simple lever; compound lever; inclined plane and binding screw; screw; wedge, in two sections, hinged.

*Force and motion*—Whirling motion; resultant table; reflection of motion apparatus; apparatus showing effect of gravity on a moving body.

*Centre of gravity*—Mechanical paradox; leaning tower; loaded wheel; square and triangular blocks; Blondin figure, balanced; witch figure, loaded; plumb line; two balls of unequal size and weight connected by a rod, pierced at center of gravity.

*Hydraulics*—Force pump (glass); common pump (glass); talantus cup; water-wheels, overshot, undershot, and breast wheel; model of Barker's mill.

*Heat*—Pyrometers; ball and ring to show expansion of metals; compound bar, brass and iron.

*Acoustics*—Revolving disk apparatus.

*Gravitation*—Pendulum apparatus.

*Voltaic electricity*—Contracting helix; Grenet battery; galvanometer; horseshoe electro-magnet; horizontal coil; Oersted's law apparatus; magic circle.

*Astronomical*—Illustration of the solar system, illustrating planetary orbits and motions. Inclinations of the axis of the sun, earth, and Mars. Parallelism of the earth's axis. Motions of the earth. Succession of day and night. Change of seasons. The moon's revolution in its orbit and on its axis. Nodes of the moon's orbit. The phases of the moon. The path of the moon round the sun. Eclipses of the sun and moon. Nodal and synodical revolution of the moon. Inferior and superior planets. Phases of the planets. Transit of a planet. The retrograde motion of planets. Conjunction, opposition, quadrature, and elongation of planets. The zodiac and the cometary orbits.

*Bound volumes*—One volume of examination papers in each of the following subjects: Music, literature, geometry, and current topics.

*Saint Paul city schools,* B. F. Wright, superintendent.—Photographs of school buildings. Penmanship—two sets mounted slates, showing writing of pupils from lowest pri-

primary grade. Twelve large frames, showing the writing of pupils from 8 to 15 years of age. Mounted drawings from each grade in the school. Solids modeled in clay by primary pupils. Models in paper, card board, wood, stone, clay, etc., by pupils from their own working drawings. High school work in projection—building, construction, machine drawing, mechanical perspective, groups of models in outline, in charcoal and in crayon. Crayon copies of fruit from nature and from casts.

*Stuk Center village schools*, W. F. Rocheleau, superintendent.—1 volume of examination papers from High School. 1 photograph of public school building.

*Saint Cloud city schools*, A. P. Thombs, superintendent.—1 volume of examination papers. Union school.

*Searing, Edward*, president State Normal School, Mankota.—4 volumes Wisconsin School Report, 1874, '75, '76, '77. 1 volume Virgil's *Æneid*.

*State Department of Public Instruction*.—1 album Minnesota educators. 7 volumes report of superintendent public instruction, 1875-'84. 1 volume of Minnesota reports. 1 statistical chart.

*State Normal School, Winona*, Irwin Shepard, president.

[This school was established in 1858. Has buildings and appliances valued at \$175,000, and an annual appropriation from the State of \$20,000. The departments and courses are as follows: Normal Department—an advanced course of 4 years, an elementary course of 3 years, a professional course of 1 year. Training Department—a model school of 9 grades, a kindergarten, a kindergarten training class.]

Industrial drawings: Fifteen framed mounts of original drawings; 10 framed mounts of object drawing; 10 framed mounts of copying drawing; 3 framed mounts in colored designs; a series of wall charts drawn and colored by pupils; 1 large chart of plant forms; 1 large chart of lower forms of animal life; 1 large chart of insects injurious to vegetation; 10 small charts of leading types in comparative physiology; 25 framed charts of botanical specimens, designed to show the principal characteristics of indigenous trees and shrubs by the following: (a) Cross sections of small trees and of large shrubs, (b) the bark of the trunk and branches, (c) the leaves and flowers, (d) the fruit and cross sections of the same, (e) specimens of the wood, polished, showing the natural grain and color, and indicating its economic value.

Kindergarten work: Twenty-four framed mounts of the work of children from four to eight years of age; 8 bound volumes of children's work; 4 bound volumes of pupil teachers' work; a collection of models in clay by children and pupil teachers; specimens of children's work in (a) sewing, (b) weaving, (c) parquetry, (d) paper folding, (e) interlacing, (f) cutting and pasting, (g) pricking. A collection of colored interior and exterior views of building and rooms. Four volumes of examination papers.

*State Normal School, Mankato*, Edward Searing, president—

[This school was established as the second State normal school in 1865. Its buildings and equipment are valued at \$90,000. It is supported by an annual appropriation of \$16,000. Its educational facilities are complete in a normal, professional, and academic course, and practice department in the model school—uniform with the other normal schools of the State.]

Pupils' work in Grecian and Egyptian ornamentation; pupils' work in map drawing; 2 large pastel paintings; 2 frames containing class memorials; 1 frame containing 12 views of school building and interior of rooms; 5 volumes of examination papers; 5 sheets original designs; 1 water-color painting of building and grounds; 1 pen and ink drawing of building with proposed addition; 1 large map showing standard time.

*State Normal School, Saint Cloud*, Thomas J. Gray, president.

[This school was opened in 1869, and has buildings worth \$50,000 and a home for young ladies worth \$25,000. It is supported by an annual appropriation from the State of \$15,000 and gives tuition free to all pledging themselves to teach two years in the State. The departments of study are as follows: I, elementary course of three years. II, advanced course of three years. III, a special professional course of one or more years.]

13 photographs of State Normal School building. 23 maps. Pupils' work in geography. 2 large charts for teaching botany, mounted specimens. 2 charts. Class work in physiology. Pupils' work in Latin, 1 portfolio. Pupils' work in English, 1 portfolio. 3 volumes examination papers. 1 panoramic set historical charts of civil war. 1 portfolio charts for vocal drill. 4 charts on the training of teachers—a systematic outline of the art of teaching. 2 charts in arithmetical method. 3 notation boards. 3 charts showing the manner of preparation and teaching of a lesson by a member of the training class. 2 charts illustrating steps in Grube's method of primary number work. 1 portfolio of historical charts. 3 charts showing fractional division and relations.

*State Institution for Deaf-Mutes, Faribault*, J. L. Noyes, superintendent.

[This institution was established by an act of the legislature in 1858, and organized by a Board of Commissioners in 1863. The buildings were erected by the State, and ample provision is now made for educating all deaf children of the State in common school branches. Instruction in some useful trade is also provided, as cooperating, boot and shoe making, tailoring, printing, and dress making.]

2 cases needle and fancy work by pupils. 2 suits boys' and youths' clothes by pupils. 1 rug made from pieces of old carpet by pupils. 4 crayon drawings by pupils. 2 pencil

drawings by deaf-mute teacher. 1 pair sewed French calf boots, hand-made, by pupils. 1 pair French kip boots, hand-made, by pupils. 1 pair sewed calf shoes, hand-made, by pupils. 1 pair sewed pebble goat button shoes, hand-made, by pupils. 7 photographs of school buildings. 1 bound volume reports Minnesota School for Deaf. 1 bound volume copy book, work of pupils. 1 set "Mute's Companion," volumes 3-9, a paper issued by the pupils. 2 school-room picture charts by deaf-mute teacher. 2 volumes "Historical Sketch," by Superintendent J. L. Noyes. 1 volume Third Biennial Report and Proceedings of Conference.

*State School for the Blind.*—J. J. Dow, superintendent.—2 photographs of buildings; 2 tidies made by pupils; 1 piece of needle-work for ornamentation of mantel; 1 bead basket.

*St. Peter city school,* L. C. Lord, superintendent.—2 volumes of examination papers.

*St. John's University, Collegeville,* Rt. Rev. Alexius Edelbrock, o. s. B., president.

[This institution was incorporated by an act of the legislature in the year 1857. It is under the care of the Benedictine Order, and is self-supporting. One source of revenue consists of large farms carried on exclusively by members of the order. It has a corps of 23 professors, and over 200 students are enrolled. From 30 to 40 students annually receive board, clothing, and tuition gratuitously. The departments of study are (I.) Theological; (II.) Philosophical; (III.) Classical; (IV.) Commercial; (V.) Scientific; (VI.) Medical.]

Photographs of buildings; photographs of faculty.

*The Bishop Seabury Mission, Faribault.*—

[A corporation of the Episcopal Church, comprising three institutions: (I.) The Seabury Divinity School, Rev. S. D. Hoskins, warden, has a generous endowment, and gives a course of three years in theology; (II.) Shattuck School, Rev. James Dobbin, rector, a preparatory training school for boys and young men, with a military department; (III.) St. Mary's Hall, Rt. Rev. H. B. Whipple, Bishop of Minnesota, rector, a boarding school for young ladies.]

1 case 14 photographs.

*The University of Minnesota,* Cyrus Northrop, president.

[The University of Minnesota is a part of the public educational system of the State. Was established in 1857 and is open to both sexes, with tuition free. A grant from Congress of 178,066 acres of land is the source of the permanent University fund, which now amounts to \$663,630.25. Following are the departments: (I.) Collegiate Department; (II.) College of Science, Literature, and Arts; (III.) The College of Mechanic Arts; (IV.) The College of Agriculture; (V.) The College of Law; (VI.) The College of Medicine. The University has charge of the Geological and Natural History Survey of the State.]

College of Mechanic Arts—Plans and photographs of buildings; 1 case 8 plates isometric cabinet and perspective drawings; 1 case tests of material; 1 case 21 plates industrial drawings; 1 case 16 plates engineering drawings; 1 case 15 plates descriptive geometry; 1 case tools used in wood work; 1 case tools used in forge work; 1 case exercises in forge work; 1 case exercises in wood work; 1 book of notes for course in roof and bridge trusses; 1 book of notes for course in stereotomy; 1 book of working drawings in forge work; 1 photograph of university building; 1 book of specimen records from testing laboratory; 1 large chart giving courses of study in civil and mechanical engineering; 1 large drawing showing grounds of university; 1 photograph of engineering apparatus; 1 case of tools used in vise work; 1 case of exercises in vise work.

Other departments—1 photograph of university farm building; 12 photographs of interior of rooms in agricultural college; 1 plan of agricultural college and plant house; 2 herbaria; 1 large synchroscopic chart of Greek biography, literature, and art; 1 history of the University of Minnesota; 2 volumes of examination papers; 1 large chart of English literature from the time of Wicliffe to the present, arranged on the linguistic basis.

*Winona city schools,* Wm. F. Phelps, M. A., superintendent.—5 volumes of pupils' written work in all grades from 1st year to high school; 2 sets of plans of school rooms of the several grades; 1 large framed group colored views of school buildings and of the city of Winona; 4 cases children's work in designs, constructions, &c., with different materials used in lowest grade; collection card mounts, showing specimens of writing from all grades; collection card mounts, showing grade work in drawing, free hand, inventive, crayon, perspective, &c., all grades; 2 sets reading charts, with supports, showing appliances used in first-year grade.

## NEBRASKA.

### STATE SCHOOL SYSTEM.

A State superintendent of public instruction, elected by the people for 2 years, has general charge of the public schools, while a board of regents of the State university and a normal school board have control of the interests indicated by their titles. There is

also a board composed of various State officers for the management of school lands and funds.

Local school officers are county superintendents of public schools, elected by the people for 2 years, and district boards of 3 trustees, elected for 3 years. Districts having more than 150 youth of school age may, if a majority of voters so decide, elect boards of 6 trustees. Women 21 years old who are residents of the district and owners of property or having children to educate may vote in district meetings.

The public schools are free to all residents 5 to 21 years of age, and they must be taught at least 9 months of each year in districts having more than 200 pupils, 6 months in those having 75 to 200, and 3 months in those with less than 75. The funds for their support are derived from the income of a State common school fund consisting of money, stocks, bonds, &c.; of such percentage as may be granted by Congress on the sale of lands in the State; of moneys arising from the sale or leasing of school lands; of the proceeds of all lands granted to the State, unless for other purposes distinctly stated; and of the proceeds of escheats and forfeitures. In addition to the income of this fund there is for public schools a State school tax of not more than 1½ mills on the dollar of taxable property, and taxes are voted by districts, which may not exceed 25 mills on the dollar. The income of the public schools is also augmented by various fines, licenses, &c. The State funds are apportioned by the State superintendent to the counties in proportion to school population, and by county superintendents to districts, three-fourths of the amount in proportion to the school population therein, the remaining one-fourth equally to the districts. Teachers must hold certificates of qualification and before receiving full pay must make monthly reports to the district director. The director reports annually to the county superintendent, the latter to the State superintendent, and he to the governor. The system of education includes public high schools, teachers' institutes, a State normal school, a State university, and a reformatory for children. Instruction in all schools supported or aided by public funds must be non-sectarian.

#### EXHIBIT.

*Beatrice public schools.*—Examination manuscript work from first to eighth grade.

*Columbus public schools.*—Examination work from third grade.

*Crab Orchard school.*—Specimens of pen work.

*Crete public schools.*—History of Crete Public Schools, by E. Healy.

*Deaf and Dumb Institute, Omaha, Nebr.*—Crayon portrait, specimens of lace work, embroidery, sewing, and crocheting; specimens of mechanical and carpenter work.

*Fairbury public schools.*—Specimens of manuscript work, principally sixth grade; specimens of map drawing by pupils.

*Falls City public schools.*—Examination papers of high school, and grammar and primary schools.

*Grand Island public schools.*—Examination manuscript work by high school and intermediate grades; slate work by primary and second grades.

*Hall County.*—Manuscript work from Chapman, Wood River, and district schools of Hall County.

*Hastings public schools.*—High school—Examination papers in geometry, history, civil government, algebra, physiology, and physical geography.

Grammar department—Examination papers in reading, penmanship, grammar, geography, orthography, arithmetic, and United States history.

Intermediate department—Examination papers in reading, writing, arithmetic, spelling, geography, and language; specimens of map drawing.

*Humboldt public schools.*—Examination manuscript work from first to tenth grade.

*Institute for the Blind, Nebraska City.*—Specimens of hand-work, consisting of crocheting, bead-work, knitting, and broom-making; manuscript work in spelling.

*Kearney public schools.*—Manuscript from high school and intermediate grades.

*Nebraska City public schools.*—Manuscript work from high school and intermediate grades, map drawing and mechanical drawing, condensed history of Nebraska City public schools.



*Nebraska State Normal School.*—Mounted zoological and botanical specimens and microscopic drawings; analysis of air in school building, with chemicals to test same; experiments by classes in physics; models of crystals; specimens of taxidermy; map drawings (outline from memory), map drawings (time limited), map drawings (time unlimited); manuscript work in language, in school economy, in history, and in rhetoric.

*Omaha public schools.*—Miss Lucia A. Rogers, special teacher. Exhibition of written music by pupils.

*Tenth Street Industrial School*—Julia Daeman and Katie Homerwik, crocheting; Katie Coffey, Edith Stewart, Josie Zebodack, and Lulu Hunt, sewing; Mary Walker and Annie Kramer, hemstitched handkerchief by each.

*Red Cloud public schools.*—Examination work from high school and lower grades.

*Sacred Heart Academy, Omaha.*—Course of study, and photograph of building.

*Saint Catherine's Academy, Omaha.*—Specimens of drawing and painting.

*University of Nebraska, Lincoln.*—Original demonstration in geometry by ——. Work on "Critique of Designs," by Prof. L. E. Hicks. Work on botany, by Prof. C. E. Bessey. "Amerikas Skönlitteratur," by H. Edgren. "Magic of the Middle Ages," by Victor Rydberg. "Nala Sagan," by ——. "Schakuntala," by ——. "Sanskrit Formlars," by H. Edgren. "Frithiof's Saga" (Tegner), from L. A. Sherman. Work on biology, by Arabell M. Kimball. "The Modern Genesis," from Fannie J. Ebright, Tecumseh.

*West Point public schools.*—Manuscript work of high school and grammar department.

*Yutan public schools.*—Examination work in physiology.

*Photographs of public school buildings.*—Ashland, Alexandria, Belvidere, District No. 15 (Buffalo County), Beatrice, Crete (5), Chester, Davenport, Exeter, Fremont (5), Friend, Falls City, Fairbury, Genoa, Grand Island, Hastings, Hebron, Hubbell, Hall County, Kearney, McCook, Nebraska City (7), Norfolk, North Platte, Nemaha County, Osceola, Pawnee City, Red Cloud, Saint Paul, Shelton, Steele City, Sutton, Thayer County (10), Tecumseh, Wahoo, Wilber.

*Miscellaneous.*—Photograph of Creighton College, Omaha. History of Steele City School, by Miss M. A. Melville. Seven drawings from life, by Thomas Rogers Kimball, Omaha. "Nebraska and the Northwest," from T. H. Brooks, Tecumseh. History and reports of county superintendents. Photograph of Normal School and Business College at Fremont, Nebr.

## NEW HAMPSHIRE.

*Concord.*—Three bound volumes of examination papers from the high school, including English, mathematics, Latin, and Greek. Drawings, freehand and mechanical, from the grammar and intermediate grades. Portfolio of drawings from all the schools. Photographs of the school buildings. Specimens of work in direction and invention from the kindergarten.

*Franklin.*—Large bound volume containing photographs of school buildings (including both interior and exterior views). The course of study. Specimens of drawing, penmanship, and original compositions.

*Manchester.*—Three volumes of drawings from the primary, grammar, and high school departments. Portfolio of plans of school buildings. Framed pencil, ink, and crayon drawings. Portfolio of mechanical drawings. Framed photographs of public and school buildings. Chart of public school system.

*Nashua.*—Framed photographs of school buildings. Thirty-four chemical preparations in glass by high school scholars. Frame on which to display them.

*Portsmouth.*—Specimens of penmanship selected from the various grades.

## NEW JERSEY.

## PUBLIC SCHOOL EXHIBITS.

The following table is a summary of the amount and character of the work exhibited from the public schools of New Jersey:

Counties and cities exhibiting.	Number of specimens of pupils' work in—								
	Miscellaneous.	Mathematics.	Grammar.	Composition.	Spelling.	Penmanship.	Primary work.	Miscellaneous drawing.	Map drawing.
Atlantic County .....	54	74	46	33	78	54	45	31	186
Bergen County .....	149	146	185	172	106	63	78	41	287
Burlington County .....	89	203	147	65	128	84	95	52	226
Camden County .....	44	53	40	25	43	28	37	16	139
Camden .....	24	46	35	22	42	37	32	34	17
Gloucester .....	2	3	0	4	4	0	7	1	2
Cape May County .....	20	32	19	14	40	25	14	8	133
Cumberland County .....	13	36	29	16	36	16	15	9	156
Bridgeton .....	14	34	11	13	28	14	10	5	36
Millville .....	8	10	8	12	24	13	7	0	30
Essex County .....	33	117	60	52	73	67	65	46	92
Newark .....	120	35	39	34	49	39	80	82	192
Orange .....	27	14	3	11	27	10	15	56	13
* Gloucester County .....	35	65	32	19	72	51	29	14	161
Hudson County .....	48	53	31	18	88	49	39	31	126
Hoboken .....	38	55	16	37	57	51	38	10	79
Jersey City .....	87	146	61	90	199	76	84	63	117
Hunterdon County .....	33	75	67	31	95	60	33	9	175
Mercer County .....	33	72	30	21	63	33	50	9	149
Trenton .....	46	63	35	23	74	22	13	49	69
Middlesex County .....	21	49	19	18	64	37	17	11	110
New Brunswick .....	14	24	6	10	25	24	28	24	38
Monmouth County .....	121	143	86	78	150	144	103	42	256
Morris County .....	30	89	50	41	89	23	40	21	251
Morristown Borough and Boonton .....	20	22	9	3	23	0	8	48	10
Ocean County .....	5	22	11	12	21	7	3	4	59
Passaic County .....	11	12	9	4	16	11	3	3	83
Paterson .....	53	86	32	70	105	76	54	33	121
Passaic .....	4	8	3	5	13	8	3	12	13
Salem County .....	60	82	55	25	87	61	49	19	140
Salem .....	16	20	9	8	13	12	16	0	0
Somerset County .....	14	32	23	28	33	33	9	7	124
Sussex County ..	57	94	67	46	94	40	45	15	124
Union County .....	46	56	37	34	48	29	27	29	208
Plainfield .....	10	15	11	9	11	13	13	0	0
Elizabeth .....	27	46	15	14	36	28	26	40	41
Rahway .....	5	13	11	11	14	10	14	13	45
Warren County .....	47	92	63	59	98	44	56	14	189

The entire collection of regular work contributed by the public schools fills 16,192 blanks, and represents the work of fully 30,000 pupils. Out of the 3,687 teachers in the public schools, 3,450 furnished work. The work was bound into volumes, in the following proportions:

Atlantic County, 12; Bergen County, 20; Burlington County, 26; Camden County (including Camden, 4), 16; Cape May County, 6; Cumberland County (including Bridgeton, 3), 12; Essex County (including Newark, 10, Orange, 4), 32; Gloucester County, 9; Hudson County (including Hoboken, 8, Jersey City, 17), 36; Hunterdon County, 10; Mercer County (including Trenton, 8), 16; Middlesex County (including New Brunswick, 4), 11; Monmouth County, 23; Morris County, 16; Ocean County, 4; Passaic County (including Paterson, 13, Passaic, 5), 20; Salem County (including Salem, 3), 11; Somerset County, 7; Sullivan County (Millville), 1; Sussex County, 12; Union County (including Plainfield, 2, Rahway, 2, Elizabeth, 4), 21; Warren County (including Phillipsburg, 4), 14; State normal and model school, 4; private schools, 12.

#### INDIVIDUAL EXHIBITS.

*State normal and model schools.*—Number of specimens of pupils' work: Mathematics, 44; grammar, 7; composition, 8; spelling, 4; penmanship, 14; primary work, 9; miscellaneous drawing, 10; map drawing, 82; miscellaneous, 27. Total, 205.

*State Normal School.*—Work prepared by the pupils in the institution: Four herbaria of local plants; two books of drawings showing the different stages of growth of several plants from the seed; three books of plant description; one set of works in book-keeping; one book containing specimens in penmanship; one case of minerals, such as each pupil receives at graduation; one case of chemicals prepared by the pupils; one case of insects prepared by the class; one set of geometrical forms made by pupils.

*State School for Deaf-Mutes.*—16 specimens of work and a history of the institution.

*Farnum Preparatory School, Beverly.*—68 specimens of pupils' work in miscellaneous branches, mathematics, grammar, drawings, and maps.

*Academy of the Sacred Heart, Jersey City.*—61 specimens in mathematics, grammar, composition, spelling, penmanship, drawing, map drawing, and primary branches.

*Martha's Institute, Hoboken.*—23 specimens of pupils' work in mathematics, grammar, composition, penmanship, drawing, primary and miscellaneous subjects.

*The Newark Public High School.*—25 large mounted drawings, 15 unmounted drawings, 2 graphic scrap-books.

*Public school, Summit.*—40 pieces of kindergarten work.

*Paterson Public School No. 6.*—22 pieces of kindergarten work, 32 books of kindergarten drawings, 24 specimens of kindergarten sewing.

*Paterson Public School No. 4.*—1 set of geometrical solids of polished wood, 6 sets of wood ornaments fastened on card board, 2 maps sawed out of wood, 38 pieces of kindergarten work.

*Christadt public school.*—1 framed piece of kindergarten work, 15 pieces of kindergarten work in drawing, sewing, plaiting, etc.

*V. L. Davey's School, district No. 36, Essex County.*—11 pieces of philosophical apparatus, consisting of hydrostatic bellows, with rubber hose; Archimedes's screw; Barker's mill; pulleys; inertia apparatus; inclined plane; water-wheels; Ruhmkorff's coil; compound lever; endless screw; and acrobats of pith (work done by boys 14 to 17 years of age).

*Institute of the Holy Angels, Hackensack.*—Fifty specimens of pupils' work in mathematics, grammar, composition, spelling, penmanship, primary and miscellaneous branches.

*West Jersey Academy, Bridgeton.*—Eighteen specimens of pupils' work in mathematics, composition, spelling, penmanship, and miscellaneous subjects.

*Deptford School, Woodbury.*—One hundred and twenty-one specimens of pupils' work in mathematics, grammar, drawing, and miscellaneous subjects.

*Hasbrouck Institute, Jersey City.*—One hundred and thirty-three specimens of pupils' work in mathematics, grammar, composition, spelling, penmanship, drawing, and miscellaneous subjects; also five large framed drawings from bas-relief casts.

*C. A. Gross, teacher, Landisville, Atlantic County.*—An herbarium containing 101 species of plants collected by himself in the sandy region near the Atlantic coast.

*S. R. Morse, county superintendent for Atlantic County.*—A collection of marine algae, mounted and named, gathered by himself on the New Jersey coast.

*J. M. Green, of Long Branch.*—A large frame containing photographs of the public school buildings, and drawings executed by the pupils; also nine books of pupils' work, numbering 720 specimens in the various branches taught in the schools. This exhibit contained 650 photographs of school buildings, showing exterior and interior views.

## OHIO.

## LETTER OF TRANSMISSION.

DEAR SIR: The following catalogue of the education exhibit of Ohio at the World's Industrial and Cotton Centennial Exposition at New Orleans is submitted for your consideration.

Very respectfully,

LE ROY D. BROWN.

To the Hon. JOHN EATON,

*Commissioner of Education for the United States of America.*

## CATALOGUE OF EXHIBITS.

## REMARKS EXPLANATORY OF THE CATALOGUE.

The remarks here prefixed are deemed necessary to a clear understanding of the catalogue.

The several classes of school districts in Ohio are classified as follows:

City districts of the first class, applying to cities of ten thousand or more inhabitants; city districts of the second class, applying to cities of less than ten thousand inhabitants; village districts, applying to incorporated villages; township districts and special districts. The divisions of the territory of the township for separate schools are termed subdistricts.

The grades of the graded or union schools may be defined as follows: (1) Elementary or grammar schools, embracing eight school years. These schools are generally subdivided into primary and grammar grades—the first embracing the first four years; the second, the second four years. (2) High schools. These in the cities and large towns have a four-years' course of study; but in some of the smaller towns and villages the course is but a three-years' one. In the city high schools instruction in another language than English is almost universally given. In some of them instruction in two languages is given; in others in three languages, and in a few in four languages. These languages are Latin, Greek, German, and French. German or French is frequently taken as an elective for Latin. Greek is principally restricted to students expecting to take a college course. The study of grammar and geography usually begins, in the graded schools, with the third school year, in a short preliminary oral course, these subjects being entered upon systematically at the beginning of the fourth year. Reading, drawing, music, slate writing, and arithmetic begin with the first year, pen-writing with the second. According to the evidence furnished by the examination papers in the exhibit, English grammar and language-lessons differ little from each other.

Throughout this catalogue years in school and grades in school are used synonymously; that is, first grade means the same as first year, &c.

Under the head of papers in arithmetic are included work in the solution of problems, in both mental and written arithmetic, and answers to questions in rules and principles. United States history is generally taught in the highest grammar grade only.

A full statement setting forth the rules and conditions under which the work of pupils was done, and the relative portion selected for exhibition, accompanies each set of papers.

The photographs of school buildings marked in the catalogue thus \*, were, through the kindness of Hon. John C. Keffer, secretary of the Ohio commission, transferred to

the educational exhibit from the general State exhibit, for which they had been collected.

The population of cities and towns is according to census of 1880.

#### CITY EXHIBITS.

*Bellerue* (population 1,432).—Volume of penmanship containing specimens from all grades of schools, high, grammar, and primary. Papers in German and geometry.

*Belpre* (population 901).—Examination papers: 1 volume from high school, containing papers in geometry; 1 geological chart, by Will H. Patton, of the high school; 1 photograph of school building.

*Bluffton* (population 1,290).—Papers (unbound) representing the work of the several grades of the high school and the grammar and primary schools; 1 photograph of the school building; 1 photograph of the interior of a school room with pupils seated therein.

*Chillicothe* (population 10,938).—Examination papers: 2 volumes from the high school, containing papers in Latin, general history, rhetoric, English composition, English literature, physical geography, physiology, chemistry, physics, algebra, geometry, and astronomy; 1 volume of penmanship, containing specimens from the fourth grade up through the high school grades; 5 volumes of grammar-school work, containing papers in grammar, geography, United States history, language, and arithmetic; 1 volume German, reaching from fourth to twelfth year, inclusive; 1 volume of memory maps, from pupils of the fifth, sixth, and seventh grades, drawn in the presence of the teacher. In all, 10 volumes of manuscript.

Ten copies of the Annual Report of the Board of Education.

*Cincinnati* (population 255,130).—1. Examination papers: 1 volume from the normal school, containing papers on methods of teaching number, reading, and penmanship; methods of giving lessons on familiar things, memory gems, and elocution; essays on the science and art of education and on school management, and essays on the principles of psychology applied to education.

Two volumes from Woodward High School, containing papers in Latin, Greek, French, German, English composition, English literature, general history, chemistry, physics, zoology, geology, algebra, geometry, astronomy and book-keeping. Two volumes from Hughes High School, containing papers in Latin, Greek, French, German, English composition, English literature, general history, chemistry, physics, zoology, algebra, astronomy, and book-keeping. One volume from colored high school and intermediate grades. High school papers on subjects same as those of Woodward and Hughes High Schools.

Three volumes from first intermediate school;<sup>1</sup> 1 volume from second intermediate school; 2 volumes from third intermediate school; 2 volumes from fourth intermediate school. These volumes contain papers in spelling, composition, grammar, geography, German, and penmanship.

One volume from first district;<sup>2</sup> 1 volume from second district; 1 volume from third district; 1 volume from fourth district; 1 volume from fifth district; 1 volume from sixth district; one volume from seventh district; 2 volumes from eighth district; 1 volume from ninth district; 1 volume from tenth district; 2 volumes from eleventh district; 1 volume from twelfth district; 1 volume from thirteenth district; 1 volume from fourteenth district; 1 volume from fifteenth district; 1 volume from sixteenth district; 1 volume from seventeenth district; 2 volumes from eighteenth district; 1 volume from nineteenth district; 1 volume from twentieth district; 4 volumes from twenty-first district; 1 volume from twenty-second district; 1 volume from twenty-third district; 2 volumes from twenty-fourth district; 2 volumes from twenty-fifth district; 1 volume from twenty-sixth district; 1 volume from twenty-seventh district; 1 volume from twenty-eighth district; 1 volume from colored school district; 1 volume from Mornington School. These volumes contain papers in spelling, language, geography, grammar, arithmetic, penmanship, and German.

One volume of compositions from third to eighth grade, inclusive; 1 volume of literary gems from same grades; 1 volume of slate work from fourteenth district.

From all the schools, 53 volumes.

2. Drawings (in eight large portfolios): 1 portfolio from normal school and Woodward High School, containing 101 drawings. Of these the normal school contributed 1 drawing of human head; 4 drawings (colored) of foliage; 23 ornamental designs; 5 ornamental (colored) designs; 2 maps; 2 drawings (colored) of animals; 1 painting of animal; total, 38. The contribution of the Woodward High School consisted of 9 drawings of the human head; 4 drawings of animals; 7 mechanical drawings; 5 drawings from the solid; 23 ornamental designs; 12 ornamental designs in color; total 63.

<sup>1</sup>The intermediate schools embrace pupils of the sixth, seventh, and eighth grades.

<sup>2</sup>The district schools embrace pupils of the first, second, third, fourth, and fifth grades.

Three portfolios from sixth, seventh, and eighth grades (intermediate schools) contained 428 drawings. The first portfolio contained 152 ornamental designs and 29 geometrical drawings; the second portfolio, 103 foliage and ornamental designs and 3 from the round; the third portfolio, 127 ornamental designs, 11 geometrical drawings, 1 drawing from the solid, and 2 designs in color. One portfolio, from fifth grade, containing 444 ornamental designs from the flat (copies enlarged), and original designs formed from a single given element. The 342 drawings from the fourth grade were copies from the flat (many of the copies enlarged) and original designs formed from a single element. The third grade drawings, 321 in number, were copies from the flat (some of them enlarged). The second-grade drawings were of two kinds—memory drawings (one whole class), of which there were 27, and 341 copies from the flat; in all, 368. The first-grade drawings consisted of 45 drawings on paper (one whole class).

Total number of drawings from district schools, 1,520; from the intermediate schools, 428; from the normal and high schools, 101; total from all the schools, 2,049.

3. Miscellaneous: Four dozen slates from the district schools, illustrative of the order followed in placing arithmetical and other work on slates in the several grades of those schools. Nearly a complete set of the Cincinnati school reports. Two dozen copies of the school report for 1884. Photographs of the following school buildings (nine in number): Woodward and Hughes High Schools, first intermediate, third district, seventh district, fourteenth district, eighteenth district, twenty-second district, twenty-eighth district. One interior view of the public library. One chart of the public-school buildings, with the number of rooms in each.

Through the exertions of Dr. John B. Peaslee, city superintendent of schools, volumes and pamphlets by Cincinnati authors have been collected and placed in the exhibit, as follows: Bound volumes, 218; pamphlets, 44.

*Circleville (population 6,046).*—Examination papers: One volume from the high school and eighth grade; high-school papers in Latin, rhetoric, English composition, physical geography, physics, chemistry, civil government, arithmetic, algebra, geometry, and astronomy; 1 volume from fifth, sixth, and seventh grades; 1 volume from third and fourth grades, colored school; 1 volume from second, third, fourth, and fifth grades. The volumes from the primary and grammar grades contain papers in spelling, definition of words, grammar, composition, geography, United States history, and arithmetic. One volume of penmanship from fourth to twelfth grades, inclusive. Total, 5 volumes. Three photographs of school buildings—Colored school, Everts School, and high school.

*Cleveland (population 160,146.)*—One set of school reports; \*6 photographs of school buildings—Central High School, West High School, Saint Clair, Walton, Dunham, and Fowler; \*1 photograph of Adelbert College.

*Columbus (population 51,665).*—1. Examination papers: 3 volumes from high school, containing essays and orations given at commencement, and papers in English grammar, rhetoric, general history, Latin grammar, chemistry, physics, algebra, and geometry; 10 volumes from fifth, sixth, seventh, and eighth grades, containing papers in spelling, language, grammar, United States history, geography, physical geography, elementary physics, and German (translation of German into English and English into German); 4 photographs of school buildings—High School, Sullivant, Garfield, and Mound Street; 8 photographs of interiors of building—2 rooms with their pupils. All these photographs in one large frame. 8 volumes of bound school reports.

2. Drawing: The following admirable logical catalogue of the drawings from the Columbus schools was prepared by Professor W. S. Goodnough, superintendent of that branch of instruction, and is given in his own words:

*Drawings.*—These drawings, 389 in number, are arranged in three horizontal rows, the upper consisting of work in construction, or the kind of drawing necessary for the construction of objects. In the middle row is representation, or drawing from objects, showing them as they appear. The lower row shows decoration, or original designs. A printed notice hung with the work explains the nature of the exhibit and the conditions under which it was arranged. From it we learn that everything exhibited is regular class work, none having been done with reference to exhibition. We also learn that drawing, as taught in the Columbus schools and as represented in this exhibit, is arranged under three general heads, each including several subjects, as follows:

Construction.—1, Geometric terms; 2, Plans and elevations of simple objects; 3, Geometrical problems worked with instruments; 4, Working drawings of objects to scale, showing plans, elevations, sections, details; 5, Architectural drawing; 6, Machine drawing.

Representation.—1, Geometrical lines and forms; 2, Drawings from simple flat objects, or showing but one face of slide; 3, Single objects drawn from solids in outline; 4, Groups of objects in outline; 5, Foliage from nature and plaster casts in outline; 6, Instrumental perspective; 7, Light and shade from models and casts; 8, Color. Flowers from copy and from nature.

**Decoration.**—1, Variation of simple forms; 2, Repetition, horizontally or vertically, forming borders; 3, Repetition for surface decoration; 4, Conventionalization of natural forms for designs; 5, Designs in geometric forms, conventionalized foliage used; 6, Applied design in pencil for various manufactured articles; 7, Botanical analysis for design in color; 8, Applied design in color for printed or woven fabrics, wood, stone, metal, pottery, etc.

These three divisions commence in an elementary manner in the lowest grade, and are carried along in three parallel lines through all grades, with a greater degree of development in each. Drawings are exhibited in all the various subjects mentioned above. No work, however, is shown from the lowest, or D primary, grade, as the pupils of that grade work entirely on slates, and it was not deemed expedient to show their work.

On the south side of the north wall of the Ohio exhibit, high-school work will be found.

On the north side of the next wall south, primary grade work is shown, and consists entirely of pages cut from the drawing-books in use during the year, mounted on cardboard. Two hundred and fifty-eight pupils are represented. The first vertical row is from C primary, or second year, and shows three sheets containing twenty-four drawings. The second vertical row is from B primary, or third year, and shows twenty-four drawings. The third row is from A primary, or fourth year, and shows the same amount of work.

Though all the work is arranged in three horizontal rows—construction, representation, decoration—the distinction between the three lines of study becomes more apparent in this grade (A primary) and those above, where it becomes further developed than in the primary grades.

The fourth and fifth rows show work from the D grammar, or 5th year, and consists of 42 drawings.

The next two rows are from the C grammar, or 6th year, 36 drawings.

The eighth, ninth, and tenth rows show 44 drawings from the B grammar, or 7th year.

The last three rows are from the A grammar, or 8th year, and represent 54 pupils.

The constructive drawing shown, except geometrical problems, is from objects.

The representation is principally from objects, and always so where shown on a blank page. The decoration is all original.

On the other wall, showing high school work, the drawings, 131 in all, are arranged by classes, commencing at the right, as follows:

First, second, junior, and senior. Here the three divisions are fully developed and represented. On the line of construction drawing, beginning at the right, are six drawings—elementary projection and simple machine details. All are drawn to scale, from objects. Next to the left are four drawings of furniture, drawn to scale, from objects, from measurements and rough free-hand sketches made by the pupils.

Next are 24 architectural drawings, rough free-hand sketches, some being original designs. They show plans, elevations, sections, inside and outside details, and perspectives, in ink lines or colored.

In the middle row, or representation, are 6 instrumental perspective drawings. Next are 22 drawings from geometric models and vases in outline, several of them being groups. Then come 13 pieces shaded with the stump and charcoal or sauce, from copy, models, or casts. On the lower row, at the right, are 30 original designs in pencil, for surface decoration, as an oilcloth, tile pattern, etc. Next are 18 designs in monochrome, for borders, centers, etc. Then 6 designs in color for various purposes, as wall paper, wood carving, book covers, etc. Finally, two sheets of botanical analysis, in color, for design, showing a painting of a plant, and also the various parts conventionalized and arranged for designing, with an original design made from the given forms.

Drawing in the Columbus schools is a required study in all grades, no scholar being excused, except for some physical disability and upon the presentation of a certificate to that effect from a practicing physician.

The average time given to drawing is one hour and a half per week, and in the primary and grammar grades the regular teachers do all the teaching, under the supervision and instruction of the superintendent of drawing.

In the high school the teaching is done by a special teacher of drawing and the superintendent of drawing. In the normal school the teaching is done by the superintendent of drawing.

**Drawing books.**—On the shelf under the drawings in the exhibit will be found one finished drawing book of each number used in the primary and grammar grades. In the high school blank books or paper are used.

**Models.**—A set of four models will be seen, constructed of wood and glued together. These were made by one pupil, in the lowest grammar grade, from his own drawings. In this and the grade above pupils are encouraged, for home optional work, to construct the objects which they draw in their study of construction drawing. They may be made of wood, framed, glued, nailed, or screwed together, or solid; of tin

soldered together; of paper or cardboard, pasted or sewed; of clay; or of any material that may be chosen. The only requirement is that certain objects be made of a given size from the pupil's own drawings. This work is not yet fully developed.

*Dayton* (population, 38,677).—Night schools for industrial drawing: Architectural drawings, 23; mechanical drawings, 17; total, 40; these drawings were displayed on wall space; 3 photographs of school buildings: seventh district, eleventh district, twelfth district; 1 interior view of twelfth district building; 1 copy annual report, 1883.

*Felicity* (population, 1,047).—One photograph of school building.

*Gallipolis* (population, 4,400).—Examination papers: 1 volume from high school, containing papers in English grammar, Latin, German, physical geography, geography, physics, botany, arithmetic, algebra, and astronomy; 3 volumes from primary and grammar grades, containing papers in spelling, definition of words, grammar, United States history, geography (with illustrative maps), and arithmetic; in all four volumes; 34 books of map drawing from sixth grade; 1 copy of Annual School Report.

*Hamilton* (population, 12,122).—Examination papers: 3 volumes from high school containing papers in English composition, English literature, Latin, German, ancient history, physics, physiology, algebra, geometry, and trigonometry; 1 volume from grammar grades and 5 volumes from grammar and primary grades; in these 6 volumes are papers in grammar, geography (beginning in third grade), English language, United States history, spelling (from second up to highest grade), and German; 1 volume of drawings from sixth, seventh, and eighth grades; 1 volume of maps drawn from memory. In all, 11 volumes.

*Lebanon* (population, 2,703).—1 photograph of school building.

*Manchester* (population, 1,455).—Examination papers: 1 volume from high school and grammar grades, containing papers in grammar, composition, geography, natural philosophy, arithmetic, algebra, and geometry; specimens of drawings; 2 photographs of school buildings.

*New Philadelphia* (population, 3,070).—Examination papers (unbound), representing the work in the high school, and in the different grades of the grammar and the primary schools; 1 photograph of a school building.

*Northwestern Normal School, Ada* (population, 1,763).—1 lithograph of building; 1 chart, survey of South Ada Ditch, by Chas. A. Aubert; 1 plat of race course, by J. L. Newhouse; 1 plat of Ada Fair Ground.

*Norwalk* (population, 5,704).—2 photographs of high school building.

*Oberlin* (population, 3,242).—Examination papers: 1 volume from high school and eighth-grade pupils, containing papers in English grammar, United States history, Latin, and Greek; 1 volume from sixth and seventh grades, containing papers in English grammar, geography, maps, and arithmetic.

*Oxford* (population, 1,744).—Examination papers: 1 volume from high school, grammar, and primary grades, containing papers in English grammar, English literature, geography, and arithmetic. Penmanship from second grade up through the high school.

*Painesville* (population, 2,463).—\*1 photograph of female seminary; \*1 photograph of Lake Erie Seminary.

*Portsmouth* (population, 11,321).—Examination papers: 1 volume from high-school, containing papers in English literature, English history, rhetoric, Latin, mental science, physics, anatomy and physiology, geology, algebra, and trigonometry; 1 volume from grammar and primary grades, containing papers in English grammar, composition, United States history, geography, arithmetic, German (from sixth grade and upward); \*2 photographic views of Union street building.

*Smithville* (population, 546).—\*1 engraving of high school building.

*Springfield* (population, 20,730).—1. Examination papers: 1 volume from high school, containing papers in Latin, German, psychology, physics, physiology, algebra, and trigonometry; 4 volumes from grammar and primary grades, containing papers in spelling, grammar, geography, and United States history; 8 volumes English penmanship, from first to eighth grade, inclusive; 1 volume German penmanship, from first to eighth grade, inclusive; total, 14 volumes.

2. Drawings (displayed on wall space): High school, 44 decorative designs, 17 decorative designs in color; grammar and primary grades, from second to eighth grades, inclusive, 77 copies and decorative designs, 5 copies and decorative design in color; total number of drawings, 143.

3. Specimens of scroll-sawing (from fifth, sixth, and seventh grades), 21.

4. Specimens of all kinds of blanks, including registers, etc., used in the Springfield schools.

*Stuebenville* (population, 12,993).—\*6 photographs of school buildings: north building, south building, second ward, sixth ward, sixth ward (rolling-mill school), and eighth ward.

*Troy* (population, 3,803).—High school: chart, working section of railroad, by R. F. Walker.

*Warren* (population, 4,428).—\*1 photograph of high school building.



*Wellsville* (population, 3,377).—1 photograph of school building.

*West Milton*.—Papers (unbound) from the several grades of the schools.

*Xenia* (population, 7,026).—Examination papers: 2 volumes from the high school for white youth; 1 volume from the high school for colored youth, each volume containing papers in Latin, German, physics, science of government, and algebra; 4 volumes of grammar and primary grades (from third to eighth inclusive), containing papers in spelling, definition of words, music, geography, United States history, and arithmetic; 2 volumes from colored schools, containing papers in same subjects as above, except music; 1 volume of compositions from all grades of the primary and grammar schools, except from pupils of the first year; total, 10 volumes; 1 photograph of high school building.

*Zaleski* (population, 1,175).—1 volume, containing papers in spelling (with diacritical marks), composition, grammar, U. S. history, general history, physical geography, arithmetic, algebra, and penmanship; 1 photograph of school building.

*Miscellaneous*.—1 photograph of building for country school, erected in Noble county, 1853; 1 photograph of school building in District No. 6, Greene county; 1 photograph of school building in District No. 12, Greene county; 1 large framed specimen of penmanship from L. Detweiler, teacher of writing in the public schools of Hillsboro'. Portraits of eminent educators: 1 photograph of W. D. Henkle, 1 photograph of Horace Mann; 1 photograph of G. W. Hosmer, formerly president of Antioch College; 1 photograph of H. H. Barney, formerly State commissioner of common schools; 1 crayon portrait of D. A. Long, president of Antioch College; 1 engraved portrait of W. H. McGuffey; 1 engraved portrait of Joseph Ray; photograph of the faculty of Antioch College (group); 1 photograph of Dr. John Hancock; 1 photograph; 1 large chart giving average expense per pupil for tuition and the number of schools in each county of the State for the year ending August 31, 1884; 1 large chart setting forth the school system of the State; 1 large chart giving the school statistics of the State; 100 copies (bound) of the school laws of Ohio; 100 copies of the commissioner's report for 1883; 3 bound volumes of the *Educational Monthly*.

#### COLLEGE EXHIBIT.

This exhibit was prepared and set up by Professor A. H. Tuttle, of the Ohio State University, and gives statistics and other valuable information from 16 colleges, besides photographic views of buildings and surrounding scenery, from most of the institutions presented. In this way, with the addition of charts, was presented an approximately complete history and the present condition of the higher education of the State—something, it is believed, not attempted in any other exhibit in the Exposition. Upon the value of such a presentation it is not necessary to enlarge.

*Adelbert College, of Western Reserve University (Cleveland)*.—Statistics; 1 photographic view of building; 10 interior views.

*Antioch College (Yellow Springs)*.—Statistics; 2 photographs of buildings; 2 photographs of scenery; 2 photographs of classes of students.

*Baldwin University (Berea)*.—Statistics.

*Buchtel College (Akron)*.—Statistics; \* 1 photograph of building; \* 1 engraving of same.

*University of Cincinnati (Cincinnati)*.—Statistics.

*Denton University (Granville)*.—Statistics; 2 photographs of buildings.

*Hiram College (Hiram)*.—Statistics.

*Kenyon College (Gambier)*.—Statistics; 8 photographs of buildings; 3 photographs of scenery.

*Marietta College (Marietta)*.—Statistics; 4 photographs of buildings; 8 photographic interior views.

*Oberlin College (Oberlin)*.—Statistics; 5 photographs of buildings; 1 photographic view of the interior of the chapel, with students assembled therein.

*Ohio State University (Columbus)*.—Statistics; 4 photographs of buildings; 8 photographic interior views; 9 drawings from students of mining department; 1 large drawing of furnace; 3 drawings from students' engineer department; 1 case students' work (iron and wood), mechanical department.

*Ohio University (Athens)*.—Statistics.

*Ohio Wesleyan University (Delaware)*.—Statistics; 2 photographs of buildings; 3 photographic interior views; 1 photograph of the famous sulphur spring.

*Otterbein University (Westerville)*.—Statistics; 4 photographs of buildings; \* 1 lithograph of main building; 2 photographic interior views.

*Wittenberg College (Springfield)*.—Statistics.

*University of Wooster (Wooster)*.—Statistics; 1 large chart in colors showing the relative standing of the counties of the State as to the number of youth attending college; 1 printed chart giving consolidated statistics of colleges; 1 colored chart showing the relative numbers of youth attending college within and without the State; 1 colored chart showing ratio of college attendance to population of college age (16-21).

## SUMMARY.

*City and town exhibits.<sup>1</sup>*

Number of cities and towns represented in the exhibit.....	30
Number of cities and towns which presented examination papers from pupils..	18
Number of cities and towns which presented work of pupils in drawing.....	6
Number of cities and towns exhibiting photographs of school buildings.....	20
Whole number volumes of examination papers (bound).....	130
Whole number volumes of examination papers (unbound).....	3, 133
Volume of slate work.....	1
Volumes of drawing not enumerated in the exhibit of drawings (Hamilton)...	2
Drawing books exhibited (Gallipolis).....	34
Slates containing work of pupils.....	48
Number of drawings exhibited on wall space.....	572
Number of drawings exhibited in portfolios (Cincinnati).....	2, 049
Total number of drawings exhibited.....	2, 621
Specimens of scroll-sawing by pupils (Springfield).....	21
Number of charts (work of pupils).....	6
Number of photographs of school buildings.....	53
Number of photographs of interiors.....	10
Interior of public library (Cincinnati).....	1
Number volumes of school reports.....	58
Volumes of the school laws of Ohio.....	100
Volumes of the Commissioner's Report for 1883.....	100
Bound volumes by Cincinnati authors.....	218
Pamphlets by the same.....	44

*College exhibit.*

Number of colleges represented.....	16
Number of colleges presenting statistics.....	16
Number of photographs of buildings.....	34
Number of photographs of interiors.....	30
Number of photographs of scenery.....	7
Photographs of classes of students.....	2
Engraving of building.....	1
Number of drawings by students.....	13
Number of statistical charts.....	4
Students' work in iron and in wood (case).....	1

It is to be regretted that a more extended State exhibit could not have been gathered together. It was hoped by the Commissioner that all the large cities at least would be generously represented; although the cities which did respond to the invitation to contribute have sent in an amount and quality of work highly honorable to their several systems of schools, it will be seen by glancing over the above catalogue that his hopes have not been fully realized. It is especially to be regretted that the country schools and the schools of the State institutions—the reform schools, both for girls and boys, the schools for the blind, for the deaf and dumb, and for the feeble-minded—are not represented. These State institutions are deservedly regarded as among the best in the country, and could have shown work in many directions that would have attracted the favorable attention of educators and the general public. A large part of the deficiencies named has arisen from a lack of time sufficient for so large an undertaking as a complete exposition of the workings of a State school system must necessarily be. But after all deductions have been made, it is believed that a careful study of the Ohio exhibit as it now stands will give a fair notion of the educational work doing in that great central State, at an annual expenditure of nearly ten millions of dollars.

I take this opportunity to acknowledge my indebtedness especially to Dr. John Hancock and to Prof. Albert H. Tuttle for the very valuable services which they, as assistant commissioners of education for Ohio, rendered in the collection and arrangement of the Ohio school exhibit for the World's Industrial and Cotton Centennial Exposition at New Orleans.

I have the honor to be, very respectfully,

L. E. ROY D. BROWN,

*State Commissioner of Common Schools for Ohio,*

*In Charge of Ohio Education Exhibit.*

<sup>1</sup> Exclusive of portraits of eminent educators and charts relating to the school system of the State.

## RHODE ISLAND.

## EDUCATIONAL INSTITUTIONS.

Rhode Island educational facilities include the following: College (Brown University); academies; public schools, comprising State normal school, high schools, grammar schools, intermediate schools, primary schools, kindergärten, ungraded schools, evening schools, school of design, school for the deaf, home and school for dependent children, free public libraries, Froebel school and kindergarten. These various institutions were represented at the New Orleans Exposition as follows:

*The college* (Brown University) by photographs of the grounds and various buildings.

*The academies* by photographs of the grounds, buildings, and school rooms of the Friends' Boarding School of Providence.

*The public schools* by (1) map of State showing location of public schools; (2) chart showing public school system; (3) chart giving statistics of public schools; (4) photographs and drawings of public schools of Providence; (5) history of public education in Rhode Island from 1636 to 1876; (6) Rhode Island school reports from 1870 to 1883, inclusive; (7) copies of blanks and forms used in connection with public instruction; and (8) exhibits (a) from Providence public schools, of bound volumes of examination papers in the various studies of the different grades of schools, from primary to high, inclusive; cards showing samples of penmanship, samples of map drawing and designing; show-case containing specimens of minerals, woods, etc., used as aids in instruction; specimens of business and other letters, and school reports; (b) from Pawtucket public schools, of bound volumes of examination papers in the various studies of the various grades, and slates showing samples of free-hand drawing and designing in primary grade; and (c) from Newport public schools, of bound volumes of examination papers, samples of designing, and, in the primary grade, of modeling in clay, and school reports.

*The school of design*, by samples of elementary and advanced free-hand drawing and painting; free-hand light and shade; elementary and applied design; elementary and advanced mechanical drawing; water-color time sketches.

*Froebel school and kindergarten* (Mrs. C. M. N. Alden's), by photographs of the children and school-rooms, by samples of modeling in clay, of wood-carving and of brass-hammering, of penmanship, of designing, of drawing, and of composition.

## TENNESSEE.

*Howell graded schools*, Clarksville.—4 volumes examination papers.

*Columbia Athenæum*, Columbia.—Set of Murdoch's charts for the cultivation of the voice. 6 oil paintings. 6 water colors. 2 paintings on porcelain. Crayon drawing. 7 ink drawings. 20 India ink sketches. Photographs of institution.

*Tennessee Female College*, Franklin.—6 framed oil paintings. 3 paintings on porcelain. Crayon drawing of institution. 2 samples fancy work. 8 pasteboard models of geometrical figures. Framed likeness in needlework. 6 samples painting on china. 2 volumes examination papers. Herbarium. 18 exercise books. 10 colored drawings of solar spectrum. 4 colored geometrical drawings. 11 colored astronomical drawings.

*Public school*, Friends' Station.—Volume containing statement of institution, with specimens of work.

*Howard Female College*, Gallatin.—Logic in Ten Chapters, by A. M. Burny, principal. 6 volumes examination papers.

*Jackson*.—13 framed photographs of teachers, pupils, and buildings. 18 packages of examination papers in arithmetic, grammar, geography, history, spelling, algebra, physiology, composition, and bookkeeping.

*City schools*, Knoxville.—6 bound volumes of examination papers.

*University of Tennessee*, Knoxville.—2 photographs of institution. Colored drawing.

*City schools*, Nashville.—13 photographs of public school buildings.

*Fisk University*, Nashville.—2 framed photographs of institution.

*Goodman's Business College*, Nashville.—Framed specimen of pen work.

*Montgomery Bell Academy*, Nashville.—3 anatomical charts. Map of great pyramid. 5 maps of United States at different periods. Map of South America. Framed photograph of faculty and students. 3 bound volumes examination papers in arithmetic, grammar, geography, spelling, physiology, natural philosophy, rhetoric, history, algebra, geometry, English literature, Latin, and Greek. 1 bound volume each of Greek

and Latin exercises, geometrical exercises, historical maps; written exercises in arithmetic, algebra, and history, and written exercises in grammar.

*Nashville College for Young Ladies*, Nashville.—20 bound volumes of examination papers containing the following number of papers in each branch of study: Geography 54, history 98, rhetoric 35, penmanship 12, political science 48, mythology 2, mathematics 200, English language and literature 330, ethics 14, Christian evidences 29, elocution 15, natural sciences 217, metaphysics 161, modern languages 50, ancient languages 77, music 76. 20 pasteboard models of geometrical figures. 2 schemes of composition, theory of penmanship based upon the scale of thirds. 2 maps of ancient Rome. 2 maps of Italy. 5 plans of college buildings. The following in frames: Table showing growth of institution; statement of facilities; historical data; contents of exhibit; topical outline of work in political economy.

*Poole Institute*, Nashville.—Framed photograph of building.

*Roger Williams University*, Nashville.—2 bound volumes of examination papers in arithmetic, grammar, geography, penmanship, algebra, physiology, mental science, geometry, astronomy, civil government, German, Latin, Greek, and Hebrew.

*St. Cecilia's Academy*, Nashville.—7 bound volumes examination papers in grammar, history, mathematics, drawing, penmanship, bookkeeping. Samples of work in book-keeping. Colored drawing of institution. Show-case containing eight specimens of fancy work. Framed statement of institution.

*Vanderbilt University*, Nashville.—Framed topographical map. Framed statement of work of institution. Bound volume of register of University. Bound volume, "Dedication and Inauguration." 2 volumes examination papers.

*School of Engineering* (Vanderbilt University).—Statement of institution. 24 specimens of mechanical drawing.

*W. E. Ward's Seminary*, Nashville.—Photograph of building. 12 framed oil paintings; crayon drawing. Framed statement of growth of institution in twenty years. Portfolio containing statements of organization, equipments, and range of work of institution, with statements of work in belles lettres, science, mathematics, English composition, languages, music, and calisthenics.

*Watkins Seminary* (near Nashville).—Photograph of institution.

*Beecher's School for Girls*, Spring Hill.—Volume examination papers.

*Peabody High School*, Trenton.—10 packages of recitation papers.

## VIRGINIA.

The educational exhibit of Virginia consisted of nine classes: county maps; city maps; general maps; promiscuous drawings; essays, compositions, etc.; copies; miscellaneous papers, diagrams, literature, charts, monthly examinations, etc.; office exhibits; photographs.

Class A contained maps of the following counties: Alexandria, Alleghany, Augusta, Bath, Bedford, Brunswick, Campbell, Carroll, Charlotte, Craig, Culpepper, Danville (district), Dinwiddie, Elizabeth City, Fairfax, Fauquier, Fluvanna, Frederick, Goochland, Grayson, Greenville, Halifax, Hanover, Henrico, Henry, James City, King George, Lee, Madison, Mecklenburg, Nansemond, New Kent, Northampton, Northumberland, Nottoway, Orange, Patrick, Pittsylvania, Powhatan, Prince Edward, Prince George, Princess Anne, Pulaski, Richmond, Roanoke, Rockbridge, Rockingham, and Stafford.

Class B, maps of Alexandria, Ashland, Fredericksburg, Lynchburg, Mauchester, Norfolk, Petersburg, and Richmond.

Class C, general maps from Accomac County, 4; Augusta, 7; Danville, 19; Dinwiddie, 2; Elizabeth City, 1; Fauquier, 5; Frederick, 18; Henry, 13; Manchester, 29; Mecklenburg, 1; Norfolk, 12; Nottoway, 11; Petersburg, 57; Pittsylvania, 12; Richmond, 330; Roanoke, 1; Rockingham, 50; Rockbridge, 26; and Staunton, 25.

Class D, under the general name of promiscuous drawings, contained the following exhibits: Augusta, old log school house; Charlotte, school house; Clarke, 3 school houses; Dinwiddie, log school house; Elizabeth City, log school house (exterior and interior); Fluvanna, 3 school houses; Grayson, 2 school houses; Hanover, school houses (old and new); Manchester, school houses (white and colored); Miller Manual Labor School, diagram of mill machinery, side and end view of derrick, steam-engine, plan of building, Clark and Knight engine, jack-screw, grounds of the school, screw; Petersburg, 9 school buildings; Rockingham, crayon drawings, 12 miscellaneous drawings.

Class E included the following essays, compositions, and other documents: Alexandria, history of schools; Augusta, 3 compositions; Danville, history of schools; Dinwiddie, 25 compositions; Fredericksburg, history of city; Lynchburg, 25 compositions, diagram; Mecklenburg, 3 compositions, history of institute; Norfolk city, 3

drawings, 8 compositions; Nottoway, 8 essays; Petersburg, 91 specimens of penmanship, 21 compositions; Pittsylvania, 12 essays, names, with derivation, of countries; Roanoke, compositions, academy news; Rockingham, Latin and French exercises, compositions, grammatic diagram, essays; Staunton, compositions.

Class F consisted of 4 copies from Fredericksburg and 22 from Staunton.

Class G consisted of a diagram of the Moore Street Industrial School, Pendleton cards and drawing maps, and three diagrams of government, from Richmond; and literature charts, monthly examinations, hair work and needle work from Rockingham.

Class H (from the office of the superintendent of public instruction) includes the following material: 1 volume of original annual reports from county and city superintendents; 12 specimens of annual reports as issued from the office; 3 bound volumes of annual reports; 1 bound volume of reports of Richmond city school board; 2 volumes of report from Alexandria; 1 bound volume of Virginia school law; 1 bound volume of samples of blanks from central office; original questions for examination of teachers; original report of census of teachers (bound); Lynchburg school reports; 2 volumes Lynchburg school regulations; rules and regulations of Alexandria city schools; 7 copies "Ordinance, Rules and Regulations," Lynchburg; 2 copies ordinance and annual school report, Fredericksburg; course of study of public schools, Danville; 3 copies outline of course of study in the public schools of Richmond; fourteenth annual report of schools of Richmond; 3 copies of Petersburg city school report.

Class I contains photographs of school houses, of Virginia Normal and Collegiate Institute, Washington and Lee University, etc.

## WEST VIRGINIA.

*Benwood*.—Bound volume of examination papers.

*Wheeling*.—10 bound volumes examination papers, primary department. 10 bound volumes examination papers, grammar department. State report of schools, 1881-'82. Volume of blank teachers' certificates. Volume of blank orders. Blank register. Blank county report. Blank sheriff's settlement for school money. Pamphlet of school laws, State of West Virginia. Finding list, Wheeling Public Library.

## WISCONSIN.

### CITY EXHIBITS.

*Milwaukee*.—Banners showing statistics. 28 views of school buildings. City normal school building. 4 frames containing pupils' work in drawing. 39 volumes, pupils' work, including kindergarten work. Examination papers in district schools; also complete sets, showing full course of instruction in high school. These exhibits include the work of whole classes.

*Lacrosse*.—46 volumes examination papers, and other work of pupils.

*Madison*.—7 thick volumes of pupils' work, examination papers.

*Janesville*.—8 volumes of pupils' work, examination papers.

### STATE NORMAL SCHOOL EXHIBITS.

*Oshkosh*.—6 large volumes examination papers and school work.

*Whitewater*.—4 large volumes examination papers and school work.

*Platteville*.—4 large volumes examination papers and school work.

### MISCELLANEOUS.

Work of pupils in the blind and deaf and dumb institutes. Reports of schools and State institutions. Catalogues of historical society and of colleges.

Banner, single piece of silk, 6 by 9 feet, containing statistical information relating to the schools of the State. Set of 8 charts, outlining school system. 2 sets geological reports and 2 volumes geological charts. 36 geological charts on frames.

## CITY SCHOOL SYSTEMS.

### ALBANY, N. Y.

*Bound volumes of pupils' work.*—1 volume penmanship specimens, schools 11, 21, and 24; 1 volume language exercises, schools 11 and 24; 1 volume language exercises, schools 2 and 14; 1 volume arithmetic exercises, schools 12 and 15; 1 volume geography and history exercises, schools 6 and 21; 2 volumes drawings, schools generally; 3 volumes test exercises, high school.

*Framed pictures.*—19 drawings; 1 perspective of high school; 4 floor plans of high school; 1 perspective of school No. 2; 1 perspective and floor plans of school No. 2.

A relief map of Albany county in plaster.

### ALEXANDRIA, VA.

Framed photograph of the Washington school building, exhibited by John P. Clark, of Alexandria, Va.

### ATLANTA, GA.

*School work:* From boys' high school, 1 volume; girl's high school, 1 volume; Calhoun-street school, 2 volumes; Walker-street school, 1 volume; Ivy-street school, 1 volume; Fair-street school, 1 volume; Crew-street school, 1 volume; Marietta-street school, 1 volume; Houston-street (colored) school, 2 volumes; Mitchell-street (colored) school, 1 volume; Summer Hill (colored) school, 1 volume. Photograph of Prof. W. F. Slaton, superintendent. Map of Europe.

### CHICAGO, ILL.

*Exhibit of drawing under the direction of Prof. Herman Hanstem:* 64 charcoal drawings; 65 industrial drawings; 12 water colors; 2 ink sketches; 12 pen drawings; 120 samples of home work by grades IV and V; 82 samples of wood construction, grade VII; 47 samples of paper construction by grade VII; 24 pencil drawings, grade IV; 36 pencil drawings, grade V; 48 pencil drawings, grade VI; 48 pencil drawings, grade VII; 66 pencil drawings, grade VIII; 3 bound volumes drawing books of grades IV, V, and VI; illustrations of perspective.

### DENVER, COLO.

6 photographs and plans of school buildings.

### LEAVENWORTH, KANS.

7 volumes representing work in sixth and seventh grades, and in the courses of the high school in English and Latin, history and science, and mathematics.

### OAK PARK, COOK COUNTY, ILL.

60 framed drawings from grades III, IV, V, VI, VII, and VIII.

### PORTLAND, OREG.

Picture of high school building and architect's plans of floors of high school building. Photographs of six other school buildings. Two charts showing school attendance for ten years. Map of city of Portland showing location of school buildings. 20 free-hand crayon drawings by pupils of the high school. 288 mechanical drawings distributed as follows: High school, 54; Park school, 12; Central school, 60; Harrison school, 54; North school, 66; Couch school, 12; Failing school, 30. 6 memory maps drawn by pupils of the Couch school.

## WASHINGTON, D. C.

## OFFICE OF SUPERINTENDENT OF PUBLIC SCHOOLS,

*Washington, D. C., December 12, 1884.*

In arranging for this exhibit no time was allowed for special preparation of pupils' work, and it therefore represents for the most part the regular exercises of the schools. Much of it has been selected with the view of showing methods of instruction rather than finished results.

J. ORMOND WILSON,  
*Superintendent.*

## CATALOGUE OF EXHIBITS.

*First grade.*—(1) Regular daily work of pupils on slates, 50 specimens; (2) clay models of geometric forms, 50 specimens.

*Second grade.*—(3) Regular daily work of pupils on slates, 50 specimens; (4) clay models of geometric forms, 100 specimens; (5) 1 volume of copybooks.

*Third grade.*—(6) 1 volume penmanship drill exercises; (7) 1 volume of copy books; (8) 1 volume of drawing-books; (9) 1 volume of samplers; (10) 1 volume of compositions; (11) specimens of map drawings.

*Fourth grade.*—(12) 1 volume penmanship drill exercises; (13) 1 volume of copy books; (14) 1 volume of drawing-books; (15) 1 volume of compositions; (16) 1 volume of samplers; (17) specimens of map-drawing; (18) 16 specimens putty relief maps.

*Fifth grade.*—(19) 1 volume penmanship drill exercises; (20) 1 volume of copy-books; (21) 1 volume of drawing-books; (22) 1 volume of samplers; (23) 1 volume of compositions; (24) 1 volume of written examination works; (25) 12 specimens relief maps; (26) specimens of map-drawing.

*Sixth grade.*—(27) 1 volume of penmanship drill exercises; (28) 1 volume of copy-books; (29) 1 volume of drawing-books; (30) 1 volume of compositions; (31) 1 volume of samplers; (32) 1 volume of written examination work; (33) 15 specimens relief maps; (34) specimens of map-drawing.

*Seventh grade.*—(35) 1 volume of penmanship drill exercises; (36) 1 volume of copy-books; (37) 1 volume of drawing-books; (38) 1 volume of compositions; (39) 1 volume of samplers; (40) 1 volume of written examination work; (41) 15 specimens putty relief maps; (42) specimens of map-drawing.

*Eighth grade.*—(43) 1 volume of penmanship drill exercises; (44) 1 volume of copy-books; (45) 1 volume of drawing-books; (46) 1 volume of compositions; (47) 2 volumes of samplers; (48) 1 volume of written examination work; (49) 1 volume of spelling exercise books; (50) specimens of map-drawing.

*Miscellaneous.*—(51) 1 volume of catalogues of school libraries; (52) 1 volume of reports of teachers on school libraries; (53) 1 case philosophical apparatus used in sixth and seventh grades; (54) 1 case specimens of free-hand drawings from third, fourth, fifth, sixth, seventh, and eighth grades and the high school; (55) school library case, with representative library; (56) photographs of school buildings—Ould, Franklin, Peabody, Henry, Gales, Analostan, Amidon; (57) photographs of school rooms in the Analostan; (58) model of the Analostan school building.

*High school,* Edward S. Paul, principal.—(a) Photographic views: (1) High school building; (2) drill hall; (3) room for drawing; (4) physics lecture room; (5) botanical laboratory; (6) chemical laboratory; (7) library; (8) the "High School Cadets" (two views).

(b) One complete set of high-school text-books.

(c) Bound volume containing (1) catalogue 1884-'85; (2) circulars, 1884-'85; (3) syllabi of courses and studies; (4) examination questions, 1883-'84; (5) blank forms.

(d) Eight bound volumes containing (1) examination papers from regular annual examination, 1883-'84; (2) examination papers from regular quarterly examination, 1884-'85.

(e) Three bound volumes containing copies of essays written by pupils, regularly in course, during the year 1883-'84, and the 1st quarter of 1884-'85.

(f) Drawings made by pupils, regularly in course during the year 1883-'84. (Exhibited on wall.)

(g) Explanatory statements of the organization and methods of work of the several departments of study, each accompanied by specimens of class-room exercises done by pupils, and transcripts from pupils' note books. Bound volumes as follows: Business training, 1 vol.; botany and zoölogy, 2 vols., 1 portfolio; chemistry and physics, 1 vol.; English, 1 vol.; German and French, 1 vol.; Latin and Greek, 1 vol.; history and political science, 1 vol. and 1 portfolio; mathematics, 1 vol.

*Normal school.*—Lucilla E. Smith, principal. Clay models representing work done in class by children of first grade:

No. 1, two spheres; No. 2, two apples; No. 3, four cubes; No. 4, three cylinders; No. 5, two four-sided prisms; No. 6, two cones; No. 7, two four-sided pyramids; No. 8, one truncated pyramid; No. 9, two pears.

Plane geometric forms cut in thick Manilla paper, to be used by children after modeling in clay; No. 10, set of circles; No. 11, set of ellipses; No. 12, set of ovals; No. 13, set of squares; No. 14, set of oblongs; No. 15, set of triangles; No. 16, set of rhombs; No. 17, set of rhomboids.

No. 18. One set of plane forms as prepared by children in first grade.

No. 19. Twenty-five sets of inch squares to be arranged by children in patterns, either original or like given samples. Objects of, first, busy work; second, training in form; third, skill in doing.

No. 20. One set of paper foldings numbered to indicate the order in which they may be made by children of second grade, object being to review forms and teach geometric construction of ornament.

Nos. 21, 22, 23, 24, 25, 26, 27, 28. Elements of design, to be used by children upon their desks for repeating around a center or for making borders.

No. 29. One box of stained glass, to be wet and used upon window-pane in color-teaching.

Nos. 30, 31, 32, 33, 34, 35, 36, 37. Mounted samples of paper, silk, and woolen goods for teaching color.

No. 38. Knots of worsted for teaching tints and shades.

No. 39. One box of wooden cubes, to be handled by children in learning number.

No. 40. One box of penny shells for number lessons.

No. 41. Three sets of bags for passing objects in number teaching.

No. 42. One set of small boxes containing various objects, to be used by children in learning number.

No. 43. One box seed cards, illustrating some of the principles of appealing to the eye.

No. 44. One box of number drawings, to make varied repetition in number lessons and to aid children in recognizing number at sight.

No. 45. One box of cards for teaching children to read numbers.

No. 46. One box of cards showing the way in which children arrange splints upon their desks in learning Roman numerals.

No. 47. One set of ruled slips by which children learn cloth measure.

No. 48. One set of children's papers showing method of writing numbers.

No. 49. One chart of mounted number cards.

No. 50. One box tins, to be used by children in trading.

No. 51. Apparatus for teaching children to tell time.

Nos. 52, 53, 54, 55, 56, 57, 58, 59, 60, 61. Hand-made number charts.

No. 62. One hundred species of spring flora (mounted).

No. 63. Catalogue of plants.

No. 64. Chart of typical forms for use in plant lessons (second grade).

No. 65. One hundred and forty-five mounted specimen leaves of standard shapes for comparison with forms on chart No. 64.

No. 66. Box of mounted leaves, to be used as models for drawing in any grade.

Nos. 67, 68, 69, 70. Hand-made charts for use in teaching natural history and language in second grade.

No. 71, 72, 73. Cases of insects, crustaceans, mollusks, and radiates, for use in teaching natural history and language in third grade.

Nos. 74, 75, 76, 77, 78, 79, 80, 81. Hand-made charts. Animal charts for use in teaching natural history and language in third grade.

No. 82. Mounted slips showing how an object may be studied by drawing.

No. 83. Mounted studies of crustaceans and radiates.

No. 84. First lessons in zoölogy, by E. Morse.

For lessons to train the reason and give facts about minerals: No. 85, one box mica; No. 86, one box sulphur; No. 87, one box flint; No. 88, one box magnetite; No. 89, one box halite; No. 90, one box chalk; No. 91, one box quartz; No. 92, one box hematite; No. 93, one box graphite; No. 94, one box gypsum; No. 95, one box galenite; No. 96, one box feldspar; No. 97, one box hornblende; No. 98, one box limonite; No. 99, one box pyrite; No. 100, one box calcite; No. 101, metals—zinc, iron, lead, and copper.

No. 102. First lessons on minerals, by Ellen Richards.

Balls which may be held in the hand for illustrating primary geography: No. 103, of soft wood, which may be wound to illustrate meridians, and may have objects pinned upon it to illustrate points; No. 104, of clay, upon which lines may be drawn with chalk.

No. 105. One copy Meteorological Record, kept by pupils of Washington normal school, with notes by Prof. Cleveland Abbe.

No. 106. One box picture cards for sentence making; No. 107, One box of linen tracings for sentence making.



Drawing representing work done by entire class: No. 108, portfolio containing drawings of plant forms from nature; No. 109, portfolio of object drawings; No. 110, portfolio containing illustrations of objects based on geometric forms, to be used as blackboard copies in connection with the teaching of geometric forms in lower grades; No. 111, portfolio of drawings illustrating principles of design; No. 112, portfolio of object drawing; drawings representing a collection of forms that may be used in lower grades for object drawings; No. 113, examples of geometric construction of ornament, forms to be folded and cut by children of lower grades.

No. 114. One book made up of pages cut from pupils' note books.

No. 115. A collection of written teaching exercises prepared by pupils of normal school.

No. 116. One portfolio of tracing, to be used in blackboard illustrations.

Nos. 117, 118, 119, 120. Interior views of Normal School rooms, Washington, D. C.

**PHYSICAL APPARATUS.**—Made and exhibited by pupils of the public schools of Washington:

*School 1, Grade 7, Division 4; S. E. Wise, teacher.*—Four cells for current electricity; cell and switch; cell, switch, and magnetic needle; cell and home-made receiver; cell, reverser, and electric motor; key and receiver; wheel and treadle; glass condenser, delivery tube and siphon; rubber tubing, 2 flasks, lamp, etc.; brass rod, candles, glass jar; iron rod, nails, sealing-wax, and lamp; stretched string, or bridge; string telephone; wire telephone; iron triangle and telephone box; bow, penny, and goblet; Cartesian diver; sucker and brick.

*School 1, Grade 7, Division 1; William Quinby, teacher.*—Specimens of some of the apparatus used in teaching physics. Most of the apparatus was made by scholars.

*a. Sound.*—(1) Transmission: Row of marbles (Fig. 7); paper tube (Fig. 8); watch and (Fig. 9) pointer; string gong (Fig. 10); telephone (Fig. 11). (2) Vibration of sounding bodies: Bell and boot buttons (Fig. 12); goblet and boot buttons (Fig. 13). (3) Miscellaneous: Wheel and card (Fig. 14); siren (Fig. 15); goblet and water (Fig. 16); stretched string (Fig. 17); principle of the vocal chords (Fig. 18).

*b. Atmosphere.*—(1) Impenetrability: Test tube, cork, and water (Fig. 19). (2) Atmospheric pressure: Cartesian diver (Fig. 20); goblet, paper, and water (Fig. 21); goblet and water (Fig. 22); bottle and egg (Fig. 23); tube and cotton (Fig. 24); pump (Fig. 25); siphon (Fig. 26); vase of Tantalus (Fig. 27); Barker's mill (Fig. 28).

*c. Heat.*—(1) Sulphuric acid (Fig. 29); shot in a bottle (Fig. 30). (2) Conduction: Brass and iron rulers (Fig. 31); paper box and water (Fig. 32); brass tube and string (Fig. 33). (3) Convection: Flowers of sulphur or bran and water (Fig. 29); paper spiral (Fig. 34); box and chimney (Fig. 35). (4) Expansion: Air pyrometer (Fig. 36); metal pyrometer (Fig. 37); knitting needle and prop (Fig. 38); test tube and drop of ink (Fig. 39); test tube partly filled with air (Fig. 40); steam pop-gun (Fig. 41). (5) Miscellaneous: Bottle and test tube to show vaporization (Fig. 42); cheap distilling apparatus (Fig. 43).

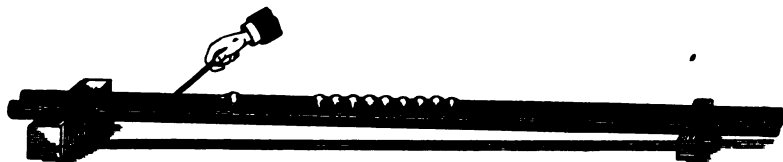


FIG. 7.



FIG. 8.



FIG. 9.

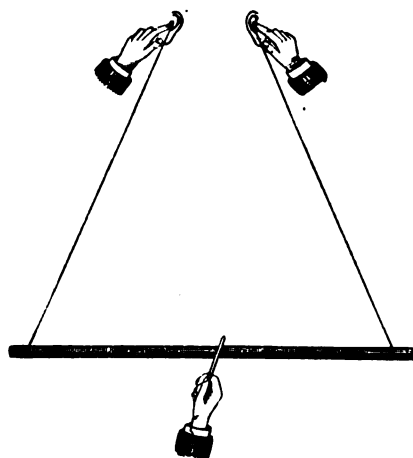


FIG. 10.



FIG. 11.

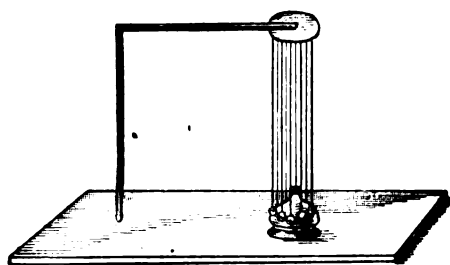


FIG. 12.

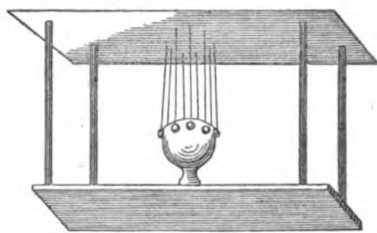


FIG. 13.

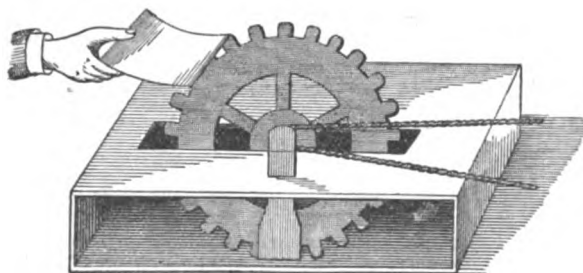


FIG. 14.

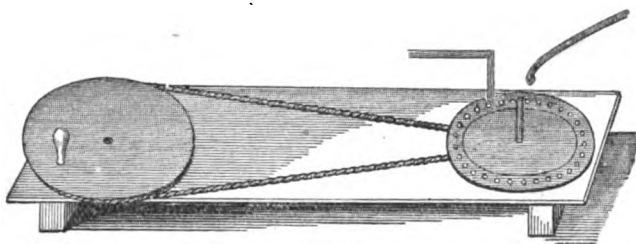


FIG. 15.

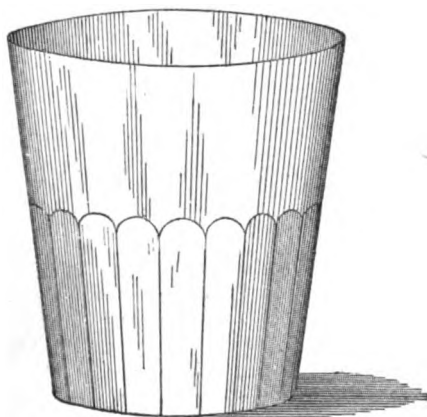


FIG. 16.

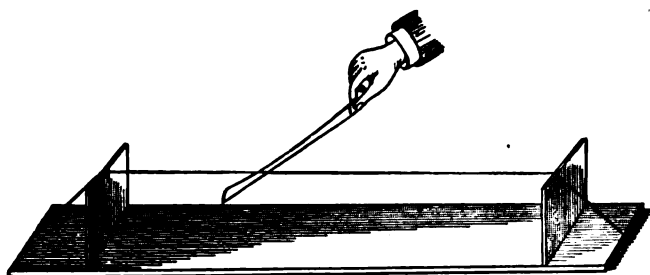


FIG. 17.



FIG. 18.



FIG. 19.



FIG. 20.

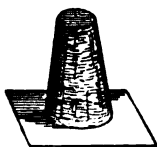


FIG. 21.



FIG. 22.



FIG. 23.

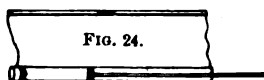


FIG. 24.

FIG. 25.

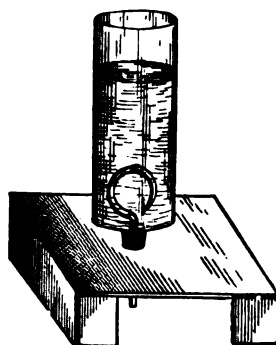


FIG. 27.

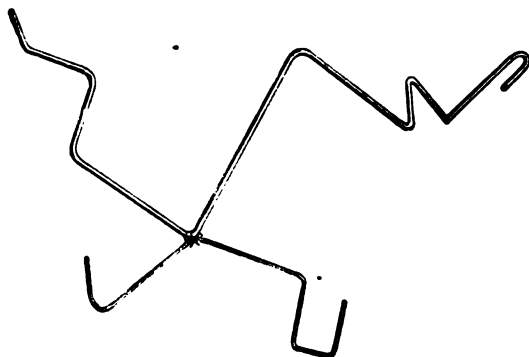


FIG. 26.

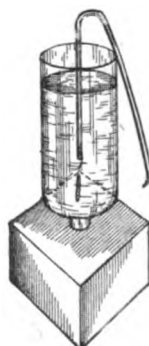


FIG. 28.

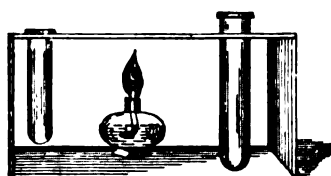


FIG. 29.



FIG. 30.

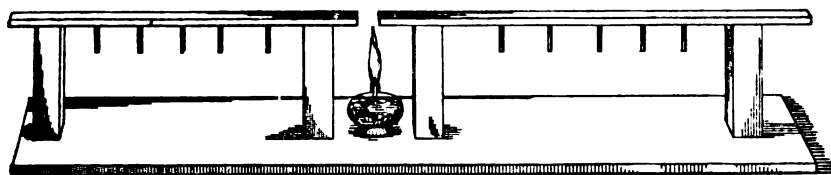


FIG. 31.

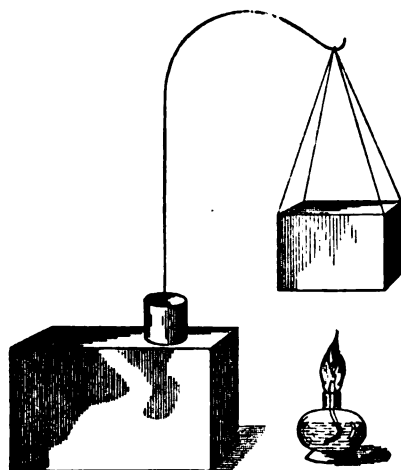


FIG. 32.

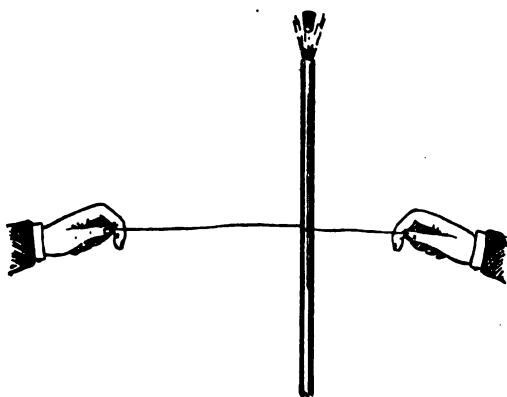


FIG. 33.

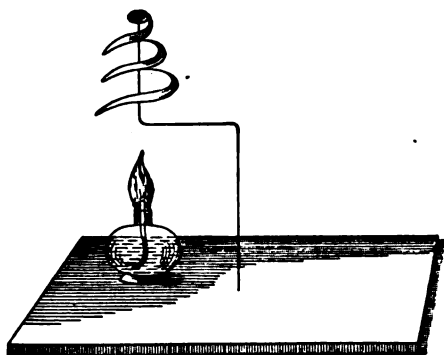


FIG. 34.

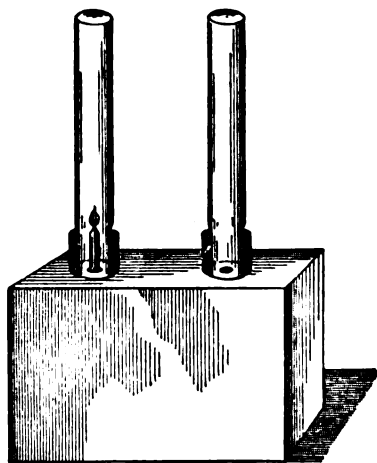


FIG. 35.

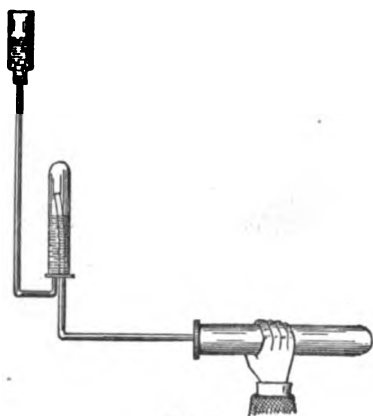


FIG. 36.

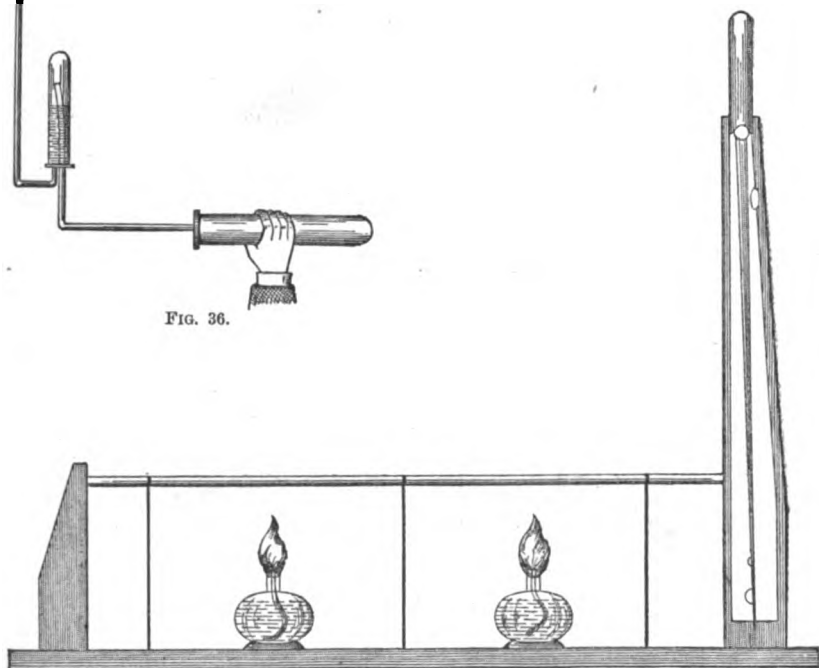


FIG. 37.

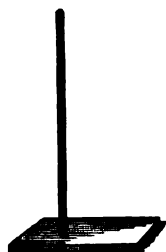


FIG. 38.



FIG. 39.

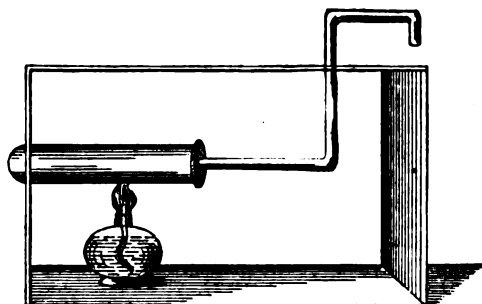


FIG. 40.

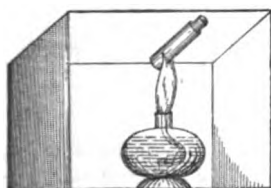


FIG. 41.

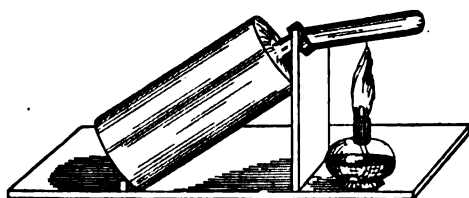


FIG. 42.

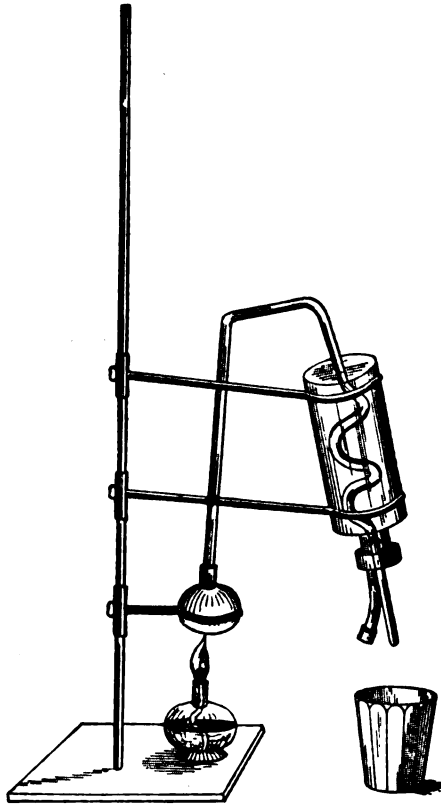


FIG. 43.

*Special exhibit of drawing*—Forty selected specimens of drawings, illustrating the entire course of drawing in the graded and high schools of Washington; arranged by Mrs. S. E. Fuller.

#### WEST DENVER, COLORADO

6 photographs and drawings of school buildings.

#### WILKES BARRE, PENNSYLVANIA.

Population of the city in 1830, 23,339; in 1844, estimated, 30,955.

#### THIRD DISTRICT PUBLIC SCHOOL EXHIBITS.

I.—Bound volumes of examination work in the various subjects called for in the "Course of study," excepting reading, and from all the pupils of any one room. The papers for December, 1883, March, 1884, and the finals of June, on any particular subject, are bound consecutively for each pupil.

II.—Specimens, wall and portfolio, of drawings: Copy, map drawing, blackboard designing, geometrical and perspective, two classes: (a) specimens made between December, 1883, and June, 1884; (b) specimens prepared since October for the exhibit.

III.—(a) Photograph, plans, specifications, and cost of construction of Central High School, erected 1881. (b) Same for Conyngham Graded School, erected 1874. (c) Some photographs of old building.

IV.—Samples of promotion papers, rewards of merit, monthly reports, manual of schools, report for 1883-'84, blanks, etc.

V.—Vocal Music: plan, books used, etc.

#### BOSTON, MASSACHUSETTS.

*Winthrop Grammar School*.—Specimens of sewing work.



## MISCELLANEOUS EXHIBITS.

### TEXT-BOOKS.

JOHN ALLYN, BOSTON, MASS.

Easy Latin Stories; First Latin Exercises; First Latin Exercise Book; First Latin Writer; Second Latin Writer; First Latin Book; Cicero De Senectute; Cicero De Amicitia; Maclean's Horace; Maclean's Juvenal; Demosthenes De Corona; Iliad of Homer, Books I-VI.

AMERICAN SCHOOL BOOK COMPANY, ST. LOUIS, MO.

Holtz's First Lessons in Physics; First Lessons in Physiology.

D. APPLETON & CO., NEW YORK CITY.

Appleton's Readers, 5 books, Normal First Reader, Normal Second Reader, Normal Third Reader, Normal Third Reader Supplement; Normal Music Manual; Song Wave; Wavelet; Appleton's Geographies, elementary and higher; Johonnot's Natural History Reader; Johonnot's Geographical Reader; Shepherd's Historical Reader; Quackenbos's Language Lessons; Northend's Memory Gems; Northend's Choice Thoughts; Northend's Gems of Thought; 4 Stickney's Child's Book of Language; Stickney's Manual to Child's Book of Language; 4 Stickney's Letters and Lessons; Stickney's Letters and Lessons, Manual; Quackenbos's American History.

Le Conte's Compendium of Geology; Clarke's Chemistry; Tracy's Anatomy; Holder's Zoology; Youmans's First Botany; Youmans's Second Botany; Morse's First Book in Zoology; Sully's Psychology; Trowbridge's Physics; Youmans's Chemistry.

3 Krüsi's Kindergarten Cards; 4 Krüsi's Synthetic Drawing; 4 Krüsi's Analytic Drawing; 4 Krüsi's Perspective Drawing; Krüsi's Analytical Manual; Krüsi's Synthetical Manual, new edition.

Harkness's Standard Latin Grammar; Harkness's Cæsar, Sallust, and Cicero; Harkness's First Year in Latin; Harkness's Cicero; Harkness's Cæsar; Harkness's Sallust; Frieze's Virgil, with notes; Frieze's Virgil, complete; Frieze's Virgil, 12 books; Frieze's Virgil, 6 books; Lindsay's Cornelius Nepos; Hadley's Greek Grammar, new ed.; Boise's Xenophon's Anabasis; Boise's First Three Books Xenophon's Anabasis; Boise's Five Books Xenophon's Anabasis; Gaillard's French Orthoëpy; Gaillard's French Orthoëpy and Grammar; Gaillard's Modern French Method; Gaillard's French Vocabulary; Dreyspring's Method; Roemer's Cours de Lecture, 2 volumes; set Appleton's Lead Pencil Course, 3 numbers; set Appleton's Short Course Tracing, 2 numbers; set Appleton's Short Course, 7 numbers; set Appleton's Grammar Course, 7 numbers; set Model Copy-Books, 7 numbers; set Model Copy-Books, 3 numbers; Lincoln's Ovid, with vocabulary; Johnson's First Three Books of Ovid; set Ballard's Pieces to Speak, 5 parts.

A. L. BANCROFT & CO., SAN FRANCISCO, CAL.

Bancroft's Readers, 5 books; Child's Bookkeeping; Rattan's California Flora; Hopkins's American Ideas; Hackett's Pure English; Stone's Arithmetic; Harton's Pen Guides (2 boxes in set); Connor's Penmanship; Bancroft's Manual for Charts.

A. S. BARNES & CO., NEW YORK CITY.

National Readers, Nos. I-V; Monteith's Popular Science Reader; Practical Lessons in English; Watson's Graphic Speller; McNally's System of Geography; Monteith's Independent Course in Geography, elementary; Monteith's Independent

Course in Geography, comprehensive; Elementary Arithmetic; Complete Arithmetic; National Arithmetic; Elementary Algebra; Barnes's Popular History; History of England, Lancaster; Barnes's General History; A Brief History of the United States; A Brief History of Greece; A Brief History of France; Battle Maps and Charts of the American Revolution, Carrington; Elementary Treatise on Mechanics, Peck; Analytical Geometry, Peck; A Text-Book of Civil Government; A Text-Book of Light-line Shorthand.

Object Lessons in Botany, Wood; Botanist and Florist, Wood; Class Book of Botany, Wood; Illustrated Plant Record, Wood; A Temperance Physiology, Hunt; Steele's Fourteen Weeks in Physiology, Fourteen Weeks in Chemistry, Fourteen Weeks in Astronomy, Popular Astronomy, Fourteen Weeks in Physics; Elements of Morals; Elementary Music Reader, Books I-III; Mineral Record.

First German Book; Second German Book; An Elementary Grammar of the German Language; Le Questionnaire; Grammaire Française; First French Book; Second French Book.

E. H. BUTLER & CO., PHILADELPHIA.

Bingham's English Grammar, Latin Grammar, Latin Reader, Cæsar; Butler's Elements of Chemistry; Butler's First Reader, Second Reader, Third Reader, Fourth Reader, Fifth Reader, Geographical Question Book; Butler's Pictorial History of the United States; Butler's Elements of Plane Geometry; Goodrich's American Child's Pictorial History of the United States, Pictorial History of the United States, Pictorial History of England, Pictorial History of Rome, Pictorial History of Greece, Pictorial History of France, Parley's Common School History of the World; Graded Problems in Arithmetic and Mensuration; Lyon's American Elocutionist; Mayhew's Practical Bookkeeping; Mitchell's First Lessons in Geography, New Primary Geography, New Intermediate Geography, New School Geography and Atlas, Physical Geography, New Ancient Geography, Key to Outline Maps (separately), Ancient Geography and Atlas, Biblical Geography; New American Primary Speller, Pronouncing Speller; New American Arithmetic (Part 1), Arithmetic (Part 2), Arithmetic (Part 3), Practical Arithmetic (comprising Parts 2 and 3); New American Etymology; Oxford's Junior Speaker, Senior Speaker; Scholar's Companion, revised; Smith's English Grammar (new edition); Tenney's Geology.

J. H. BUTLER, PHILADELPHIA.

2 copies each of the following books: Worcester's New Primary Speller, New Pronouncing Speller; Franklin Primary Arithmetic, Elementary Arithmetic and Key, Written Arithmetic and Key, Elementary Algebra and Key; Seaver and Walton's Mental Arithmetic, Logarithmic and Trigonometric Tables; Adams's Advanced Speller; Souder's History of the United States.

CASSELL & CO., LONDON, PARIS, AND NEW YORK.

Adams's Dictionary; Brewer's Dictionary; French Dictionary; German Dictionary; Latin Dictionary; Encyclo. Dictionary, Vols. 1-6; Morley's First Sketch of English Literature; Young Folks' History of England; Marlborough French Grammar; Marlborough German Grammar; Textile Fabrics; Steel and Iron; Woolens and Worsted; Practical Mechanics; Cutting Tools; Hand-railing; Applied Mechanics; Drawing for Bricklayers; Building Construction; Drawing for Cabinet-makers; Drawing for Carpenters; Gothic Stonework; Linear Drawing; Drawing for Machinists; Drawing for Metal-Plate Workers; Model Drawing; Projection; Practical Perspective; Drawing for Stone-Masons; Systematic Drawing.

COWPERTHWAIT & CO., PHILADELPHIA.

Monroe's New Readers, No. I-V; Monroe's First Steps in Spelling, Practical Speller; How to Write, Powell; Appgar's Geographical Drawing-Book; Warren's New Primary Geography, Brief Course in Geography, Common School Geography, New Physical Geography; Elementary Moral Lessons; How to Talk, Powell; The Child's History of the United States, Goodrich; Vocal and Physical Training, Monroe.

ELDRIDGE & BROTHER, PHILADELPHIA.

Houston's Elements of Physical Geography; Suplée's Handbook of Civil Government; Mills's Physiology, Hygiene, and Narcotics; Stuart's First Latin Book; Chase's Latin Grammar.

GINN, HEATH & CO., BOSTON.

*English Literature.*—Arnold, Manual of English Literature (historical and critical); Carpenter, Introduction to Anglo-Saxon (grammar and reader); Harrison & Sharp, Beowulf (text and glossary); Classical English Reader (with explanatory and critical foot-notes); Thom, Two Shakespeare Examinations; Lambert, Memory Gems (for primary, intermediate, and advanced classes); Yonge, Scott's Quentin Durward (classics for children).

*English Grammar.*—Gilmore, Outlines of the Art of Expression; Whitney & Knox, Elementary Lessons in English, Part I—"How to Speak and Write Correctly"; Knox, Teacher's Edition of above, with plans for oral lessons; Whitney, Essentials of English Grammar (for high schools).

*Latin.*—Allen & Greenough, Latin Grammar (revised edition, 1877), Cæsar (4 books, with vocabulary), Cicero (13 orations, or 8 orations with vocabulary), Ovid (with vocabulary); Allen, Latin Primer (for very young students), New Latin Method (with additional exercises by William Deutsch), Introduction to Latin Composition (new edition), Remnants of Early Latin (chiefly inscriptions); Blackburn, Latin Grammar and Exercises (in one volume); Crowell & Richardson, Brief History of Roman Literature (Bender); Greenough, Bucolics and Six Books of Virgil's *Æneid* (with vocabulary); Halsey, Etymology of Latin and Greek (with English derivatives); Keep, Essential Uses of the Moods in Greek and Latin; King, Latin Pronunciation (Roman, continental, and English methods); Leighton, Latin Lessons (rewritten, simplified, and carefully graded in 1877); Tetlow, Inductive Latin Lessons (exercises taken from Cæsar); Tomlinson, Manual for the Study of Latin Grammar (paper); Junior Student's Latin-English and English-Latin Lexicon (sheep); Whiton, Six Weeks' Preparation for Reading Cæsar.

*Greek.*—Allen, Medea of Euripides; D'Ooge, Sophocles's Antigone; Flagg, Hellenic Orations of Demosthenes; Goodwin, Greek Grammar (syntax based on the author's Moods and Tenses); Greek Moods and Tenses (the sixth edition); Goodwin & White, Anabasis (4 books, with full notes and references); Keep, Essential Uses of the Moods in Greek and Latin; Leighton, Greek Lessons (exercises from the first book of Anabasis); Liddell & Scott, Greek-English Lexicon (abridged); Seymour, Selected Odes of Pindar; Tarbell, Philipides of Demosthenes (from the Zürich edition of the text); White, First Lessons in Greek (exercises from the first 4 books of Anabasis).

*Mathematics.*—Byerly, Differential Calculus, Integral Calculus; Halsted, Metrical Geometry (an elementary treatise on mensuration); Hardy, Elements of Quaternions; Hill, Geometry for Beginners; Wentworth, Elements of Algebra, Complete Algebra, Plane and Solid Geometry, Plane and Spherical Trigonometry, Plane and Spherical Trigonometry and Surveying and Navigation, Plane and Spherical Trigonometry and Surveying, with tables; Wentworth & Hill, Five-Place Logarithmic and Trigonometric Tables (seven tables), Five-Place Logarithmic and Trigonometric Tables (complete edition), Practical Arithmetic, Examination Manuals: (I) Arithmetic, (II) Algebra, Exercise Manual: (II) Algebra;\* Wheeler, Plane and Spherical Trigonometry and Tables; Seelye, Hickok's Empirical Psychology, Moral Science.

*Modern Languages.*—Boisen, Preparatory Book of German Prose †; Deutsch, German Reader, Colloquial Exercises; Hodges, Course in Scientific German; Knapp, Grammar of the Modern Spanish Language, Modern Spanish Readings (with notes and vocabulary), Modern French Readings (for a year's study); Sheldon, Short German Grammar (for high schools and colleges).

*Science.*—Gage, Elements of Physics; Shaler, Primer of Geology.

*Geographies, etc.*—Globe Hand-Book (120 pages, furnished free with globe); Hall, Our World (No. 1), Our World (No. 2).

*Music.*—Caswell & Ryan, Time and Tune Book, Book I.

*The National Music Course.*—Eichberg, Fifth, or High School Music Reader, Girl's High School Music Reader, Supplement to High School Music Reader; Mason, Primary, or First Music Reader (adapted to rote singing), Second Music Reader (only major scale in nine keys need), Third Music Reader (songs based on the triads and chords taught in the charts), Intermediate Music Reader (second and third readers bound together), The Teacher's Manual, National Hymn and Tune Book (for female voices and for mixed voices), Independent Music Reader (for upper classes in grammar school), Independent Reader and Hymn and Tune Book (mixed voices) combined; Sharland, Fourth Music Reader (for advanced grades of grammar schools) abridged.

*Miscellaneous.*—Lanman, Sanskrit Reader (with vocabulary and notes); March, A-B-C Book (based on the phonic method); Monoyer, Sight Test for Schools (mounted); Stevens, Yale Examination Papers (including Sheffield Scientific School); Whitaker, Wood-working Tools; How to Use Them.

\* The last two may be had in one volume.

† Notes and text may be had separate.

## IVISON, BLAKEMAN, TAYLOR &amp; CO., NEW YORK CITY.

Swinton's Readers (Numbers I-V); Swinton's Introductory Geography, Grammar School Geography (six numbers), Complete Course in Geography; Scribner's Geographical Reader and Primer; The Literary Reader; Kerl's Language Lessons; Kerl's Shorter Course in English Grammar; Kerl's Common School Grammar; Kerl's Comprehensive English Grammar; Swinton's New Word Analysis; Common School Dictionary of the English Language, Webster; Two dozen copies Spencerian Writing Books; The New Bryant and Stratton High School Bookkeeping; Fish's Arithmetic (Numbers 1 and 2); Robinson's Complete Arithmetic; Guyot's Physical Geography; How Plants Grow, Gray; Gray's Lessons in Botany; Gray's New Manual of Botany; Gray's School and Field Book of Botany; Gray's Botanical Text-Book; Outlines of the World's History, Swinton; First Lessons in Our Country's History, Swinton; A Condensed School History of the United States; Elementary Manual of Chemistry; New Text-Book of Chemistry; New Text-Book of Physics; A Short Course in Civil Government; The Geological Story Briefly Told; Manual of Geology, Dana; Complete Course with the German Language; Practical French Course; Elements of Zoology, Tenney; A Descriptive Atlas of the United States.

## J. B. LIPPINCOTT CO., PHILADELPHIA.

Full set of Worcester's Dictionaries; Set of Readers, Willson, Numbers I-V; Primary Analytical Arithmetic; Intermediate Analytical Arithmetic; Higher Analytical Arithmetic; Common School Arithmetic; Lippincott's Pronouncing Biographical Dictionary; New Elementary Algebra; Astronomy for Schools and General Readers; Lessons in Chemistry, Greene.

## MACMILLAN &amp; CO., NEW YORK AND LONDON.

Guest's Lectures; Huxley's Physiology; Lockyer's Astronomy; Geikie's Physical Geography; Mrs. Fawcett's Political Economy; Jevons's Logic; Stewart's Physics; Thompson's Electricity; Masson's French Dictionary; Morris's English Grammar; Tanner's Agricultural Practice; Ward's Poets, 4 volumes, student's edition; set Globe Readings; Huxley's Physiography; Huxley and Martin's Biology; Tait on Heat; Tait on Light; Calderwood's Moral Philosophy; Foster and Langley's Physiology; Fawcett's Manual of Political Economy; Todhunter's Euclid, Algebra for Beginners, College Algebra, Plane Trigonometry, Conic Sections, Differential Calculus, Integral Calculus; Roscoe's Chemistry; Calderwood on Teaching; Fitch on Teaching.

## JOHN MURPHY, BALTIMORE AND NEW YORK.

Lessons in English Literature.

## THOMAS NELSON &amp; SONS, NEW YORK CITY.

World at Home Readers (I to VI); Morrison's Grammar; English Language; Royal Drawing Books; Royal History of England and Scotland; Collier's British History, Great Events, Senior Class Book, Advanced Class Book, Outlines of History, British Empire, Junior Class Book, English Literature; Bryce's First and Second Latin and Greek Books, Elementary Latin Grammar; Blaikie's Bible History; Chemistry of Common Things; Principles of Agriculture; Elementary Mechanics; Science of Home Life, 2 vols.; Model Notes of Lessons; Moral Subjects; Scott's Reader.

## PORTER &amp; COATES, PHILADELPHIA.

Set Normal Readers (Numbers I-V); Primary Spelling Book, Buckwalter; Comprehensive Spelling Book, Buckwalter; Set Raub's Arithmetics; Lessons in English; Practical English Grammar.

## POTTER, AINSWORTH &amp; CO., NEW YORK CITY.

First Book in Natural Philosophy; First Book in Physiology; First Book in Astronomy; Astronomy for Schools and Academies; Payson, Duntou & Scribner's Single Entry Bookkeeping, Double Entry Bookkeeping, Manual of Penmanship; complete set of Payson, Duntou & Scribner's Penmanship (12 numbers); Handbook of National System of Penmanship; Industrial Drawing, Bartholomew (Numbers 1 and 2); set of Bartholomew's System of Industrial Drawing (18 numbers); How to Teach Bartholomew's System of Drawing; set of six composition books; blank books for book-keeping.

## RAND, McNALLY &amp; CO., CHICAGO, ILLINOIS.

Indexed Atlas of the World.

GEO. SHERWOOD & CO., CHICAGO.

Set Model Readers; Model History; Civil Government of Illinois; Civil Government of Michigan; Sewall's Botany; Rhetoric Made Racy; Haynie's Analysis; set Writing Spellers; Class Register, No. 1; Sherwood's Register; Walker's Register, No. 1; Business Reader; Student's Reader, parts; Little Folks' Model Arithmetic; Model Elementary Arithmetic; Model Complete Arithmetic; dozen circulars of each kind.

TAINTOR BROTHERS, MERRILL & CO., NEW YORK.

Franklin Readers; Campbell's Concise School History of the United States.

VAN ANTWERP, BRAGG & CO., CINCINNATI.

Revised First Reader, Second Reader, Third Reader, Fourth Reader, Fifth Reader, Sixth Reader; Ray's Plain and Solid Geometry, Geometry and Trigonometry, Analytical Geometry, Astronomy, Surveying and Navigation, Differential and Integral Calculus; Hepburn's Rhetoric; Eclectic Primary History; Eclectic United States History; Thalheimer's England, General History, Ancient History, Modern and Mediæval History.

## SCHOOL APPARATUS.

[NOTE.—For physical and chemical apparatus, see p. 127.]

D. APPLETON & CO., NEW YORK.

Reading charts, with stands; writing charts, with stands; music charts, with stands and manual; Cornell's outline maps; Henslow's botanical charts; Linton's historical charts.

A. L. BANCROFT & CO., SAN FRANCISCO, CAL.

Bancroft's charts of geography, geographical definition, history, and physiology; Finch's arithmetical chart; Montgomery's revolving chart.

E. H. BUTLER & CO., PHILADELPHIA, PA.

Reading charts, 36 numbers, with color chart, chart of form, and time chart; chart primer; Mitchell's outline maps, with key.

BUFFALO SCHOOL FURNITURE COMPANY, BUFFALO, N. Y.

New paragon desks, full set, double and single; 1 single-back seat; 2 double-back seats; 1 single box desk; 1 single study front desk; 1 tablet settee; 2 dozen kindergarten chairs; large kindergarten table; 6 small kindergarten tables.

BUREAU OF EDUCATION.

Cubes, weights, and measures illustrating metric system; relative globe, relative time globe, relief globe, blackboard globe, and ordinary terrestrial globes, large and small; relief maps of Italy and Switzerland; large framed maps of Eastern and Western Hemispheres and Canada; set of drawing models; set of Boyd's object lessons; Smith's map of the United States; 4 Warman's school charts; 6 pictures of Swiss scenery.

COWPERTHWAIT & CO., PHILADELPHIA, PA.

Set of Monroe's vocal gymnastic charts, including Bell's Visible Speech; set of Monroe's reading charts.

DETROIT RADIATOR CO., DETROIT, MICH.

School radiator.

S. T. ENOS, ETNA, ILL.

"Educational Device," framed.

## 90 EDUCATIONAL EXHIBITS AT THE NEW ORLEANS EXPOSITION.

GINN, HEATH & CO., BOSTON, MASS.

Mason's musical charts; terrestrial globe (12-inch).

LOUISA J. KIRKWOOD, NEW YORK CITY.

School sewing-box, containing a supply of needles, thread, thimbles, scissors, pins, emery, cushions, and thimble-bags, 400 basted sewing sample patches, arranged in eight graded lessons.

NEW YORK CRAYON COMPANY.

Plain white chalk crayons; enameled white chalk crayons (dustless); enameled colored chalk crayons (dustless); Conklin's blackboard erasers; boxes pastel crayons, No. 2; boxes pastel crayons, No. 1; soapstone slate pencils; wire-bound slates; pencil-holding slates; Lehigh slates.

NEW YORK SILICATE BOOK SLATE CO.

Holly blackboard; daisy blackboard; young artist blackboard; No. 1 easel and blackboard; No. 2 easel and blackboard; No. 3 roll and blackboard; (pocket) book slate, with interleaves; (quartz) book slate, without interleaves, popular school size; (crystal) book slate, without interleaves, large size; (silica) book slate, same as No. 14; (quartz) book slate, with interleaves; (stone) book slate, with interleaves, medium size; (mineral) book slate, with interleaves, largest size; daily class report for teachers' use, ruled for daily recitation marks of 50 pupils.

*For office use.*—(Silex) book slate, indelibly ruled dollar columns and horizontal lines, medium size; (flint) book slate, indelibly ruled dollar columns and horizontal lines, large size; daily memoranda for vest pocket, interleaves; forget-me-not ladies' shopping book, interleaves; every-day book slate, interleaves, calendar if desired; minute book slate, extra interleaves; gem book slate, interleaves; journal book slate, plain title, extra interleaves, horizontal ruling; merchants' book slate, extra interleaves.

*For desk or office use.*—(Agate) book slate; centennial book slate, ruled interleaves; (diamond) book slate, with interleaves; (glass) book slate, indelibly ruled dollar columns and horizontal lines; conductors' book slate, black cloth cover, opening at end, short.

PARMENTER CRAYON CO., WALTHAM, MASS.

Crayons in ten colors, tastefully arranged upon a revolving cylinder within a show case.

PEOPLE'S PUBLISHING CO., CHICAGO, ILL.

The People's Illustrated and Descriptive Family Atlas.

RAND, McNALLY & CO., CHICAGO, ILL.

Seven maps in case.

CHAS. SCRIBNER'S SONS, NEW YORK CITY.

Set Trouvelot astronomical charts.

BETH THOMAS CLOCK CO., THOMASTON, CONN.

Two clocks, one each for library and kindergarten.

GEO. SHILLING, WASHINGTON, D. C.

Six engineering instruments with case for them, as follows:

The *Engineer's Transit* has two horizontal plates, moving freely upon each other. The upper or vernier plate is of larger diameter than the lower plate or circle, and has at the circumference a rectangular downward projection, within which the circle is closely fitted to exclude dust, grit, etc., from the divisions of the circle and the verniers, which are on the lower side of the vernier plate. Apertures are cut and fitted with porcelain shades in the vernier plate directly above the verniers, revealing the same and an equal space of the circle around which they travel. At the edges of the

apertures recesses are cut, into which pieces of plate glass are closely fitted, affording protection to the circle and verniers, and also excluding dust, moisture, etc. On top of the vernier plate is a compass central to the vertical axis; the needle is  $4\frac{1}{2}$  inches long, and is provided with a lifter to release it from the pin when the instrument is not in use. The vertical axis consists of two parts, the internal and the external; the internal axis is connected with the vernier plate and the external axis with the circle. The external axis is also fitted into a shank, at the upper end of which is a circular plate which is 5" in diameter (called the upper parallel plate), containing the four leveling screws, placed opposite each other at equal distances apart. To the lower end of the shank a segment of a ball is attached, which works in a socket-plate held against the under side of the lower parallel plate. This plate has a large circular opening in the middle, which permits the socket-plate that secures the whole instrument to the lower parallel plate to be shifted for position; thus, for instance, when an engineer desires to locate the transit over a given point, he can do so by means of this shifting device, without changing the position of the tripod legs. The clamp for the horizontal circle embraces the external center immediately above its fitting in the shank, and is connected with the upper parallel plate by means of the tangent or pushing-screw, opposite to and in line with which is a spring-box containing a piston worked by a strong spiral spring, imparting a counter motion. Hence, by tightening the clamp, the whole instrument can be moved any small quantity of space by turning the pushing-screw. In like manner the clamp for the vernier plate embraces the external axis immediately below the horizontal circle, and is connected with the vernier plate by means of a German-silver tangent screw, thus freeing the circle from all incumbrance.

The transit has two cylindrical spirit-levels mounted at right angles to each other, one on the vernier plate, the other on one of the standards.

At the top of the standards V-shaped bearings are cut to receive the pivots of the telescope axis. One of the bearings is adjustable and can be raised or lowered by means of two capstan-headed screws opposite each other, the purpose of which is to bring the telescope axis into the horizontal plane, thus securing a motion of the telescope parallel to the vertical axis of the instrument. The telescope may be held in any position around its axis by a clamp, the collar of which embraces one end of the telescope axis, and when clamped will hold the telescope in a rigid position, which can then be controlled by means of the tangent screw connecting the clamp with the standard. At the opposite end of the axis is mounted the vertical circle (5" in diameter) having a silver ring let into its rim for the purpose of receiving the divisions. The vertical circle is divided to read to 20 minutes and the vernier to read to 30 seconds. The telescope has an attached level 6" long mounted on the under side, this level having horizontal and vertical adjustments for the purpose of bringing it into parallelism with the line of collimation of the telescope.

The eye-piece, instead of focusing upon the diaphragm by a simple slide or by rack and pinion, is made to move in a straight line in and out by a milled rotating collar carrying a female screw, which engages with pins upon the eye-piece, giving a slow motion without shake, enabling the adjustment for different eyes to be made quickly and easily, and once made to be retained without liability to disarrangement. This arrangement for focusing the terrestrial eye-piece on the cross-wires is used on all telescopes having a direct eye-piece.

*Engineer's Wye-Level.*—The Y's, leveling-plates, etc., are made as in the engineer's transit, which permits the use of a much longer center than usual, gives greater solidity to the instrument as a whole, and materially increases the nicety and accuracy of all work. The level-bar is 13" long and is screwed directly upon the center-flange, immediately below which the clamp embraces the center, and is connected with the upper parallel plate by means of the tangent screws. At each end of the bar Y's are mounted, one of which has a vertical adjustment for the purpose of bringing the Y's into a line horizontal to the vertical axis of the instrument. These Y's support the telescope, which is confined in them by means of hinged clips at the top. The telescope is 17" long, the objective  $1\frac{1}{4}$ " in diameter, and has a clear opening of  $1\frac{1}{4}$ ".

A valuable and original improvement is made by adding collars of bell-metal to the telescope, in which the latter rotates, instead of in the Y's. In one of the collars a stop is placed, permitting the telescope to be revolved exactly  $180^\circ$ . When the usual clamps over the Y's are lifted, the disengagement of pins with the collars permits the revolution of the whole combination, as in the ordinary level, except that the collars revolve in the Y's instead of the telescope. The advantages derived from this improvement are many. It permits a much more rapid and accurate collimation adjustment, since, the revolution of the telescope on its axis being exactly  $180^\circ$ , the time usually spent in placing the wires horizontal and vertical is gained; for the motion in the collars being concentric, the axis maintains its direction unchanged in any position of the telescope in them, and once adjusted, is not liable to derangement from wear; as, instead of the usual two bearing surfaces in the Y's, the telescope revolves in the accurately-fitting collars, which are so made as to exclude dust, grit,

etc. The life and value of the level are thus indefinitely increased, since there is no appreciable wear of the bearings of the telescope.

The 6-inch *Theodolite* consists of two horizontal plates—the upper or vernier being of less diameter than the lower plate or limb. Within the circumference of the lower plate is let in a silver ring to receive the graduations. On opposite sides of the vernier plate, or 180° apart, silver arcs are let in, forming the verniers, which are about .002 of an inch lower than the graduation of the circle; as the reading of the divisions through the reading microscope is performed at an angle of about 60° to the plane of the division, it follows that if the outer division is a trifle higher than the inner a continuous line will be the result when any two of the lines of the divisions are opposite each other. The reading of the verniers is assisted by having porcelain shades immediately above them, to mellow and subdue the light.

The vernier plate bears freely upon the lower plate, and meets the lower limb within the circle at a distance of nine-sixteenths inches from the periphery, both having a horizontal motion by means of the vertical axis. This axis consists of two parts, the external and internal; the former is secured to the graduated circle and the latter to the vernier plate. The form of both vertical centers is conical and they are ground into each other, having an easy and very steady motion. The external center also fits into an upright shank having three arms or claws carrying the leveling screws, which rest directly upon the tripod head. The lower limb or circle is graduated to read to 10 minutes, and is subdivided by the vernier to 10 seconds, which are easily read off by aid of the attached microscopes.

The lower horizontal limb can be fixed in any position by tightening the clamp-screw, which causes the collar of the clamp to embrace the external axis and prevents its moving; but if it is desired that it should be fixed in some precise position more exactly than can be done by the hand alone, the whole instrument, when thus clamped, can be moved any small quantity by means of the slow-motion screw which is attached to the shank (this slow motion screw being fitted with a spring box containing a piston controlled by a powerful spiral spring securing a counter motion). In like manner the upper or vernier plate can be fixed to the lower in any position by a clamp attached to the external center of the instrument and connected with the vernier plate by means of the tangent screw, thus freeing the divided circle from any incumbrance.

Upon the plane of the vernier plate a universal adjustable level is placed, its use being to determine the horizontal setting of the instrument. On the vernier plate the upright standards carrying the telescope and circle are placed. These standards are slotted for Y's to receive the axis of the telescope. The axis of the telescope is secured in the Y's by catches or clips hinged to the top of the standard, forming a self-acting, strong, and durable fastening, easy to use and far superior to the swinging bars usually seen on instruments. The Y in one of the standards is adjustable, and can be raised or lowered by means of a stout screw which has a plain fitting in the standard, and is held in place by a fine steel pin which fits into a groove turned in the shank of the screw. The Y carries a female thread into which the upper end of the screw works; hence by turning the screw the Y can be raised or lowered at will, and especial merit is claimed for this appliance for securing a true vertical motion of the telescope.

The clamp for the telescope axis is a hinged collar having two horizontal projections opposite the hinge, said projections being slotted to receive a strong German-silver screw which is fastened to the lower projections by means of a steel pin on which it swings vertically. This screw has a milled screw-nut which slips over the projection of the upper half of the collar, and by turning the screw-nut, one revolution may be made to tighten the two half collars on the telescope axis. This clamp is easily operated, being permanent in its place and independent of the axis, and offers no inconvenience or obstruction when the axis is being reversed in the standards for the purpose of testing the line of collimation.

The fulcrum of the tangent screw controlling the telescope works in stationary half balls, into which creases are cut coincident to creases in the tangent screw, mounted on one of the standards. One end of the tangent screw works in a female thread or ball secured to the tail-piece of, and controls, the clamp. This kind of tangent screw is used on all instruments made by George Shilling, except where pushing-screws are used.

The telescope is 11" long; the object glass 1½" clear aperture, having an inverting eye-piece magnifying 16 times; there is a detachable striding level longitudinal with the telescope. The striding level, when properly adjusted, is parallel with the line of collimation, and is used to determine its horizontality. The axis of the telescope carries a circle 5" in diameter, having a silver rim laid in, upon which is indicated the graduations, which are divided to 20 minutes, and subdivided by means of the vernier to read to 30 seconds.

The telescope drawer carrying the reticule and achromatic eye-piece is moved out and in, in a straight line, by means of a rack and pinion.



The *gradiënter*—used in preliminary triangulations to measure angles of altitude and azimuth, and also in distance measurements (telemeter work). Like the theodolite, it has two horizontal plates; the lower one, or circle, is fixed to the shank in which the center carrying the vernier plate revolves. Within the periphery of the circle a silver ring is laid in, upon which the division is ruled. The diameter of the circle at the edge of reading is 34". Silver arcs are inlaid in the vernier plate opposite each other (180° apart), forming the verniers. At the lower end of the shank are three equidistant arms carrying the leveling screws, which rest directly upon the tripod head. The construction is similar to that described for the theodolite, having, however, no repeating motion.

The vertical axis and the standard are cast in one continuous piece, the vernier plate being screwed to the base of the standard. The standards carrying the axis of the telescope being 2" above the vernier plate, allow about 30° of elevation and depression. The tops of the standards are slotted for Y's, and, as in the description given of the theodolite, the axis of the telescope is held in place by movable clips, to permit of ready reversion to ascertain whether adjustment has been secured.

A universal level is mounted upon the base of the standard central to the vertical axis, its use being, as readily understood, to determine the exact horizontal position of the instrument.

The clamp for the telescope axis is the same as that described for the theodolite, with the exception that the tail-piece has a horizontal projection carried into a slot cut in one of the standards, and is there controlled by means of a pushing-screw and counter-motion piston in a box, working against a strong spiral spring.

The telescope resting its axis in the Y's of the standard as above described, is 9" long, having an object glass of 1½" aperture in the clear, with a movable cap, a rack and pinion to secure the inward and outward motion of the drawer which contains the adjustable stadia wires for telemeter observations, and an achromatic eye-piece. To one end of the axis of the telescope is rigidly attached a vernier index or nonius, which follows the motion of the telescope and moves upon the inner arc of a circle which is divided to 30 minutes, and is subdivided by means of the nonius to read to 30 seconds. The telescope carries a detachable compass 5" long, upon which rests an adjustable graduated ether-level. The compass needle can be secured or released by means of a small pin or lifter.

The vernier plate is secured to the lower limb or circle by means of a clamp which travels on the outer edge of the lower horizontal plane, and assists the tangent screw in securing a horizontal motion to the entire instrument above the horizontal circle.

VAN ANTWERP & CO., CINCINNATI, OHIO.

McGuffey's revised primary charts; eclectic wall maps.

A. G. WHITCOMB, BOSTON, MASS.

One teacher's desk; 1 high school lid desk; 1 primary lid desk; 7 graded single desks.

## KINDERGARTEN.

### DESCRIPTION OF THE SCHOOL.

In the southwest corner of the gallery in the Government building a room 35 feet long by 17 feet wide has been partitioned off for a kindergarten. The walls are of white cotton cloth with a red border above and a brown one below, each about two feet wide. Pictures illustrating animal life, groups of picture cards, and the children's first lessons in color, form, and number, in the shape of paper chains, decorate the walls. Over the mantel-piece hangs a picture of the Madonna and Child, to which little faces lovingly turn as the children sing, "Jesus once was a little child." Opposite this picture hangs a handsome clock, furnished by the Seth Thomas Clock Co., Thomaston, Conn.

White muslin curtains, bright lambrequins, and an ingrain rug, add to the home-like appearance of the room.

On cold days a cheerful fire is a center of attraction, not only to the little ones, but to the benumbed fingers and toes of chance visitors, who frequently remark, "This is the most pleasant place I've seen."

In one corner stands a cabinet, well filled with every variety of kindergarten material, generously loaned by Milton Bradley, Springfield, Mass.

Upon the rug, near by, are arranged the beautiful tables and chairs provided by the Buffalo Furniture Company.

The munificence of Mr. A. Weber, Fifth avenue, corner of Sixteenth street, New York, supplies, in addition, an elegant inlaid upright piano, whose sweet strains seldom fail to draw a delighted throng to the windows, through which the spectators witness the marching and games of the children.

The object of this kindergarten, as expressed by the Commissioner of Education, being to exhibit perfection in detail rather than numbers, only sixteen children, between the ages of four and seven, have been admitted. With one exception these children have never before attended a kindergarten. The novelty and pleasure of their occupations seem to render them quite unconscious of the presence of occasional visitors, who cannot resist the temptation to step inside, now and then.

Of course, in so short a time only a small portion of the regular kindergarten course can be given; but it affords at least a glimpse of a living kindergarten to many parents and teachers who have become interested in the subject through books. They see how the theories of Froebel, the founder of the system, are applied to the children, for whose symmetrical development they were elaborated by him. To remind the reader what those theories are, statements of them from recognized authorities are presented.

The theory which considers the universe as an organic whole and man as a member of the whole in all, and which will allow the laws of education to be dictated chiefly by the laws of life, governed Froebel through and through, governs the present time, and will make its influence felt more and more in the educational field.

The mission of Froebel is to give to education, not a one-sided, but an all-sided foundation. (Dr. Richard Lange.)

The purpose of the kindergarten is to take the oversight of children before they are ready for school life; to exert an influence over their whole being in correspondence with its nature; to strengthen their bodily powers; to exercise their senses; to employ the awakening mind; to make them thoughtfully acquainted with the world of nature and of man; to guide their heart and soul in a right direction, and lead them to the Origin of all life and to union with Him. (Froebel.)

Man must not be instructed, but developed. I separate instruction from development very sharply. (Froebel.)

Froebel gives to children *experience* instead of instruction; he puts action in the place of abstract learning. (Baroness Marenholtz-Bulow.)

Work, which is at the same time fulfillment of duty, is the only true basis of moral culture; but it is necessary that such work should also satisfy the child's instinct of love, and the object of it must therefore be to give pleasure to others. With this end in view difficulties will be overcome with courage and cheerfulness, and the only effectual barrier will thus be opposed to selfishness. A true system of national education, such as the reforms of modern times render necessary, can only be established by making work, such work as shall connect artistic dexterity with the cultivation of intelligence, the basis of education. (Baroness Marenholtz-Bulow.)

Two kindergartners were employed during the continuance of the Exposition, Mrs. Anna B. Ogden and Miss May Crosby, both of Washington, D. C. The former has made the application of kindergarten principles in the home and in classes of quite young children the chief object of her life and study for the past twelve years.

Prof. E. A. Spring, of Perth Amboy, N. J., rendered valuable help in giving the best quality of artists' clay for the exercises in modeling, and interesting lessons in its use.

The eminent success of the kindergarten class is primarily due to the Hon. John Eatou, Commissioner of Education, whose belief in the wisdom of the kindergarten system impels him to give the fullest information of its principles and methods, and whose foresight enables him to embrace every opportunity to make it a power for improvement in the education of children.

KINDERGARTEN EXHIBITS.

MILTON BRADLEY & CO., SPRINGFIELD, MASS.

First gift (6 worsted balls in box); two second gifts (ball, cube, and cylinder); twelve third gifts; twelve fourth gifts; twelve fifth gifts; twelve sixth gifts; one package seventh gift, B (right-angled isosceles triangles); three boxes eighth gift (colored sticks from 1 to 5 inches); twelve boxes jointed slats; two bunches colored slats; three boxes rings (ninth gift); twelve wooden tiles; two boxes pegs for tile sticking; two boxes inch straws for chains; four packages papers for stringing; four boxes parquetry; two boxes Mrs. Hailman's second gift (beads); two boxes wooden balls; eight packages cutting and folding paper squares; one package circular folding papers; one package triangular folding papers; fifteen packages weaving material, twelve steel weaving needles; one package (180) pricked cards; twelve paper folders; twelve pricking needles; twelve pricking pads; twelve ruled slates; twelve ruled drawing books; large package picture cards unpricked; six charts embroidery design cards; one Froebel institute blocks arranged by Mrs. Hailman; one set plane forms (triangular tablets) arranged by Mrs. Hailman; one set colored sticks arranged by Mrs. Hailman; one set lentils (wooden, six colors) arranged by Mrs. Hailman; Mrs. Hailman's second gift, beads, to illustrate number.

BUREAU OF EDUCATION, WASHINGTON, D. C.

Kindergarten charts, showing location of kindergärten and their increase in ten years.

CALIFORNIA KINDERGARTEN TRAINING SCHOOL.

*Mrs. Kate Smith Wiggin, Principal.*

One school each of paper cutting, paper folding, weaving, drawing, sewing, pricking, slat work, and paper twining; one hundred copies report of free kindergärten.

CHEROKEE ORPHAN ASYLUM, INDIAN TERRITORY.

*Mrs. Phæbe Riddell, instructor.*

Four charts of mounted work done by children, paper folding and embroidery; two charts mounted weaving mats; six sachet bags (weaving mats); two embroidered cardboard wall pockets; one box clay modeling.

NATIONAL KINDERGARTEN, WASHINGTON, D. C.

*Mrs. Louise Pollock, Principal.*

One group blocks (fifth gift, B); two embroidered work boxes; five embroidered design cards; one embroidered scrap bag; one embroidered letter case; two cornucopius (weaving); two sachet bags (weaving); one watch case; two parquetry design cards; two specimens cork work; five specimens folding; two specimens slat work; three specimens paper cutting; four drawing patterns; six worsted balls.

EMMA MARWEDEL, SAN FRANCISCO, CAL.

Labeled charts, viz: beginning with circular sewing in silk; flowers sewed; circular drawing and cutting; circular drawing invention; paper cutting; map drawing; circular drawing by children; arithmetic; botanical drawing; geometrical drawing; geometrical sewing.

The following material was also exhibited by Miss Marwedel in the Pacific Slope Division of the Woman's Department, under the supervision of Mrs. J. G. Lemon:

One series of ten pieces of children's work; one series of six pictures of California wild flowers made in paper by the normal class; two maps—California and Bay of San Francisco. One picture of the kindergarten school building of Miss Marwedel; three large photographs of views of the Stanford Memorial Free Kindergarten School, San Francisco; one manuscript form, a concise history of kindergarten work in California, by Mrs. —.

E. STEIGER, 24 PARK PLACE, NEW YORK.

First gift (6 worsted balls in box); second gift (ball, cube, and cylinder); third gift; fourth gift; fifth gift; sixth gift; seventh gift (eight boxes); box connected slats; bunch loose slats; bundle sticks; package seeds; package shells; package corks; thirty-eight packages weaving material; three packages book-mark strips; dozen steel weaving needles; dozen wooden weaving needles; two wrappers for weaving mats; package paper for cutting; box artists' clay; box modeling tools and material (wax); package papers and straws; package sewing cards; package No. 758, weaving samples; package No. 712, thread games; box rings and half-rings, three sizes; package paper for interlacing; package drawing paper; package paper frames; package perforating material; box colors, brushes, etc., for painting; three leporello books (for mounting); one sample book of work; box silver baskets, etc., for perforating; box doll's furniture (cardboard); two portraits of Froebel; seventeen boxes "Occupations for home and family"; package paper folding; package drawing paper; package kindergarten tracts; copy Kraus's Kindergarten Guide; copy Watson's Calisthenics; copy Watson's Calisthenics and Gymnastics; copy Rhymes and Tales, Kriege; copy The Child, Kriege; copy The Kindergarten, Shirreff; copy The Kindergarten, Douai; copy Kindergarten Guide, Peabody; set Douai's Readers; copy "After the Kindergarten, What?" Mann and Peabody.

### KITCHEN GARDEN.

A kitchen garden (school) was conducted by Miss Olivia Tracy in the kindergarten room during March and April. Sessions were held in the afternoon four times a week. The pupils were girls from 7 to 10 years of age residing near the Exposition, and were quick to learn the exercises of the kitchen garden. Many visitors to the Exposition not only saw the class under instruction, but also studied the principles and methods of the system. At the close of the term of instruction a review lesson was given for the benefit of the public. It was well attended, and received the commendation of those present.

The kitchen-garden system is a combination of songs, exercises, and plays, designed to give a practical training in simple housework. It is divided into six parts or occupations, and comprehends the following details of domestic work: Kindling fires, waiting on the door, bed-making, sweeping and dusting, arranging and cleaning a room, laundry work, laying a dinner table in the due order of courses, etc. In connection with the arrangement of the table, the parts of beef and mutton, and the best way to cook and cut each, are taught.

The material used in the kitchen garden, and forming part of the exhibit of the Bureau of Education, was as follows:

Kitchen garden table on standards, length 9 feet by 24 and 22 inches high. Kitchen garden material as follows:

Occupation No. 1.

Occupation No. 2: 12 tea sets, 12 knives, forks, and spoons, 12 table boards, 12 table cloths, 48 napkins and rings, 12 towels with +, 12 towels plain, 12 dish pans.

Occupation No. 3: 12 brooms, 4 bean bags, dust pan and brush, whisk broom, feather duster, set of steps, 4 chairs, 2 bedsteads, 2 mattresses, 2 bolsters, 4 square pillows.

Occupation No. 4: 12 tubs, 12 wash boards, 12 scrubbing brushes, 12 jumping ropes, 4 clothes poles, 12 dozen clothes pins.

Occupation No. 5: 12 dinner sets, 12 portfolios, 24 white papers, set of designs, 24 pricking pads, 12 pricking needles, No. 20.

Occupation No. 6: 12 pairs of butter pans, 12 rolling pins, 12 baking pans, 12 cookie cutters, 12 biscuit cutters, 12 pie plates, 12 knives and forks, 12 muffin-rings, brick of clay, 2 sets bed-clothing, 12 pies washing.

### FITCH CRÈCHE.

This exhibit consisted of, first, a series of 17 frames, containing 11 photographs of the building, etc., a picture of Fitch Institute, a copy of the rules of the crèche, a copy of one day's record of the crèche, 2 cards with specimens of kindergarten work, and 3 photographs, respectively, of the founder, matron, and benefactor, properly lettered, so as to be a title for the exhibit. Second, a glass show-case containing samples of the uniforms, toilet articles, etc., constituting numbers 13-19, inclusive. Third, a cradle. Fourth, a crib.

## NORMAL SCHOOLS.

## MARYLAND STATE NORMAL SCHOOL, BALTIMORE.

## SEWING.

Sewing was introduced about a year before the specimens were sent to the Exhibition.

There were about 200 lady students. Ten per cent. had no knowledge of sewing. Some did not know how to thread a needle. At least one-half of them sewed badly and with difficulty.

## METHOD OF WORK.

A teacher was employed. The time assigned was one hour and a half, Wednesday afternoon. The lesson was compulsory. During the time thus occupied, the young men went out surveying. The sewing school was divided into sections of six. The head sewing teacher took one section for half an hour, thus giving a lesson to eighteen students in one week. Each of these students was assigned to a section, and gave them the same lesson that she had learned. In two weeks the whole school was fully and systematically at work—the regular lady teachers of the school acting as assistants to the sewing teacher. This plan has given entire satisfaction.

The sections are graded, and no student is permitted to leave her grade until she can do the work of it reasonably well. Cutting is taught as soon as the student is ready to begin to make garments. We propose to teach fitting to those who are prepared for it.

When a student has acquired some facility in plain sewing and shows some skill in the making of useful garments, no objection is made to her doing fancy work of any kind that good taste will sanction.

M. A. NEWELL,  
*Principal.*

## EXHIBIT.

Framed picture of State normal school; 5 framed photographs of blackboard work; 2 framed views of interior of rooms in normal school building; 3 framed plans for school-houses.

Portfolios containing the following: 11 original wall-paper designs, full size; 35 maps; 53 original designs from flowers in water-colors; 32 history charts and statements; 44 rapid crayon and water-color drawings; 11 plats and survey-bills; 293 botanical specimens (5 portfolios); 46 examination papers in bookkeeping; 73 essays on physiology; 31 examination papers on grammatical analysis; 26 original reading charts; 42 plans of normal school building and original plans for school-houses; 51 original designs wall-paper, carpets, etc., in water-colors; 48 graded drawings; model school work (3 portfolios); 32 drawing books from regular work.

List of articles contributed by 132 different pupils: 14 child's dresses, 10 handkerchiefs, 2 shopping-bags, 2 neckties, 2 corset-covers, 3 buffet-covers, 3 skirts, 27 aprons, wrapper (Mother Hubbard), 6 chemises, 3 pillow-shams, 14 ties, 2 infant's shirts, towel, 2 stand-covers, 6 child's skirts, child's shirt, 4 child's aprons, child's pants, 2 splashes, night robe, pillow-case, child's bib, toilet-set, 2 collars, purse, worsted edge, shirt, mat, 2 shoe receptacles, drawers, arnold apron, lace, Chinese lantern, stocking-bag, 2 slippers, 2 hoods, child's drawers, tray-cover, cushion, pin-cushion, shoe, fichu, chemise-yoke; samples of running, back-stitching, half back-stitching, hemming, over-seaming, felling, putting on the band and button-hole, by four pupils.

## STATE NORMAL AND TRAINING SCHOOL, FARMINGTON, ME.

4 photographs of buildings (from museum of Bureau of Education).

## TILESTON NORMAL SCHOOL, WILMINGTON, N. C.

Photographs of Tileston Normal School (1) with pupils, (2) with teachers and janitor, and (3) with classes in calisthenics; views of interior of building, and pho-

tograph of the principal, Miss Amy M. Bradley; 36 specimens of kindergarten work; specimens of drawing and designing: primary department, first class, 17, second class, 20, higher department, 39; examination papers: botany, 20 vols., physiology, 20 vols., geology, 20 vols., kindergarten department, 9 vols., primary department, 6 vols., intermediate department, 9 vols., grammar department, 9 vols., high and normal department, 11 vols.; maps of North America (6), N. E. States (2), Maryland, North Carolina, Virginia, West Virginia (2), South America (5), United States, Greece, and Europe.

## BUSINESS COLLEGES.

### GEM CITY BUSINESS COLLEGE, QUINCY, ILLINOIS.

3 framed specimens of penmanship.

### KENTUCKY UNIVERSITY BUSINESS COLLEGE, LEXINGTON, KY.

12 framed specimens of penmanship; system of bookkeeping and business accounts, with papers used in complete course of study.

### PIERCE'S COLLEGE OF BUSINESS, PHILADELPHIA, PA.

2 volumes of papers written in full business course.

## INSTITUTIONS FOR SECONDARY INSTRUCTION.

### NEW YORK TRADE SCHOOLS, NEW YORK CITY.

Specimens of work in plumbing, pattern making, and stone cutting, neatly arranged in a large case furnished by the schools.

### SAINT ALPHONSUS' PAROCHIAL SCHOOL, NEW ORLEANS.

*Mechanical drawings, colored.*—Steam fire-engine, Baldwin locomotive, French express engine, steam mining pump, Harris-Corliss engine.

*Architectural drawings, colored.*—Plan of the exterior of a railroad depot, plan of the exterior of a court-house, scene near New Orleans (oil painting), French villa, bourgeois residence, Saint Alphonsus' church, Saint Alphonsus' school, Lee's monument (India ink), public fountain (India ink), Château Vincennes (India ink), New York residence.

*Maps, 20 inches by 24 inches (water colors).*—United States, Europe, Asia, Africa, America, and the State of Louisiana with its parishes, by boys between the ages of 12 and 16.

*Busts of distinguished men, etc. (crayon drawings).*—Mozart, Haydn, Paganini, Grover Cleveland, Thomas A. Hendricks, child at prayer.

*Specimens of penmanship.*—Business writing by boys between the ages of 7 and 16.

A steamboat, 26 by 18, carved with a penknife by Charles Webb, aged 15.

Model of a stationary engine, cast iron, by William Johnson, aged 16.

### SHELDON JACKSON INSTITUTE, ALASKA.

[An industrial training school for Indian boys and girls.]

8 photographs, viz: Front view of Greek church, Sitka; side view of Greek church, Sitka; interior of Greek church, Sitka; totemic carvings and Chilkat shawl; custom-house, barracks, and castle, Sitka; totemic sticks and ruins of Hydah houses; Juneau, Alaska, 1882; house of native chief; 31 specimens kindergarten work; 6 plans of buildings of Sheldon Jackson Institute; 5 totems; eagle bowl; medicine rattle; 2 ducks; child's head; shark bowl; puffin bowl; babe and cradle; bone doll; model of canoe; set table mats; 3 hats; 2 toy hats; 20 baskets; 2 covered bottles; baby suit embroidered.

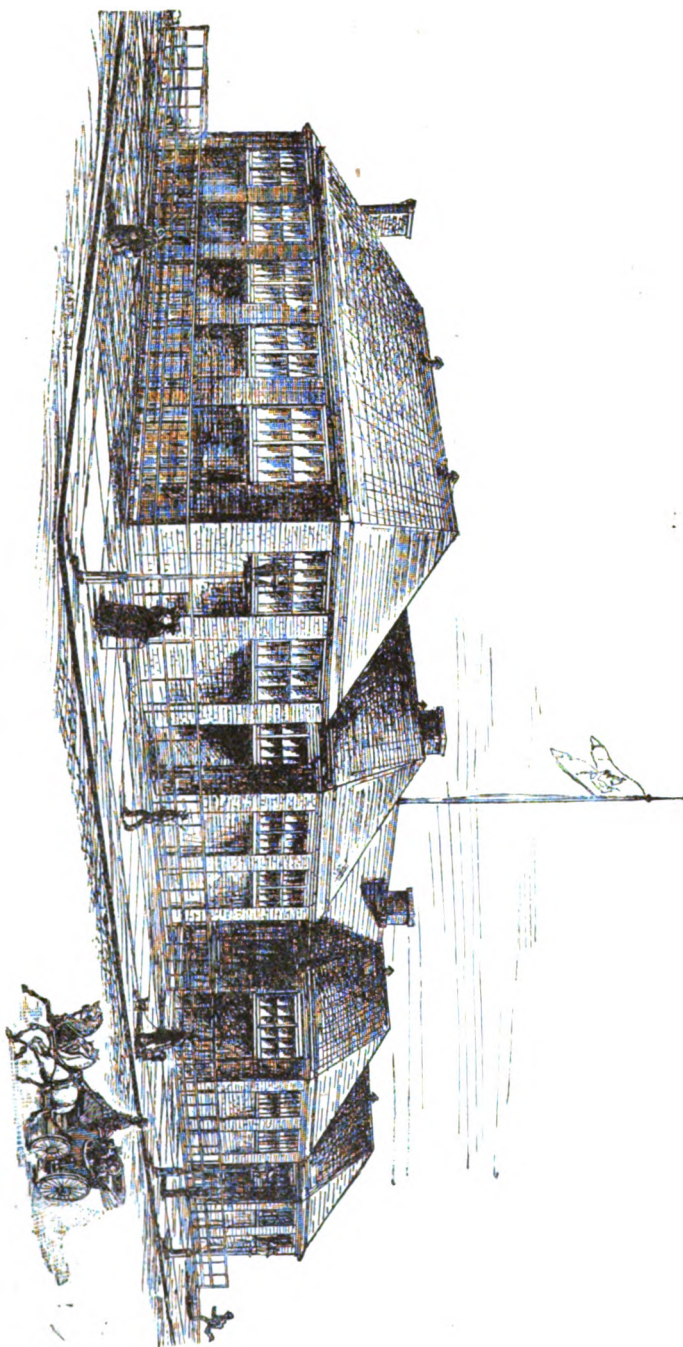


FIG. 44.—New York Trade School.

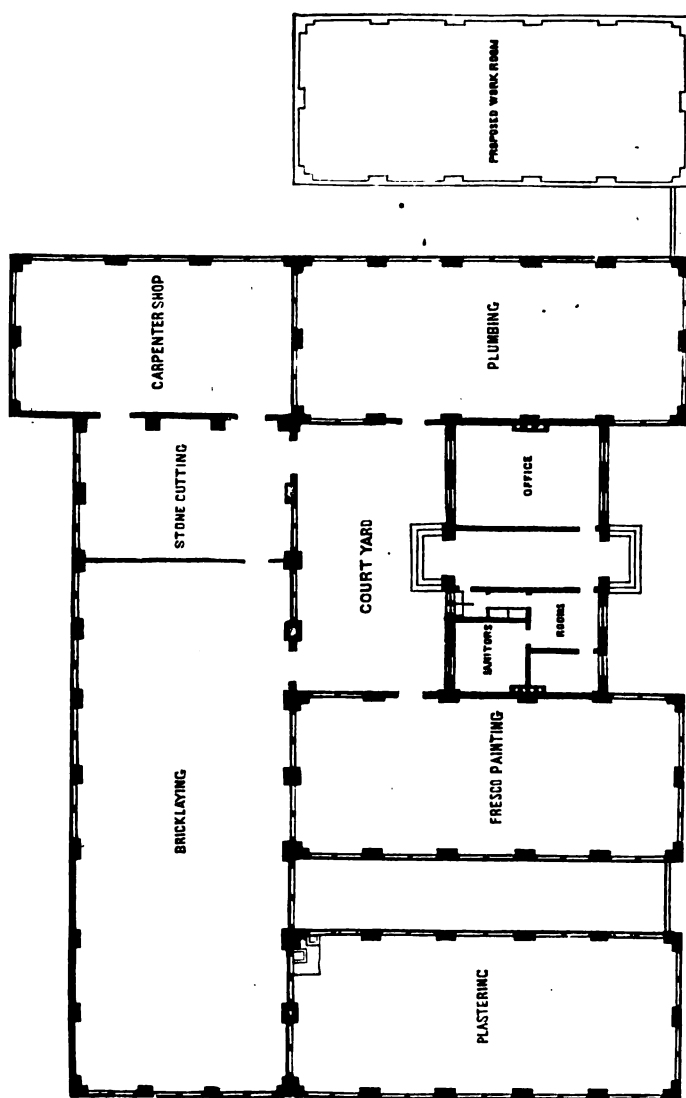


FIG. 45.—Floor plan, New York Trade Schools.



SOULÉ'S COMMERCIAL COLLEGE AND LITERARY INSTITUTE OF NEW ORLEANS, LA.

Samples of desks and furniture used in the commercial, academical, and English departments; sample of settees used in the lecture rooms; specimens of apparatus used in the physical and chemical departments; specimens from the college museum of mineralogy, phrenological busts, comparative zoölogy, etc.; astronomical, physiological, geographical, and geological maps, charts, etc.; drawings, models, and mathematical objects; specimens of books of accounts and commercial instruments of writing, penmanship, drawing, and grammatical and logical diagrams, work of students; the stenograph, or short-hand writing machine, in charge of a practical operator.

WORKINGMAN'S SCHOOL AND FREE KINDERGARTEN OF NEW YORK, NEW YORK CITY.

9 photographs, viz: Building of Workingman's School and Free Kindergarten of New York; school workshop I, school workshop II, school workshop III, casts in modeling room, modeling room, geography class, reception room, drawing class.

Exhibits from Technical Department: Clay cutting, 24 specimens; pasteboard work, 14 specimens; scroll work, 15 specimens; sawing, 6 specimens; wood-turning, 6 specimens; carpentry work, 2 specimens; 12 drawings.

Exhibits from Art Department: Four framed charcoal drawings, 20 plaster casts.

INSTITUTIONS FOR THE SUPERIOR INSTRUCTION OF WOMEN.

ANDERSON FEMALE SEMINARY, ANDERSON, S. C.

Photograph of seminary buildings, 4 oil paintings, 2 crayon sketches.

JUDSON FEMALE INSTITUTE, MARION, ALA.

This school was founded in 1839, and was incorporated by the legislature of Alabama in 1841. It is the property of the Alabama Baptist State Convention. Its affairs are in the hands of a board of trustees appointed by that body. Its officers and teachers all receive stipulated salaries; so that there is no one who is at all interested in having any pecuniary profits arise from its management. Its object is not that any one shall make money by it, but that the best educational advantages that this country can furnish may be offered to its patrons at the lowest cost attainable for such advantages. Its policy is to employ the most accomplished and skillful teachers in all its departments, to make ample provision for the comfort and health of its pupils, and to practice a wise economy in all the details of its management.

The college building is a large four-story structure of brick, with 250 feet front, and contains about eighty rooms.

The Judson exhibit in the World's Industrial and Cotton Centennial Exposition at New Orleans is intended to show the character of the work done in all the departments of the school.

I. *Kindergarten Department*.—Embossing on paper, embroidery, modeling in clay, drawing in pencil and pastel coloring, and the work done by the children in their study of colors (primary, secondary, and tertiary, illustrating their combinations in plaiting and weaving) and of geometric forms (surfaces and solids).

II. *Literary Department*.—(a) Fifteen volumes of manuscripts containing examination papers and exercises showing the daily school-room work in spelling, writing, geography, history, languages, mathematics, physical sciences, and intellectual and moral philosophy.

(b) Catalogues setting forth the organization of the school, and its curriculum and methods of instruction.

(c) Monthly issues of *Judson Echoes*, a paper published under the auspices of its literary societies.

(d) Blank forms of reports and diplomas, showing the system of rewards and honors.

III. *Department of Music*.—Compositions in the form of chorals, the bass being given, the other parts (soprano, alto, and tenor) the original work of pupils; analyses of various sonatas and fugues of Beethoven, Mozart, Clementi, Bach, and others; programmes of monthly recitals and concerts.

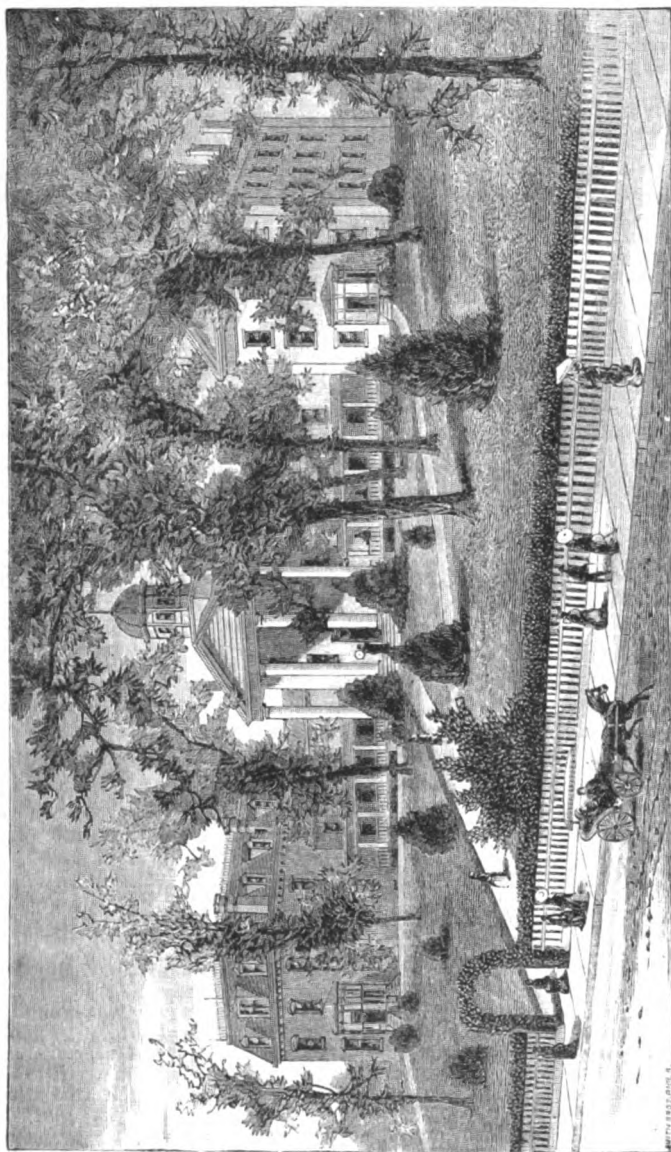


FIG. 46.—Judson Female Institute, Marion, Ala.

IV. *Department of Art.*—(a) Decorative art: Kensington, lustra (or iridescent) and tapestry painting, china painting in mineral colors and amber enamel, pastel drawing and painting, ancient and modern needlework, embracing Kensington and French embroidery, Queen Anne's darning, outlining, plush-stitch, arrasene, chenille, ribbon, appliqué, drawn linen work, a variety of stitches on canvas, crochet, knitting, and darned lace work.

(b) Drawing and painting: Outlines in pencil, charcoal, and crayons; studies in pencil, crayons, and charcoal, from the flat and the round, or from object; drawings from nature, such as fruit, flowers, etc., to which is added color in pastel, crayon, charcoal, water-colors, and oil, and portraiture from plaster casts and from nature.

## COLLEGES AND SCHOOLS OF SCIENCE.

### AGRICULTURAL AND MECHANICAL COLLEGE OF THE STATE OF MISSISSIPPI, NEAR STARKVILLE, MISS.

Six photographs of college buildings, faculty, etc.; five drawings by students; charts showing the various courses of study.

### AMHERST COLLEGE, AMHERST, MASS.

Thirty photographs of resident faculty in frame; 11 photographs of college houses in frame; 9 photographs of Amherst College buildings and Amherst village in frame; 8 photographs of college in frame; 4 photographs of former presidents; summary of students and graduates in frame; plan of buildings in frame; 4 photographs of society houses in frame; 16 bound volumes, viz: Historical reports, addresses, and papers; triennial catalogues 1831-1878; annual catalogues 1822-1849; annual catalogues 1850-1869; annual catalogues 1870-1885; student life; examinations for admission 1881-1884; biographical record of alumni and non-graduates; reminiscences; history during first half century; physical culture; commemorative discourses; inaugural and valedictory addresses of presidents; schedule of exercises; exercises at semi-centennial; catalogue Amherst College 1894-'85.

### BUREAU OF EDUCATION, WASHINGTON, D. C.

College books: Harvard, 2 volumes; Yale, 2 volumes; Princeton, 1 volume; Vassar, 1 volume; models showing the improvements in ploughs; geological charts; charts illustrating building construction; representations of crystals; illustrations of conic sections by movable models; plans and photographs of buildings, Cornell University, Ithaca, N. Y. (from museum of Bureau of Education).

### FISK UNIVERSITY, NASHVILLE, TENN.

Two framed pictures of buildings.

### GEORGETOWN UNIVERSITY, GEORGETOWN, D. C.

Large walnut case containing framed photographs of Georgetown College in 1789, Georgetown College in 1812, and Georgetown College in 1884; framed engravings of Rt. Rev. John Carroll, D. D., founder of Georgetown College, and William Gaston (died chief justice of North Carolina), first student of Georgetown College; framed statement of historical outline, rectors, degrees conferred, requirements for degrees, courses of study, and average number of students; the Toner medal for collection of woods of the District of Columbia.

### HOWARD UNIVERSITY, WASHINGTON, D. C.

Framed sketch and plans of institution and grounds.

### NORTHWESTERN UNIVERSITY, EVANSTON, ILL.

*Statement of Institution.*—The Northwestern University has 60 professors and teachers, and about 900 students. It is located on the shore of Lake Michigan, about 12 miles from Chicago. In beauty of situation and in moral influence it is unsurpassed. The sale of intoxicating drinks within 4 miles of the university is prohibited by its charter.

## 104 EDUCATIONAL EXHIBITS AT THE NEW ORLEANS EXPOSITION.

The university includes: (1) the college of liberal arts; (2) woman's college; (3) college of medicine; (4) college of law; (5) preparatory school; (6) school of elocution; (7) conservatory of music; (8) department of art; (9) Garrett biblical institute; (10) Swedish theological school.

In the college of liberal arts are four courses of study, and corresponding degrees are given to those who graduate from them. The privileges of the college of liberal arts and of the preparatory school, as well as of the departments of elocution, music, and art, are granted to young women on the same terms as to young men.

POLYTECHNIC SCHOOL OF WASHINGTON UNIVERSITY, SAINT LOUIS, MO.

Specimens of mechanical drawing.

STATE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS, COLLEGE STATION, TEX.

Three mechanical drawings in ink; 2 pencil drawings of laboratory.

UNIVERSITY OF GEORGIA, ATHENS, GA.

Two framed drawings.

UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL, N. C.

Eight framed photographs of university buildings.

UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.

Views of university buildings; architectural drawings; history of university; university pamphlets; 9 models in engineering.

UNIVERSITY OF TENNESSEE, KNOXVILLE, TENN.

Four framed drawings.

UNIVERSITY OF VIRGINIA, VA.

Twelve framed photographic views of exterior and interior of buildings.

# MUSEUMS AND SCIENCE COLLECTIONS.

A. E. FOOTE, PHILADELPHIA, PA.

*Minerals, college cabinet.*

1. Sulphur, Sicily.
2. Coal, var. Jet, El Paso County, Colorado.
3. Graphite, Plumbago, Colfax County, New Mexico.
4. Copalite, Fossil Gum, Zanzibar, Africa.
5. Quartz, Rock Crystal, Hot Springs, Ark.
6. Quartz, Amethyst, Thunder Bay, Lake Superior.
7. Quartz, Rose, Southford, Conn.
8. Quartz, Smoky, Cairngorm, Pike's Peak, Colo.
9. Quartz, Milky, Philadelphia, Pa.
10. Quartz, Chalcedony, Yellowstone National Park.
11. Quartz, Agate, Agate Harbor, Lake Superior.
12. Quartz, Moss Agate, Middle Park, Colo.
13. Quartz, Flint, Dover Cliffs, England.
14. Quartz, Honestone, Hot Springs, Ark.
15. Quartz, Jasper, near Ottawa, Canada.
16. Quartz, Silicified Wood, Bijon Basin, Colo.
17. Quartz, Itacolumite, Flexible Sandstone, Rutherford County, North Carolina.
18. Opal, Opalized Wood, Bijon Basin, Colo.
19. Pyroxene, Pierrepont, N. Y.
20. Wollastonite, Tabular Spar, Diana, N. Y.
21. Amphibole, Hornblende, and Titanite, Spheene, Renfrew County, Ontario, Canada.
22. Amphibole, Actinolite, Rhode Island.
23. Amphibole, var. Asbestos, Harford County, Maryland.
24. Beryl, Ackworth, N. H.
25. Garnet and Vesuvianite, Templeton, Canada.
26. Zircon, Renfrew County, Ontario, Canada.
27. Epidote, Putnam County, New York.
28. Allanite, Amherst County, Virginia.
29. Muscovite, Mica (Magnetited), Delaware County, Pennsylvania.
30. Phlogopite, Hull, Quebec, Canada.
31. Lepidolite, Lithia Mica, Pa. Me.
32. Wernerite, Bolton, Mass.
33. Albite, Soda Feldspar, Redding, Conn.
34. Orthoclase, Pike's Peak, Colo.
35. Microcline, Amazon Stone, Pike's Peak, Colo.
36. Labradorite, Mount Marcy, Essex County, New York.
37. Tourmaline, Pierrepont, N. Y.
38. Cyanite, Norwich, Conn.
39. Datolite, Bergen Hill, N. J.
40. Stilbite, Radiated Zeolite, Frankford, Pa.
41. Pectolite, Bergen Hill, N. J.
42. Apophyllite, Bergen Hill, N. J.
43. Natrolite, Bergen Hill, N. J.
44. Talc, Saint Lawrence County, New York.
45. Serpentine, Texas, Pa.
46. Soda Niter, Nitratine, Peru.
47. Halite, Salt, Bermudas.
48. Witherite, Northumberland, Eng. Barite, See No 94.
49. Strontianite, Hamm, Westphalia.
50. Celestite, Strontian Island, Lake Erie.
51. Gypsum, Plaster, Grand Rapids, Mich.
52. Fluorite, Fluor Spar, Rosiclare, Ill.
53. Apatite, Renfrew County, Ontario, Canada.
54. Calcite, Lime Spar, Bergen Hill, N. J.
55. Marble, Vermont.
56. Dolomite, Pearl Spar, Saint Louis, Mo.
57. Magnesite, Texas, Pa.
58. Corundum, Jackson County, North Carolina.
59. Cryolite, Ivigtuk, Greenland.
60. Wavellite, Montgomery County, Arkansas.
61. Magnetite (Loadstone), Magnet Cove, Ark.
62. Hematite, Ishpeming, Marquette County, Michigan.
63. Martite, Cleveland Mine, Marquette County, Michigan.
64. Goethite, var. Wood Ore, Superior Mine, Mich.
65. Limonite, Negaunee, Mich.
66. Limonite, pseud. after Pyrite, Marion, N. C.
67. Pyrite, Fools' Gold, French Creek, Pa.
68. Pyrrhotite, Nickeliferous and Cobaltiferous Magnetic Pyrites, Gap Mine, Pa.
69. Dufrenite, Green Iron, Rockbridge County, Virginia.
70. Vivianite, Mullica Hill, N. J.
71. Siderite, Spathic Iron, Roxbury, Conn.
72. Chromite, Texas, Pa.
73. Menaccanite, Titanic Iron, Rhode Island.
74. Rutile, Nigrit, Magnet Cove, Ark.
75. Brookite, Arkansasite, Magnet Cove, Ark.
76. Columbite, Niobite, Haddam, Conn.
77. Pyrolusite, Nova Scotia.
78. Pailonellane, Hard Manganese, Georgia.
80. Rhodonite, var. Fowlerite, Franklin, N. J.
81. Zincite, Franklinitite, and Willemite, Franklin, N. J.
82. Sphalerite and Greenockite, Rosiclare, Ill.
83. Calamine, Granby, Mo.
84. Cassiterite, Durango, Mexico.
85. Galenite, Washington County, Mo.
86. Pyromorphite, Phoenixville, Pa.
87. Cerussite, Phoenixville, Pa.
88. Bismuthinite, Mineral Point, San Juan, Colo.
89. Subnite, Gray Antimony, California.
90. Molybdenite, Philadelphia, Pa.
91. Copper (Lake Superior region), Michigan.
92. Cuprite, Frisco Mountains, Arizona.
93. Chalcocopyrite, Copper Pyrites, Chili.
94. Malachite and Barite, Cheabire, Conn.
95. Azurite, Mammoth Mine, Utah.
96. Cinnabar, California.
97. Silver, Lake Superior.
98. Embolite, Silver City, N. Mex.
99. Gold and Pitzite, American Mine, Colo.
100. Platinum, Urals, Russia.

The following facts should be noticed:  
This collection is especially designed for teaching mineralogy, but in order to render it more valuable to those using it for illustrating chemical lectures there have been left out some of the less important silicates, and put in some of the metallic minerals like Columbite, Allamite, and Samarskite, in the latter of which several elements have recently been discovered.

## WARD'S NATURAL HISTORY COLLECTIONS.

(*Inorganic nature, Ward and Howell. Organic nature, H. A. Ward.*)

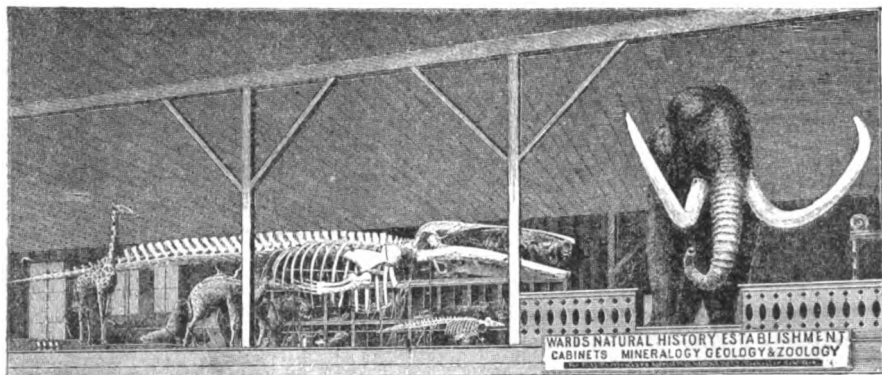


FIG. 47.—View in Ward's Museum.

Prof. Henry A. Ward, of Rochester, N. Y., has brought from his natural science establishment in that city a grand collection of most valuable specimens in every department of natural history, which he and his assistants have mounted and arranged with care in the east gallery of the Government building, directly over the main entrance. They here occupy a space 168 feet in length along the gallery, with an average width of 48 feet—in all a little over 8,000 square feet of floor space. This was awarded him by the chief of the United States Department of Education, with the understanding that he should there make a full and worthy exposition or *conspectus* of all the divisions of natural history.

To this end a series of six large cases, 50 feet long and 10 feet high, besides many smaller ones, all with long glass doors and suitable internal fixtures, have been so arranged as to secure the best results of light, display, and classification.

The east wall has also been covered to a height of 30 feet, while in a central area running east and west, and in a line along the whole gallery front, large forms, standing on individual pedestals, have been so arranged as to show to the best advantage, either to the visitor standing beside them or to those viewing the array from the hall below.

These large objects, too tall and bulky to enter cases, and by that fact thrown out of their exact position in the orderly, systematic series, are the mammoth, megatherium, mastodon, glyptodon, whale, elephant, rhinoceros, hippopotamus, camel, giraffe, walrus, and others, with groups of gorillas, orang outangs, and ornithorhynchus. The tops of the cases outside have specimens standing upon them, while the walls, quite to the ceiling, are hung with charts, pictures, and specimens. The rest of the display is made up of special collections or cabinets, each compiled to illustrate a department of science, and thus each is complete in itself.

## PALEONTOLOGY.

In this division is arranged a series of fossils, from the earliest dawn of life on our globe up through all the geological epochs to the advent of man and the present time. Under this chronological arrangement is a subsidiary biological arrangement, the plants and animals of each geological age being arranged in botanical and zoological order. Many of the objects, however, are too large to be arranged in the cases, and are placed on platforms on the floor.

In the center of the large forms—modern and extinct—which border the gallery edge, and overshadowing them all by his immensity, stands the *Elephas primigenius*, or great hairy mammoth of Northern Europe (Fig. 48).

This is a *restoration*, built up carefully by a skillful artist, under the direction of a German geologist—Dr. Oscar Fraas, of Stuttgart, who has a European reputation in his work on fossil forms. Among many bones of the mammoth in the Royal Museum at Stuttgart, a few were greatly larger than the others, betokening an individual of extraordinary size—a mammoth among mammoths. The great law of the co-relations of parts and structures, first enunciated by Cuvier, was a sure guide in the

work, for which, moreover, abundant material was present. The result was an animal of form and dimensions as we see them in this specimen. The height of this mammoth is 16½ feet, the top of his head being exactly in a line with the highest point of his back; his length, from the tail to the front of pendent trunk, is 22 feet; thence to front curve of tusks is 4 feet more, giving a total length to the animal of 26 feet, while his greatest length is 32 feet. The two great flaring tusks, sweeping with a double

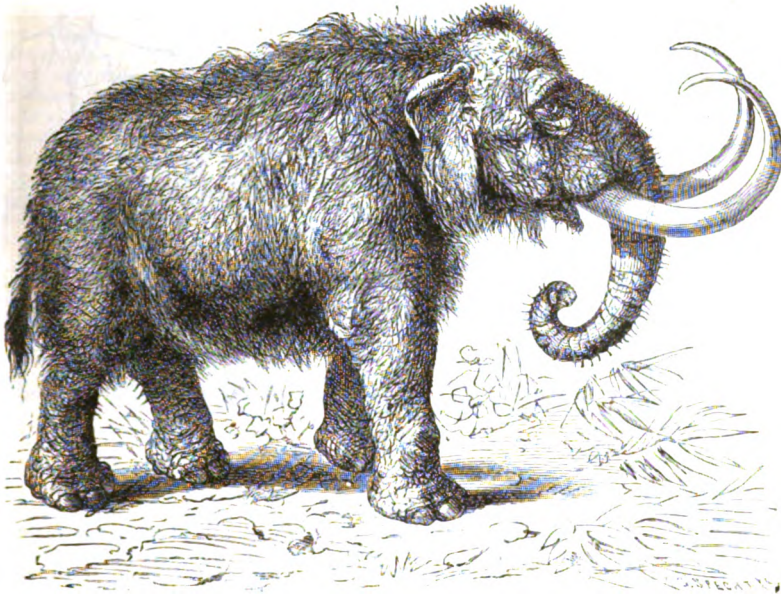


FIG. 48.—The Mammoth (*Elephas primigenius*.)

curve from either side of his upper jaw, are 13 feet 8 inches long, and 40 inches in circumference at the base. His fore feet, nearly round, are quite a yard in diameter, with a step of about 7 feet. For the covering of the animal, guidance was given by the famous specimen standing in the Imperial Academy Museum in St. Petersburg, which was found in 1799 frozen in the ice in Northern Siberia. As a restoration, this stands alone in size among all similar works in this country or abroad.

On a pedestal, conveniently near for comparison, are the head and tusks of the American mastodon, the near relative of the mammoth. The main or most observable difference is in their teeth, and is fully illustrated by fine examples of the dentition of each genus, which are placed side by side, together with leg-bones, vertebræ, etc., in the adjoining case.



FIG. 49.—Grinder of Mammoth.



FIG. 50.—Grinder of Mastodon.



Other large objects on pedestals are casts of the *Colossochelys atlas*, or gigantic tortoise, from the Tertiary beds of the Sewalik Hills in the Himalayas. The carapace of this king of the chelonians is over 8 feet long by 6 feet wide. He must have weighed when alive nearly or quite two tons.

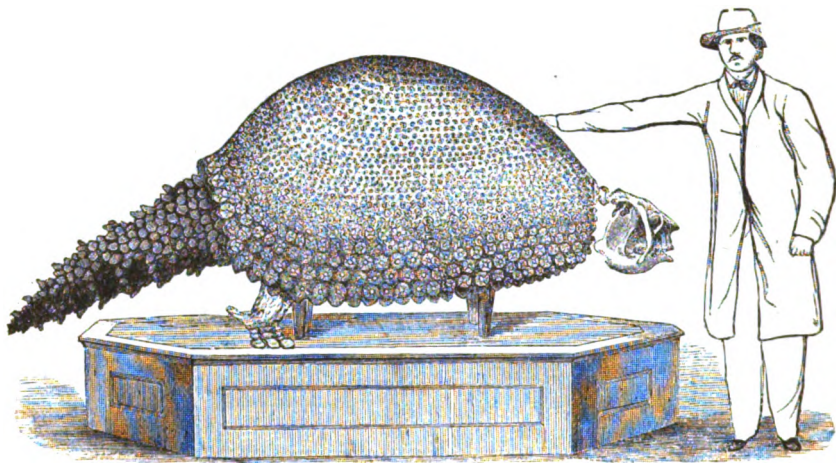


FIG. 51.—The Glyptodon.

The *Glyptodon* is a gigantic fossil edentate—a representative in Pleistocene times of the armadillos now inhabiting South America. It was furnished with a huge carapace, or coat of mail, formed of hexagonal plates united by sutures, and constituting an impenetrable covering for the upper part of the body and part of the tail. The carapace differed from that of modern armadillos in having no greaves or joints for the purpose of rolling up its body. The head was defended by a tessellated, bony casque. The tail possessed an independent dermal sheath or cuirass, made up of very prominent tubercles disposed in distinct whorls. This arrangement of the component parts of the sheath permitted slight flexibility and made the tail a formidable weapon. The animal measured 11 feet from the snout to the end of the tail, following the curve of the back.

The *Dinotherium giganteum* is of Miocene age, discovered in the Rhine valley, and now in the museum of Darmstadt. Naturalists disagree as to the proper classification of this huge animal, which Cuvier and Kauss calculated to have attained the length of eighteen feet! The immense femur, in the case near by, shows that the animal must have had legs nearly ten feet long. Probably, however, he did not stand so erect and firm upon them as does the mammoth. De Blainville and Pictet considered the *Dinotherium* an aquatic herbivore, resembling the dugong, and inhabiting the embouchures of rivers. But bones of the lower limb have been found so associated with teeth as to determine the *Dinotherium* to be a hoofed quadruped probably of aquatic habits, and transitional, as it would seem, between the large lophiodons and the huge proboscideans.

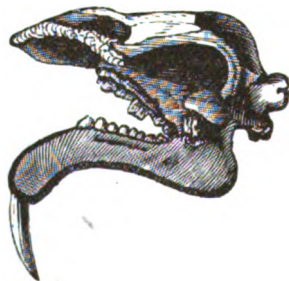


FIG. 52.—Cast of skull and lower jaw of *Dinotherium giganteum*.

Directly before the spectator, as he approaches the exhibition from the west, towering above him, stands the Megatherium, or great fossil ground-sloth. This gigantic



fossil was first made known to the scientific world in 1789. It was discovered on the banks of the river Luxan, near the city of Buenos Ayres, and was subsequently transmitted to Madrid, where it long excited the most lively speculations among all naturalists who were so fortunate as to see it. To give to the singular quadruped its proper position in the animal kingdom was for many years a problem which the *savants* of Europe could not solve. Cuvier, who gave it its generic title, thought it combined the characters of the sloth, ant-eater, and armadillo. Professor Owen, the celebrated English geologist, has conclusively proved that the *Megatherium* was a "ground-sloth," feeding on the foliage of trees which it uprooted by its great strength. The extreme length of the mounted skeleton is eighteen feet. Its height, when standing on all fours, was about eight feet. No other fossil so exceeds its modern representative, for the largest living sloth does not exceed two feet in length. The length of the skull is thirty inches, three inches less than that of the Asiatic elephant. The formation of the muzzle indicates the possession of a short proboscis. The *Megatherium* differs strikingly from existing quadrupeds of corresponding bulk in the vast proportions of its anterior extremities. Its clavicle, fifteen inches long, is the longest known. The fore leg bespeaks enormous strength; with the foot it is seven feet and four inches in length. The posterior extremities are shorter than the anterior. The pelvis is the largest bone in any land animal, living or extinct; it is upward of five feet broad. The hind legs appear more like columns for support than organs for locomotion, and, with the hind feet, are models of massive organic masonry. The heel-bone alone has the extraordinary length of seventeen inches, and a circumference of twenty-eight inches. The monster walked, like the ant-eater, on the outside edge of its foot, on a marginal hoof-like callosity. The middle toe, the hind foot, and likewise the second, third, and fourth digits of the fore foot, were armed with powerful claws.

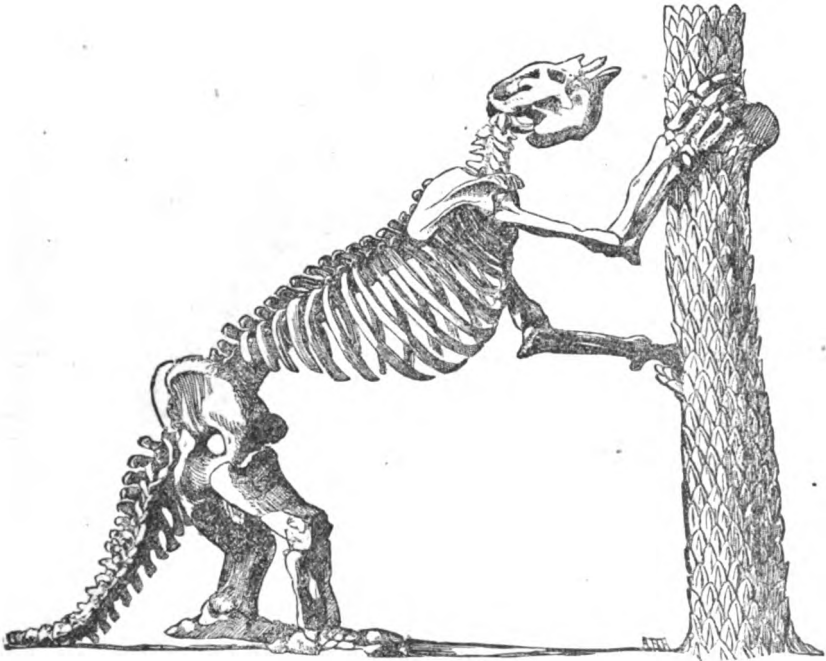


FIG. 53.—Skeleton of *Megatherium Ouvieri*.

The magnitude of the tail fills the observer with wonder; when clothed with flesh it must have been fully two feet in diameter at the greater end. With the hind legs it formed a tripod upon which the animal rested when obtaining its food.

The largest actual fossil is an unusually fine and perfect skeleton of the great Irish elk (*Megaceros Hibernicus*). This was brought to light from a peat-bog near Limerick, Ireland. This skeleton, neatly and substantially mounted in a natural attitude on a high platform, is complete, and has great antlers spreading nearly ten feet. It is a most rare and valuable fossil, unsurpassed in dimensions and completeness by any similar specimen in American museums.

Another rare and valuable fossil is a mounted skeleton of the moa, or *dinornis*—the great fossil bird of New Zealand.

Here, also, are many examples (actual and casts) of the so-called bird tracks from the red sandstone of the Connecticut valley, "footprints on the sands of time" made by these old animals far back in Triassic time, when these hard sandstones were soft mud. One large slab shows the tracks of various animals of different sizes and kinds, who crossed it in all directions. Another with three tracks shows the mark of the tail also.

Among the saurians the largest and most notable is a cast of the *Plesiosaurus Cromptoni*, mounted on the roof-truss over the central area. This great saurian, or marine lizard, is from the Lias beds of Whitby, England. This specimen is 23 feet long, and the spread of its paddles is over 12 feet, indicating powerful and rapid motion for this denizen of the ancient seas. Two other great saurians, the *Plesiosaurus dolichodiscus* and the *Ichthyosaurus intermedius*, are represented by life-size restorations, standing on frames fastened to the ends of the cases. Other restorations on a smaller scale (1 inch to the foot of actual size) are the iguanodon, megalosaurus, labyrinthodon, pterodactyl, plesiosaurus, ichthyosaurus, and glyptodon. These are all ideal restorations, showing the animal clothed with flesh as in life, and are great aids to the student in comprehending the actual skeleton of the fossils of same species in the collection.

Space will not permit a more detailed description of this paleontological cabinet, which consists of many hundred specimens and contains many invertebrates (sponges, crinoids, echinoderms, shells, crustaceans, etc.), and large and typical forms of fishes, marine lizards (mosasaurus, teleosaurus, plesiosaurus, ichthyosaurus, etc.), pterodactyl, iguanodon, megalosaurus, labyrinthodon, and other terrestrial reptiles.

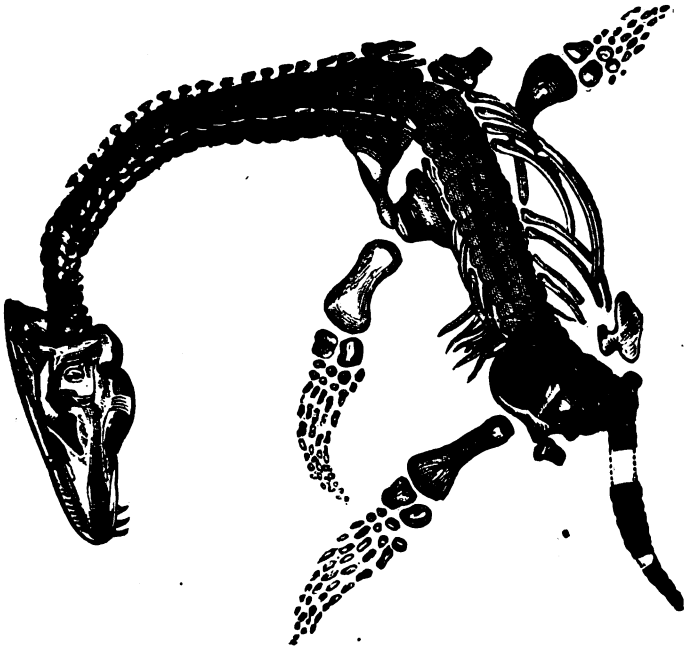


FIG. 54.—Great-headed Plesiosaure from the Lias (*Plesiosaurus macrocephalus*).

Further are many portions—legs, feet, shoulder-blades, jaws, skulls, teeth, etc.—of the mammoth, mastodon, rhinoceros, hippopotamus, tapir, mylodon, megalonyx, hexaprotodon, tetraprotodon, nototherium, diprotodon, and other terrestrial mammals from the loose surface deposits of the Quaternary period of Europe, India, Australia, and North and South America. Also oreodon, anchitherium, poebrotherium, and others from the "Bad Lands" of northern Nebraska; with the palæotherium, anoplotherium, lophiodon, anthracotherium, etc., from which, as found in the gypsum quarries of Montmartre, near Paris, Cuvier first announced to the scientific world the ex-

istence of forms of life different in kind and species from those now living on the globe, and thus laid the foundation of the science of paleontology.

Invertebrate life is profusely represented by series, each giving many typical forms among the protozoa (including the foramenifera and the sponges); the echinoderms, with several score of interesting echinoids and fossil sea-stars; the mollusks of all families, including a very rich series of the ammonites with all the type-groups of Von Buch's classification. Finally there are nearly one hundred crustaceans, notably the important family of the trilobites, of older paleozoic age.

These series of fossil specimens—actual and casts—constitute together a complete paleontological cabinet, graduated so as to include the lowest to the highest forms of fossil animal organisms, from the earliest dawn of life upon our planet down to the period immediately preceding our own. The collection is provided with all needful fixtures, and every specimen is accompanied with a handsome printed label giving the full scientific name, the locality, and the geological age of the fossil. It is further accompanied by a series of fifty-two paleontological pictures, representing forms of ancient animal life, which are of especial importance from a zoological or from a geological point of view. These pictures—seven the well-known “restorations” of Waterhouse Hawkins, twenty-two hand copies of the series made by the celebrated English zoologist, Edward Forbes, for the museum of the London Geological Society, and sixteen the Unger series of geological landscapes—are handsomely framed under glass. There are, finally, several large geological wall-charts, by Hall, Winchell, etc.

“*Academy Series*” of *Paleontology*.—From this large cabinet, mentioned above, a careful selection has been made and arranged by itself, in a case 23 feet long with step-like shelves, to show what can be done by schools and academies having but little money for collections.

The unique and rarer forms are represented by casts, and the common forms by original fossils. All have been so chosen as to cover the whole field of paleontology, and give an even representation of the forms characterizing each of the different geological periods. This collection or cabinet contains 475 specimens (about one-third casts and two-thirds originals) and is accompanied by a complete illustrated catalogue, almost full enough to answer for a text-book.

#### MINERALOGY.

In the glazed case next parallel to the east wall, situated on the right hand of the visitor entering the hall, is a large and very choice mineral cabinet. The specimens are handsome, clean, fresh, and beautifully crystallized, and are so chosen as to represent very evenly the whole field of systematic mineralogy. The specimens, which are mainly of large cabinet size, are each mounted upon a black-walnut block, bearing a handsome printed label, which gives, in scientific fullness, the name of the mineral, its chemical composition, and its crystalline form, while a number in its corner corresponds to the same number upon the back of the specimen (see Fig. 55).

In this case are fine specimens of adularia, agate, albite, allanite, amber, amethyst, antimonite, argentite, aventurine, axinite, barite, beryl, bournonite, brucite, calamine, calcite (many varieties), cancrinite, cassiterite, chalcedony, chrysoberyl, columbite, corundum, cuprite, cyanite, datolite, diopside, elaterite, emerald, epidote, erubescite, fahlerz, fluorite, franklinite, garnet, geyserite, gold, hausmannite, heliotrope, hyalite, hydrotalcite, Iceland spar, itacolomite, jasper, jefferisite, jeffersonite, jet, labradorite, lapis lazuli, lepidolite, loadstone, malachite, meerschaum, menaccanite, meesotype, millerite, molybdenite, moonstone, natrolite, nephrite, obsidian, opal, orpiment, pectolite, pericline, platinum, polyhalite, quartz (20 to 30 varieties), realgar, rubellite, rutile, scapolite, sodalite, sphene, spinel, staurolite, stibnite, sulphur, sylvite, talc, topaz, turquoise, ulexite, wavelite, wernerite, wolframite, wollastonite, wulfenite, zincite, zircon, and many hundred other species and varieties. Examination of the cabinet shows the abundance of choice specimens, even among such species as are rare for mineralogists to obtain and accounted precious when possessed. The number of polished specimens is large, and this plan of bringing out the structure or the reflecting qualities of the species has been liberally availed of in all species which admitted of it. There are a number of actual meteorites, both of the stone and the iron class, one of the latter weighing twenty pounds; and these are supplemented by a series of seventeen casts of the most interesting meteorites of the British Museum collection. Besides actual specimens of the precious metals there are fac-similes of the celebrated Welcome nugget, the Siberian gold nugget, now in St. Petersburg, and the immense platinum nugget, belonging to Count Demidoff; also, copies of all the great nuggets of gold found in Australia, all of them gilded so as to be exact fac-similes.

There are likewise models in cut glass of the celebrated diamonds of the world, containing exact reproductions of 15 of these beautiful historical gems, from the handsome Polar Star—the original of which weighs 40 carats and belongs to the Princess Yousoupoff—to the valuable Kohinoor, of the British crown, and the immense diamond belonging to the Great Mogul, said to weigh 297 carats. Also models

in glass of all the precious stones. There is, further, a series of crystal models in plate-glass, with axes and angles shown by colored threads within, and illustrating the six systems of crystallization, with the derivative forms.

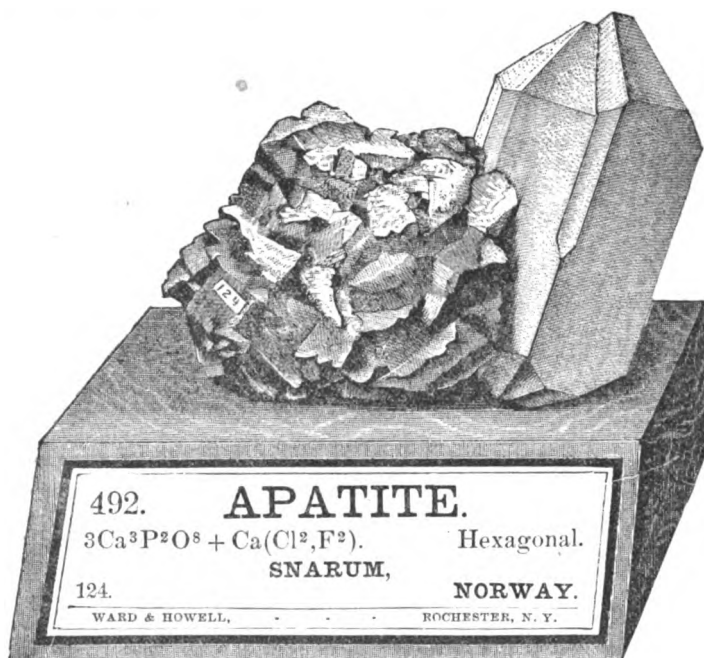


FIG. 55.—Mineralogical specimen, showing method of mounting.

Another suite of solid plate-glass models represents the fundamental forms under which all natural crystals may be ranged. Other artificial crystals, with colored primitive faces, give the more important secondary or derivative forms of minerals. These are several hundred in number, and are mounted in the classification with the various mineral species whose crystallographic nature they illustrate. Finally, several special series or suites of specimens have been compiled to illustrate the physical characters of minerals, as shown in their inner structure, their exterior form, and the several features which result from these and from their chemical composition.

The specimens composing these series have been selected with great care, in order to give fullest aid to the student of this chapter of the science.

This cabinet has been planned, both in its main body of mineral specimens and in its adjuncts, to give a fine, showy and liberal illustration of the science. Its display and its educational scope and comprehension are both of the very highest character.

"Academy Collection" of Minerals.—To the right on entering, in the case with sloping glazed front, is a smaller series of minerals, consisting of 180 specimens—all choice, though of smaller size, and mounted and labeled in the same manner as noted for the previous cabinet. A printed catalogue also accompanies the collection, describing each one of its specimens. This collection is particularly calculated for an academy or a normal school.

#### GEOLOGY.

1. *Lithology*.—Filling a case directly beyond the minerals is a large cabinet of rocks. The series is compiled and arranged with a lithological classification, and presents in typical specimens the various lithological varieties among the rocks which enter into the composition of the earth's crust. Among the more important are granite, from Utah, New York, Maine, Scotland, France, Saxony, etc.; syenite, from Massachusetts, Saxony, and Syene (Egypt); gneiss and mica schist, from Freiberg, Mt. Blanc, Abyssinia, New York, Connecticut, and Minnesota; protogine, from Mt. Blanc; porphyry, from New York, Massachusetts, Cornwall, and Germany; greenstone, or diorite, from native and foreign localities; basalt, from Giants' Causeway (Ireland), Rhine valley, Italy, and France; lavas, with obsidian, and pumice, from Vesuvius, Prus-

sia, and the Lipari Isles; diabase, gabbro, and hypersthene, from New York, Connecticut, Saxony, and Italy; apophane, from Saxony and the valley of the Nile; andesite, trachyte, rhyolite, etc., from European and American localities; serpentines and steatite, from New England, New York, Maryland, Italy and Saxony; slates, from Vermont and Wales; "Oriental alabaster" and "Mexican onyx," from Algiers, Egypt, California, and Mexico; gypsum and alabaster, from Italy, England, Nova Scotia, and Michigan; marls, from New York, New Jersey, and France; old and new red sandstones, from Scotland, England, and France; lias and oolite, from England, France, Germany, etc. Mineral composition—the preponderating, or characterizing, mineral element—forms the basis of the classification of this cabinet. The specimens are classified in four main series. In the Earthy Series are grouped the feldspathic rocks, trachytic rocks, pyroxenic rocks, amphibolic rocks, hypersthene rocks, talcose rocks, micaceous rocks, quartzose rocks, and argillaceous rocks. The Haloid Series contains the limestone rocks and the gypsaceous rocks. Under the ores occur the iron ores, copper ores, and lead ores. Finally, the Combustible Series contains the carbonaceous rocks and the bituminous rocks. Each of these families contains several specimens from all parts of the world. These specimens are of uniform size, neatly trimmed, with fresh surfaces and well-marked characters, and each specimen is separately mounted on a black walnut block with printed label. A complement to this collection is a choice series of beautiful marbles from American and foreign localities. The slabs are of large size (many of them over a foot square), and are finely polished on face and edges. They show a state of structural density and intimate aggregation of particles which—in rocks of greatly different ages and widely varying composition—give, when cut and smoothed, a clear, reflecting surface.

2. *General Stratigraphical Series.*—There is here no constancy of lithological constitution, or even of structure, in specimens of the same age or period. But it may still be observed—though in a very general way and with many exceptions—that the older rocks are more compact and of denser structure, while those of the recent formations are more loose and friable. The "ages" of geological time represented are the Archæan, Lower Silurian, Upper Silurian, Devonian, Carboniferous, Permian, Triassic, Jurassic, Cretaceous, Tertiary, and Quaternary.

3. *Rocks of the New York System.*—This series is of especial interest to students of American geology who wish to study the lithological character of the rocks which have served as the types of the Silurian and Devonian in America.

Great care has been taken in the selection of the most typical specimens to represent each rock, and in nearly every instance they have been collected at the localities which give the names to the group or formation. Thus we give the Utica slate from Utica, the Oriskany sandstone from Oriskany Falls, the Moscow shale from Moscow, and so on through the series.

On the bottom of the block on which each specimen is mounted, is pasted a small geological diagram with a red line drawn under the particular stratum to which that individual specimen belongs, thus giving at a glance its position in the geological series. In addition to this, each collection is accompanied by a large *Chart of Geological Time*, on which all the strata of New York are arranged and classified according to eras, ages, periods, and epochs, and are correlated with the beds of similar geological horizon in other States of the Union, Canada, and Europe. As the approximate thickness is given in each case, one is able to trace their variation in that respect, or their entire disappearance as they are followed from one State to another.

4. *Phenomenal Series.*—These illustrate many interesting points in dynamical and physical geology, and display many of the phenomena of rock formation, and other wonders registered in the crust of the earth. Here are huge pillars of basalt, from the Giants' Causeway (Fig. 56) and from the Rhine valley; "volcanic bombs," from the extinct volcanoes of central France; lava, showing contortions made in flowing; fulgurites (sand cemented and vitrified by the passage of lightning through it); veins of segregation, injection, and infiltration, passing through larger rock masses; contortions and foldings of strata; sedimentary rocks altered by proximity to igneous dykes, or by contact with lava current; jointed structure in slates and limestones; "lignilites," septaria, claystones, "cone-in-cone," and other singular concretions; geodes, dendrites, "sickensides," glacial markings, polished and striated rocks; rounded drift, ripple marks, impressions of rain-drops, mud cracks, fossil "tadpoles' nests," coralline and shell limestones, stalactites, stalagmites, flexible sandstone, etc.

An adjunct to these actual specimens is a series of six models in wood, which dissect in various ways and illustrate in a clear manner most of the more important features of structural and dynamical geology, both simple and complex, such as the perplexing complication produced by veins and faults crossing each other, and the very different surface effects produced by erosion, whether at right angles or oblique to the strike of the fault and bedding. A catalogue giving full explanation, and calling attention to the different features illustrated by each model, accompanies the series.

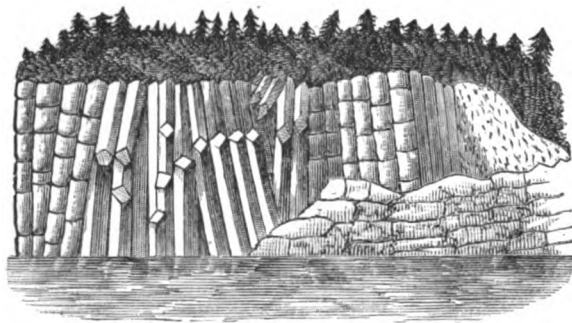


FIG. 56.—Columns of basalt, Giant's Causeway, Ireland.

A continuation and enlargement of this series includes the—

5. *Geological Relief Maps*.—Along the south and east walls of the room, above the cases or shelves of specimens, and standing on tables, are disposed thirteen relief maps, carefully copying to a scale, and representing, by the combination of suitable colors, the physical and geological structure of certain regions of the earth whose geology is of remarkable interest. One of these is the district of—

Auvergne, in central France: This is a region which is full of vestiges of most intense volcanic action, which transpired during the Tertiary period. There are multitudes of truncated cones, each with its exhausted crater; also peculiar rounded domes of trachyte, with flows of basalt and plateaus of great extent. This region, displaying as it does so remarkably the grand succession of events in central France since the last retreat of the sea, and illustrated by the masterly researches of Scrope, Lyell, and Murchison, is perhaps the finest field in the world for the study of extinct volcanic action. This map is over five feet square. Equally large is the relief map of the—

Grand Cañon of the Colorado River: This represents an area in southern Utah and northern Arizona, 144 miles square. There is probably no other portion of our globe which exhibits erosion so graphically and on so grand a scale. The Colorado River is seen flowing through a gorge or cañon which it has cut for itself a mile in depth for a distance of 225 miles, some portions being 6,200 feet below the general surface. To assist the mind in grasping the magnitude of the Grand Cañon, a small corner of the model is devoted to representations on the same scale of the Yosemite Valley and the gorge at Niagara Falls. This model was prepared by Edwin E. Howell, geologist, with the Geographical and Geological Survey of the Rocky Mountain Region.

Relief Map of the Henry Mountains of Utah: The Henry Mountains are of volcanic origin, but the lavas were all injected among the strata and cooled in bubble-shaped bodies, called *laccolites*, which were afterwards exposed to view by erosion. There was no eruption, properly speaking, but irruption only, and the strata lying above the zone of irruption were bent up in arches or domes. This peculiar structure was discovered by Mr. G. K. Gilbert, who made a special study of the mountains in 1876.

Relief Map of the high plateaus of Utah: This is another very carefully modeled map of a region especially interesting geologically. It is mainly one of high plateaus, separated by valleys of erosion and faults, and the great principles of structure and erosion, and the relation which these bear to each other, are remarkably well illustrated.

Relief Map of Vesuvius: The map shows a portion of the Bay of Naples, and the slope of the volcano on all sides, from its crater to the plain. The steep, semicircular escarpment of Monte Somma, and the modern cone of Vesuvius which it faces, rise in bold relief; and the various lava currents which have been ejected—from that which overwhelmed Herculaneum in 79 to the eruption of 1820—are represented with their dates.

Relief Map of Etna: This celebrated volcano—the loftiest in Europe—rises near the sea to the height of nearly 11,000 feet. The most striking and original feature in its physiognomy is the multitude of minor cones distributed over its flanks. They number about eighty, and throw out sulphurous vapors. Near the summit of Etna is the Val del Bove—a famous gorge of magnificent dimensions, a vast amphitheater of four or five miles in diameter, surrounded by nearly vertical precipices from 1,000 to 3,000 feet high. This very accurate map was modeled after one constructed on the spot by Élie de Beaumont, the noted French geologist.

Besides the preceding are the relief maps of Palma, Teneriffe, and Bourbon, as further illustration of regions shaped by volcanic action.

**Relief Map of Mont Blanc:** This celebrated mountain is the culminating point of the Alps and of all Europe. This relief map, colored geologically, exhibits the mountain arch surrounded by its subordinate peaks, the various *cols* or passes, the magnificent glaciers—30 in number—with their lateral and terminal moraines, and the streams flowing from them. An explanatory list of about 200 names accompanies the map, serving as a guide to the topography and geology of this interesting region.

#### ARCHÆOLOGY.

In this department are exhibited models of ancient ruins in Arizona and New Mexico. One of them shows a portion of an old cave town, high up in the side of a steep cliff. This position was undoubtedly chosen on account of its difficulty of access, and consequent ease of defense against an enemy. This ancient people took advantage of a natural cave formed by the erosion of a soft stratum in the cliff, and thus but little work was required to make a home suitable for occupation.

Another model is of Tegna, one of the seven Moquis towns. This ancient town, occupied at the present time by Moquis Indians, was built on the salient of a mesa, so as to be surrounded on all sides but one by steep cliffs. The houses were built without any entrance to the first story except through the roof. There are also models to a correct scale of a series of ancient mounds in Wisconsin, called "animal mounds" on account of their resemblance to animals, such as the squirrel, rabbit, eagle, elephant, etc. The latter is very interesting and suggestive. Did the old mound builders inhabit this country contemporaneously with the mastodon? If not, where did they get their model for this "elephant mound"?

Not the least interesting of the objects in this division is a cast of the Rosetta stone.



FIG. 57.—Cast of the Rosetta Stone.

The original of this celebrated inscription, which now occupies a central position in the gallery of Egyptian antiquities, British Museum, was discovered in 1799, in the little town of Rosetta (Rasheed of the Arabs), in the delta of the Nile. It may be described as a very thick, irregular-shaped slab, about 2½ feet square, of hard, black basalt, on the flat surface of which is the inscription in three languages—first, the Egyptian hieroglyphics, second, cursive Egyptian, and finally, Greek. A translation of the Greek showed that it was an act of the priests assembled in synod at Memphis,

B. C. 196-197, in honor of King Ptolemy Epiphanes, in the ninth year of his reign; and after reciting the events of the period, the birth of the king, the troubles in higher Egypt, the inundation of the Nile, the decease of Ptolemy Philopater, the attack of Antiochus, the suppression of rebellion, the remission of taxation, and the gifts to the bulls Apis and Mnevis and the sacred animals, proceeds to order that a figure of the king should be placed in the temples; that a shrine, with a gilded figure in wood of the monarch, should be placed in the adyta with the other shrines, and be carried in procession on a special festival in honor of the king on the 30th Messori, his birthday; and, above all, that a copy of this synodical act should be engraved on a tablet of hard stone and set up in every temple of the first, second, and third rank throughout the country.

Although the inscription was one of very great historical interest, the Rosetta stone derives its greatest importance from the fact that it gave the first clue to the meaning of the hieroglyphics.

#### ZOOLOGY.

On a pedestal directly in the rear of the mammoth is mounted a skeleton of his nearest modern representative, the elephant. This is the Indian species (*Elephas Indicus*), shot in 1877, in a forest of Southern India. Its general relation to the mammoth is very evident; but the difference in size between that extinct proboscidean and this modern congener—albeit full-grown and well developed—is very noteworthy and striking. It will be especially observed how different is the proportion and the curve of the great ivory tusks in the two individuals.

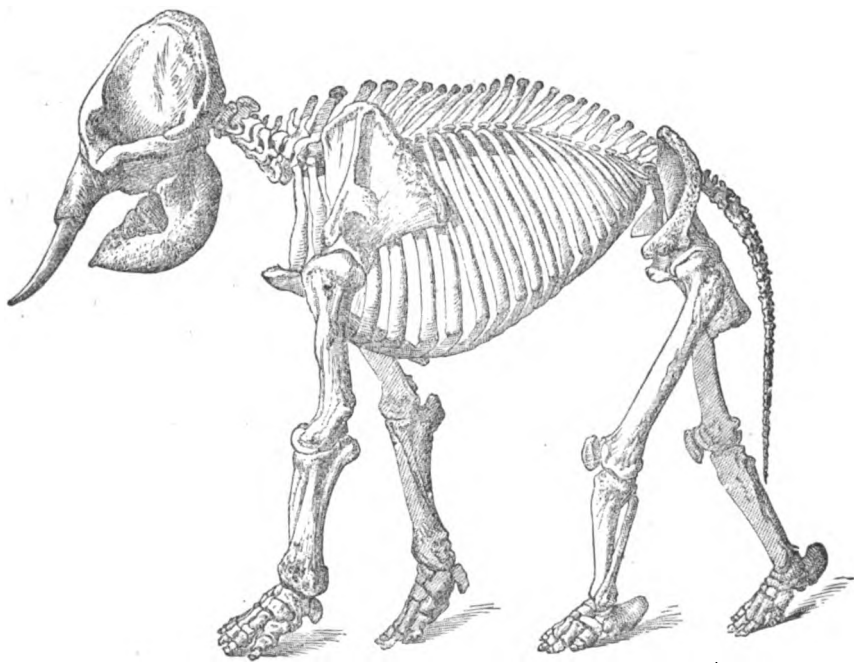


FIG. 58.—Skeleton of Elephant.

Along the gallery edge, as shown in the cut on page 106, stands, elevated high on bronzed iron standards, the bleached and mounted skeleton of a fin-back whale (*Balaenoptera musculus*). This great monster of the deep was captured off the coast of Massachusetts in the summer of 1884. It is one of the largest of this species of cetacean, being 55 feet in length. The black *baleen*, or whalebone, which borders each side of the upper jaw, is a point worthy of especial notice. Through this, as a strainer, the animal passed large volumes of water taken into its opened mouth, and separated from it the myriad small jelly-fishes and other minute marine organisms



which supplied its sole nourishment. This is an unusually perfect and entire individual, and it has been mounted with great care to bring out the peculiar features of cetacean anatomy.

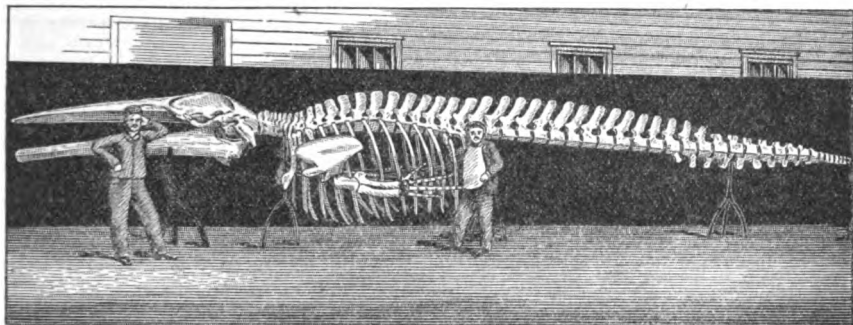


FIG. 59.—Skeleton of Fin-Back Whale (*Balaenoptera musculus*).

*Cabinet of Comparative Anatomy.*

In the long case east of the whale, quite filling the shelves and floor of both sides, and with a few specimens—too large to enter it—on top of the case, is arranged a cabinet of comparative anatomy. It consists of beautiful snow-white skeletons, mounted with brass supports on handsome black walnut pedestals. This is a systematic series, chosen with care to represent the different natural orders in the several classes of vertebrate animals. They are:

(1) **MAMMALS**.—*Primates*: Gorilla (*Troglodytes gorilla*), Orang outang (*Simia satyrus*), Chimpanzee (*Troglodytes niger*), Dog-faced Baboon (*Cynocephalus porcarius*), Rhesus (*Macacus rhesus*), Capuchin (*Cebus capucinus*), Langur (*Semnopithecus cucullatus*), Onistiti (*Hapale ædipus*), Slow Lemur (*Nycticebus tardigradus*), Slender Lemur (*Loris gracilis*).

*Cheiroptera*: Ceylon Fruit Bat (*Pteropus Edwardsii*), Ronssette Bat (*Pteropus poliocephalus*), Hoary Bat (*Vespertilio pruinosus*).

*Insectivora*: European Hedgehog (*Erinaceus europæus*), Teurec (*Centetes ecaudatus*), European Mole (*Talpa europæa*), Star-nosed Mole (*Condylura cristata*).

*Carnivora*: Polar Bear (*Ursus maritimus*), Dog (*Canis familiaris*), Leopard (*Leopardus varius*), Wild Cat (*Lynx rufus*), Red Fox (*Vulpes fulvus*), Striped Hyena (*Hyæna striata*), American Otter (*Lutra canadensis*), Badger (*Taxidea americana*), Skunk (*Mephitis mephitis*), American Sable (*Mustela americana*), Civet Cat (*Fiverra civetta*).

*Pinnipedia*: Walrus (*Rosmarus obesus*—mounted skull), Sea-lion (*zalophus Gillespii*).

*Cetacea*: White Whale (*Beluga catodon*), Porpoise (*Phocæna communis*).

*Sirenia*: Dugong (*Halicornæ australis*—mounted skull), Manatee (*Manatus americanus*).

*Ungulata*: Burchell's Zebra (*Asinus Burchelli*), Baird's Tapir (*Elasmognathus Bairdii*), Hippopotamus (*Hippopotamus amphibius*—skull), Collared Peccary (*Dicotyles torquatus*), Llama (*Auchenia guanaco*), Java Deer (*Tragulus javanicus*), American Reindeer (*Tarandus rangifer*), Roebuck (*Capreolus capræa*), Sheep (*Ovis aries*), Bison, "Buffalo" (*Bison americanus*), Mountain Sheep (*Caproris montana*), Pronghorn (*Antilocapra americana*).

*Proboscidea*: Indian and African Elephants (*Elephas indicus* and *Elephas africanus*—molar teeth).

*Rodentia*: European Squirrel (*Sciurus vulgaris*), Red Squirrel (*Sciurus hudsonius*), Woodchuck (*Arctomys monax*), Pouched Rat (*Geomys bursarius*), Jerboa (*Dipus hirtipes*), Capybara (*Hydrochærus capybara*), Agouti (*Dasyprocta agouti*), Coypu (*Capromys pilorides*), Jack Rabbit (*Lepus callosus*).

*Edentata*: Three-toed Sloth (*Arctopithecus flaccidus*—this specimen may be placed on the platform directly beneath the Megatherium, as being his nearest modern representative in skeleton structure), Aard Vark (*Orycteropus capensis*), Great Ant-eater (*Myrmecophaga jubata*—skull).

*Marsupialia*: Viverrine Dasyure (*Dasyurus viverrinus*), Opossum (*Didelphys virginiana*), Giant Kangaroo (*Macropus gigas*), Thick-tailed Kangaroo (*Halmaturus brachyurus*), Vulpine Phalanger (*Phalangista vulpina*), Koala (*Phascolarctos cinereus*).

*Monotremata*: Ornithorhynchus, or Duck-billed Platypus (*Ornithorhynchus anatinus*), Echidna, or Marsupial Porcupine (*Echidna hyetrix*).

(2) BIRDS.—*Passeres*: Robin (*Turdus migratorius*), Nuthatch (*Sitta cæsia*), American Crow (*Corvus frugivorus*), European Jay (*Garrulus glandarius*).

*Picariæ*: Helmeted Horn-bill (*Buceros galeatus*).

Toucan (*Rhamphastos cuculi*), Belted Kingfisher (*Ceryle alcyon*), Guaharo Bird (*Stor toris caripensis*).

*Psittaci*: Blue and Yellow Macaw (*Ara ararauna*), Brazilian Parrot (*Conurus viridissimus*).

*Columbæ*: Common Pigeon (*Columba livia domestica*).

*Gallinæ*: Pinnated Grouse (*Cupidonia cupido*), Quail (*Ortyx virginiana*), Peacock (*Pavo cristatus*), Fire-back Pheasant (*Euplocamus*), Common Fowl (*Gallus domesticus*).

*Accipitres*: Red-shouldered Hawk (*Buteo lineatus*), Fish Hawk (*Pandion carolinensis*), Indian Vulture (*Neophron ginginianus*), Marsh Hawk (*Circus hudsonius*), Great Horned Owl (*Bubo virginianus*), Little Screech Owl (*Scops asio*), Short-eared Owl (*Brachyotus Cassini*).

*Struthiones*: Emu (*Dromaius Noræ Hollandiæ*), Ostrich (*Struthio camelus*), Cassowary (skull), Apteryx (*Apteryx Mantelli*).

*Grallæ*: Little Bustard (*Otis tetrax*), Green Heron (*Ardea viridis*), Saras Crane (*Grus antigone*), Jacana (*Parra jacana*), Marbled Godwit (*Limosa fedoa*), White Ibis (*Ibis alba*), Sora Rail (*Porzana carolina*), Maribout Stork (*Leptoptilus argali*).

*Natatores*: Canada Goose (*Bernicla canadensis*), Mallard (*Anas boschas*), Black Swan (*Cygnus atratus*), Great Black-backed Gull (*Larus marinus*), Royal Tern (*Sterna regia*), Albatross (*Diomedea exulans*—skull), Florida Cormorant (*Graculus floridanus*), Loon (*Colymbus glacialis*), Frigate Bird (*Ichthyophaga fregata*), Horned Grebe (*Podiceps auritus*), Penguin (*Spheniscus demersus*), Puffin (*Fratercula cirrhata*), Guillemot (*Uria troile*), Mutton Bird (*Nestris brevicauda*), Gannet (*Sula bassana*), Brown Pelican (*Pelicanus furvus*).

(3) REPTILES.—*Serpentes*: Python (22 feet long), Garter Snake (*Eutania sirtalis*), Banded Sea Snake (*Platurus fasciatus*).

*Lacertilia*: Gould's Monitor (*Monitor Gouldii*), Black-yellow Cyclodus (*Cyclodus nigroluteus*), Mastigure (*Uromastix spinipes*), Scheltopusic (*Pseudopus Pallasii*), Horned Frog (*Phrynosoma cornutum*).

*Sauria*: Crocodile [13 feet long] (*Crocodilus vulgaris*), Alligator (*Alligator mississippiensis*—skull), Bornean Gavia (*Tomistoma Schlegelii*—skull).

*Rhynchocephalina*: Tuatara; *Sphenodon* (*Hatteria punctata*).

*Chelonis*: Painted Tortoise (*Chrysemys picta*), Musk Tortoise (*Ozotheca odorata*), Box Turtle (*Cistudo clausa*), Tartaruga (*Testudo graeca*), Snapping Turtle (*Chelydra serpentina*), Soft-shelled Turtle (*Aspionectes ferox*).

(4) BATRACHIA.—*Urodela*: Spotted Salamander (*Salamandra maculosa*), Giant Salamander (*Sieboldia maxima*), "Hell-bender" (*Menopoma alleghaniensis*), Siren (*Siren lacertina*), Menobranchus (*Menobranchus lateralis*).

*Anoura*: Bull Frog (*Rana mugiens*), Toad (*Bufo americanus*).

(5) FISHES.—Shark (jaws), Hammer-head Shark (*Zygæna malleus*), Port Jackson Shark (*Cestracion Philippi*), Skate (*Raja batis*), Barramunda (*Ceratodus Forsteri*), Polypterus (*Polypterus biclir*), Gar Pike (*Lepidosteus bison*), "Dogfish" (*Amia occidentalis*), Paddle-fish (*Polyodon folium*—skull), Mud-laff (*Synanceia verrucosa*), Scabbard Fish (*Trichurus lepturus*), Codfish (*Morrhua vulgaris*), Catfish (*Pimelodus pullus*), Phractocephalus, Saw-bellied Salmon (*Serrasalmo*), Notopterus (*Notopterus chitala*), Orange File-fish (*Monocanthus aurantiacus*).

The above enumeration will give a view of the scientific fullness of this cabinet of comparative anatomy. In its comprehensive representation of typical forms it probably has not its equal south or west of the National Museum at Washington. It will be invaluable for teaching the science of osteology in any college or university.

*Anthropoid Apes*.—The series of mounted specimens of mammals in the cabinet is led by two groups of apes of great stature and of a wonderfully human aspect. They show a greater advance and approximation toward man than any member of the animal kingdom below him. In the great glass case which faces the visitor approaching by the northern stair-case, is a group of gorillas. Here, mounted on a tree, half sitting half standing on a side branch, is a noble male gorilla and his smaller female. The male is over 5 feet in height, and of bodily proportions quite exceeding those of an adult man. The girth of his chest is 58 inches, which size diminishes little in the body below. His arms are of great length, reaching quite down to his knees. The hands are large and well-developed, with distinct thumbs, and well-developed nails on all five digits. The body is bare on the chest and back, but is elsewhere covered with a coat of gray hair, which assumes great length on his arms and shoulders. His head, as large as a man's, has a villainously low forehead, but his facial angle is still not greater, nor his countenance more brutal, than that of many a vicer in various parts of our country! These specimens are from the region of the Gaboon in Western Africa, on the equator.

Across the aisle from the gorillas, in a high case 12 feet long, is a group of three

orang outangs (*Simia satyrus*). There are three specimens,—an adult male and an adult and a young female. The male measures 4 feet 2 inches from head to heel, with a stout body, very long arms, and very short legs. His great round head possesses the wonderful cheek callosities peculiar to his sex, which give his face a strangely flattened character, forming an almost perfect circle. The group is placed in the tree-



FIG. 60. —Gorilla (*Troglodytes gorilla*).

tops on the branches of the durian tree, of the fruit of which the animal is very fond. The male is hanging by one hand and foot to a stout limb and is reaching stealthily out to snatch a large durian from the hand of the old female hanging on a tree to the left. On the right of the group in the foreground is a young female lying on her back, fast asleep, upon a nest of green boughs broken off and piled crosswise in the top of a small sapling. These specimens are from the river Sadong, in Borneo.

#### Cabinet of Mounted Animals.

In the cases through the center and on the east side of the hall, with some on top of cases and in a closed area along the gallery edge, is a large and carefully chosen cabinet of mounted (stuffed) animals, belonging to each of the five classes of vertebrate life. These are handsomely and naturally mounted on ash pedestals, and make together a valuable zoological cabinet, as well as an interesting and graphic display. They are :

(1) MAMMALS.—*Primates* : Gibbon (*Hylobates leuciscus*), Proboscis Monkey (*Nasalis larvatus*), Langur (*Semnopithecus cucullatus*), White-throated Monkey (*Cercopithecus albogularis*), Sooty Mangaby (*Cercocebus fuliginosus*), Rhesus (*Macacus rhesus*), Chacma (*Cynocephalus porcarius*), Dog-faced Baboon (*Cynocephalus papio*), Hamadryas (*Cynocephalus hamadryas*), Coaita (*Ateles paniscus*), Brown Cuxio (*Cheirotopes satanas*), Gray Capparro (*Lagothrix Humboldti*), Ouistiti (*Midas derelliti*), Feline Donroucouli (*Nyctipithecus felinus*), Ruffed Lemur (*Varecia varia*), Golden Lemur (*Propithecus coronatus*), Gray Lemur (*Hapalemur griseus*), Slow Lemur (*Nycticebus tardigradus*).

**Cheiroptera:** Roussette Bat (*Pteropus poliocephalus*), Gray Kalong (*Pteropus griseus*), Striped Fruit Bat (*Pteropus capistratus*), Duke of York Bat (*Cephalotis Peronii*), Harpaya, European Brown Bat (*Vespertilio noctula*).



FIG. 61.—Roussette Bat.

**Insectivora:** European Hedgehog (*Erinaceus europæus*), Tenrec (*Centetes ecaudatus*), European Mole (*Talpa europæa*), Shrew Mole (*Scalops aquaticus*), Elephant Shrew (*Macroscellus intufi*), Bornean Squirrel Shrew (*Tupaia tana*), Colugo (*Galeopithecus volans*).

**Carnivora:** Lion (*Felis leo*), Bengal Tiger (*Felis tigris*), Black Leopard (*Felis leopardus melas*), Jaguar (*Felis onca*), Chaus (*Felis calligata*), Bengal Cat (*Felis bengalensis*), Leopard Cat (*Felis minuta*), Canada Lynx (*Lynx canadensis*), Zibeth (*Viverra zibetha*), Binturong (*Arctictis binturong*), Paradoxure (*Paradoxurus typus*), Bennett's Cynogale (*Cynogale Bennettii*), Black-footed Sable (*Martes melanopus*), Mink (*Putorius vison*), Polecat (*Putorius fatidus*), Galera, American Otter (*Lutra canadensis*), Ichneumon (*Herpestes ichneumon*), European Wolf (*Lupus vulgaris*), Red Fox (*Vulpes fulvus*), Arctic Fox (*Leucocyon lagopus*), Raccoon Dog (*Nyctereutes procyonoides*), Grizzly Bear (*Ursus horribilis*), Black Bear (*Ursus americanus*), Syrian Bear (*Ursus syriacus*), Sun Bear (*Helarctos malayanus*), Raccoon (*Procyon lotor*), Kinkajou (*Cercoleptes caudivolvulus*).

**Pinnipedia:** Walrus (*Odobenus obesus*), Sea Lion (*Eumetopius Stelleri*), Sea-leopard (*Zalophus californicus*), Fur Seal (*Callorhinus ursinus*), Harp Seal (*Phoca grænlantica*), Harbor Seal (*Phoca vitulina*).

**Cetacea:** Porpoise (*Phocæna communis*).

**Sirenia:** Manatee (*Manatus americanus*).

**Ungulata:** Hippopotamus (*Hippopotamus amphibius*), Wild Boar and two young (*Sus scrofa*), Collared Peccary (*Dicotyles torquatus*), Rhinoceros (*Rhinoceros Floweri*), Bison ["Buffalo"] (*Bison americanus*), Ravine Deer (*Tragops Bennettii*), Arabian Antelope (*Antilope cervicapra*), Rocky Mountain Goat (*Mazama americana*), Saiga (*Saiga tartarica*), Prong-horn Antelope (*Antilocapra americana*), Koodoo (*Strepsiceros kudu*), Rocky Mountain Sheep (*Caprovris montana*), Oryx (*Oryx beisa*), Giraffe (*Giraffa caméléopardalis*), Moose (*Alces malchis*), Elk (*Cervus canadensis*), Mule Deer (*Cervus macrotis*), Musk Deer (*Tragulus kanchil*), Camel (*Camelus arabicus*).

**Hyracoidæ:** Coney [Klipdas] (*Hyrax capensis*).

**Rodentia:** European Squirrel (*Sciurus vulgaris*), Raffle's Squirrel (*Sciurus Rafflesii*), Cocoa Squirrel (*Sciurus plantani*), Bornean Flying Squirrel (*Pteromys nitidus*), Prairie Dog (*Cynomys ludovicianus*), Woodchuck (*Arctomys monax*), American Beaver—male, female, and 2 young (*Castor canadensis*), Pouched Gopher (*Geomys bursarius*), Shewellel (*Haplodontia leporina*), Hamster (*Cricetus frumentarius*), Lemming (*Myodes*), Dormouse (*Myoxus*), Golden-bellied Water-rat (*Hydromys chrysogaster*), Musk Rat (*Fiber zibethicus*), Borneo Spiny Rat (*Acanthion javanicum*), African Porcupine (*Hystrix cristata*),

American Porcupine (*Erethizon dorsatum*), Tree Porcupine (*Cercolabes prehensilis*), Viscacha (*Lagostomus trichodactylus*), Coyote (*Canis latrans*), Jack Rabbit (*Lepus callosus*), Cotton-tail Rabbit (*Lepus campestris*).

*Edentata*: Two-toed Sloth (*Choloepus Hoffmani*), Maned Sloth (*Bradypus crinitus*), Collared Sloth (*Bradypus torquatus*), Armadillo (*Tatusia peba*), Giant Armadillo (*Prionodon gigas*), Great Ant-eater (*Myrmecophaga jubata*).

*Marsupialia*: Viverrine Dasyure (*Dasyurus viverrinus*), Opossum (*Didelphys virginiana*), "Tiger Wolf" (*Thylacinus cynocephalus*), Giant Kangaroo (*Macropus gigas*), Red Kangaroo (*Macropus rufus*), Black-tailed Kangaroo (*Halmaturus ualabatus*), Pademelon Kangaroo (*Halmaturus thetidis*), Rufous Rat Kangaroo (*Hyppiprymnus rufescens*), Koala (*Phascogale cinereus*), Vulpine Phalanger (*Phalangiata vulpina*), Sooty Phalanger (*Phalangiata fuliginosa*), Flying Phalanger (*Petaurista taguanoides*), Squirrel Flying Phalanger (*Belideus sciurus*), Wombat (*Phascolomys ursinus*).



FIG. 62.—Koala.

*Monotremata*: Ornithorhynchus, or Duck-billed Platypus (*Ornithorhynchus anatinus*), Echidna, or Marsupial Porcupine (*Echidna hystrix*).

There are, further, mounted heads on black-walnut shields of Virginia Deer, Pronghorn Antelope, Koala, Walrus, and Elk, also antlers of latter.

(2) BIRDS.—*Accipiter*: African Vulture (*Otrogypus auricularis*), Lammergeyer (*Gypsbarbatus*), Audubon's Caracara (*Polyborus cheriway*—2 specimens), Red-shouldered Buzzard (*Buteo lineatus*), Broad-winged Buzzard (*Buteo pennsylvanicus*), Arabian Eagle, Mace's Sea Eagle (*Cuncuma Macei*), Rock Falcon (*Cerchneis rupicola*), Sea Hawk (*Thalassatus pelagicus*), Harpy, Sparrow Hawk (*Accipiter nisus*—2 specimens), Collared Sparrow Hawk (*Urospiza torquatus*—3 specimens), Egyptian Kite (*Milvus aegyptius*), American Goshawk (*Astur atricapillus*), Hen Harrier (*Circus cyaneus*), Sparrow Owl (*Athene noctua*), Bengal Owl (*Bubo bengalensis*), Great Horned Owl (*Bubo virginianus*), Spotted Owl (*Spiloglaux maculatus*), and others.

*Passeres*: Night-Jar (*Nyctibius cornutus*), Tawny-shouldered Podargus (*Podargus strigoides*), Whiskered Tree Swallow (*Dendrochelidon mystacea*), Madagascar Roller (*Eurystomus madagascarensis*), Splendid Trogon (*Trogon splendens*), Indian Trogon (*Harpactes kasamba*), Diard's Trogon (*Harpactes Diardi*), Entombia (*Entombia pileata*), Kingfisher (*Alcedo isipida*), Azure Kingfisher (*Alcyon azurea*), Giant Australian Kingfisher (*Dacelo gigas*), Spotted Japan Kingfisher (*Megaceryle guttata*), Gould's Kingfisher (*Dacelo Gouldii*), Racquet-tail Kingfisher (*Rectes uropygialis*), White-shouldered Rifle Bird (*Seleucides niger*), White-faced Honey-eater (*Melliphaga phrygia*), Parson Bird (*Prothemadera nova seelandiae*), Lyre Bird (*Menura superba*—3 specimens), Flame Breasted Robin (*Petroica phanicea*), Pied Grallina (*Grallina picata*), Hermit Thrush (*Turdus Pallasii*), Great-billed Tody (*Cymbirhynchus macrorhynchus*), Fork-tail (*Dicurus* —), Satin Bower Bird (*Ptilonorhynchus holosericeus*), Noisy Pitta (*Pitta strepitans*), Macklot's Pitta (*Pitta Macklotii*), Black-faced Graucalus (*Graucalus melanops*), Temminck's Graucalus (*Graucalus Temminckii*), Pyroderus (*Pyroderus canadensis*), Cock of the Rock (*Rupicola peruviana*), Crow-shrike (*Cracticus cassicus*), White-throated Thick-head (*Pachycephala gutturalis*), Telophorus (*Telophorus gutturalis*), European Jay (*Garrulus glandarius*), Tasmanian Piping Crow (*Gymnorhina tibicen*), Common Crow (*Corvus americanus*), Raven (*Corvus corax*), American Magpie (*Pica melanoleuca hudsonica*), Red Bird of Paradise (*Paradisaea raggiana*), Lesser Paradise Bird (*Paradisaea minor*), Magnificent Paradise Bird (*Diphyllodes speciosa*), King Paradise Bird (*Cicciturus*

regius), Starling (*Sturnus vulgaris*), Heterolocha (*Heterolocha Gouldii*), Oriole (*Cacicus*), Purple Grackle (*Quiscalus purpureus*), Yellow-headed Blackbird (*Xanthocephalus icterocephalus*), Snow Bunting (*Plectrophanes nivalis*), Tanager (*Pyrranga æstiva*), South African Plantain Eater (*Turacus musiphaga*), Red-necked Hornbill (*Rhyticeros ruficollis*), Abyssinian Hornbill (*Buceros atratus*), and many others.

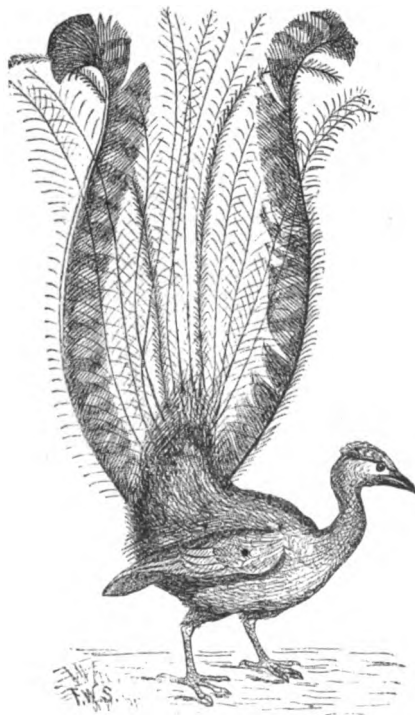


FIG. 63.—Lyre Bird.

**Scansores:** Cuvier's Toucan (*Rhamphastos Curieri*), Pennant's Parakeet (*Platycercus Pennanti*—2 specimens), Collared Parakeet (*Barnardius semitorquatus*), Barraband's Parakeet (*Polytelis Barrabandi*), Blue-tailed Parakeet (*Apornis cyanopygius*), Red and Blue Macaw (*Ara macao*), Blue-bellied Lorikeet (*Trichoglossus Novæ Hollandiæ*—2 specimens), Scaly-breasted Lorikeet (*Trichoglossus chlorolopidotus*), Lory (*Lorius* —), Musk Lorikeet (*Glossopsitta concinnus*), Swift Lorikeet (*Nanodes discolor*), Red and Green Eclectus (*Eclectus polychlorus*—3 specimens), Kaka [Mountain Parrot] (*Nestor meridionalis*), Kea [Carnivorous Parrot] (*Nestor notabilis*), Sparrow Parrot (*Psittacula passerina*), Sulphur-crested Cockatoo (*Cacatua galerita*), Leadbeater's Cockatoo (*Cacatua Leadbeateri*—2 specimens), Ophthalmic Cockatoo (*Cacatua ophthalmica*), Megalaima (*Megalaima versicolor*), Capito (*Capito sp.*), Eos (*Eos cardinalis*), Banksian Cockatoo (*Calyptorhynchus Banksii*), Yellow-eared Black Cockatoo (*Calyptorhynchus zanthonotus*), Gang-gang Cockatoo (*Callocephalon galeatum*), Great Black Cockatoo (*Mirocroglossum aterrimum*), Red-shafted Flicker (*Colaptes mexicanus*), Centrococcyx (*Centrococcyx eurycercus*), and others.

**Columbæ:** Yellow-bellied Fruit Pigeon (*Ptilopus xanthogaster*), Magnificent Fruit Eater (*Carpophaga magnifica*), Van Wyck's Globicera (*Globicera Van Wyckii*), Australian Large-tailed Pigeon (*Macropygia phasianella*), Goura Crowned Pigeon (*Goura coronata*), Top-knot Pigeon (*Lopholaimus antarcticus*).

**Gallinæ:** Argus Pheasant, male and female (*Argusianus giganteus*), Amherst Pheasant (*Chrysolophus pictus*), Impeyan Pheasant (*Lophophorus Impeyanus*), Golden Pheasant (*Chrysolophus pictus*), Japanese Pheasant (*Phasianus versicolor*), Sammering's Pheasant (*Graphephasianus Sammeringii*), Euplocornis, Sonnerat's Jungle Fowl (*Gallus Sonneratii*), Silver Pheasant (*Gennarus nyctemerus*), Wild Turkey (*Meleagris gallopavo*), Honduras Turkey (*Meleagris ocellatus*), Capercailzie (*Tetrao urogallus*), Sage Grouse

(*Centrocercus urophasianus*), Peacock (*Pavo cristatus*), Crested Curassow (*Crax allector*), Zanzibar Guinea Fowl (*Numida vulturina*).

**Opisthocomi:** Hoatzin (*Opisthocomus cristatus*).

**Struthionies:** African Ostrich, male, female, and young (*Struthio camelus*), Rhea [South American Ostrich] (*Rhea americana*), Emu (*Dromaius Nova Hollandia*), Cassowary (*Casuarus galeatus*), Apteryx (*Apteryx Oweni*).

**Grallae:** Little Bustard (*Otistetrax*), Australian Bustard (*Choriotis australis*), Tasmanian Double-banded Dottrel (*Ochthodromus bicinctus*), Australian Crane (*Grus australasiana*), Great Blue Heron (*Ardea Herodias*), Reddish Egret (*Demigretta rufa*), American Bittern (*Botaurus minor*), Nankeen Night Heron (*Nyctiardea caledonica*), Adjutant (*Leptoptilus dubius*), Wood Ibis (*Tantalus loculator*), Straw-necked Ibis (*Carphibis spicollis*), Weka, Wingless Rail (*Ocydromus australis*), Black-backed Porphyrio (*Porphyrio melanotus*), Ruff, group of six (*Machetes pugnax*), Crested Screamer (*Chauna chavaria*), Roseate Spoonbill (*Platalea ajaja*).

**Nataiores:** American Flamingo (*Phaenicopterus ruber*), Spnr-winged Goose (*Plectropterus gambiensis*), White-fronted Goose (*Anser albifrons*), Mute Swan (*Cygnus olor*), Wood Duck (*Aix sponsa*), Mandarin (*Aix galericulata*), Blue-winged Teal (*Querquedula ciria*), European Green-winged Teal (*Nettion crecca*), American Widgeon (*Mareca americana*), Tasmanian Broad-bill (*Spatula rhynchotis*), Barrow's Golden Eye (*Bucephala islandica*), King Eider (*Somateria spectabilis*), Steller's Eider (*Stelleria dispar*), Scoter (*Oidemia americana*), Australian Musk Duck (*Biziura lobata*), Smew (*Mergellus albellus*), Red-necked Grebe (*Podiceps ruficollis*), Crested Grebe (*Podiceps cristatus*), Crested Penguin (*Eudyptes chrysolopha*), Little Penguin (*Eudyptila minor*), Sea Dove (*Ille nigricans*), Western Guillemot (*Uria columba*), Wilson's Petrel (*Oceanites oceanica*), American Mew Gull (*Larus canus brachyrhynchus*), Laughing Gull (*Chroicocephalus rudibundus*), Common Tern (*Sterna hirundo*), Jaeger (*Stercorarius parasiticus*), Caspian Tern (*Thalasseus caspia*), Crested Cormorant (*Graculus leucogaster*), White-breasted Cormorant (*Hypoleucus leucogaster*), American White Pelican (*Pelecanus erythrorhynchus*), and others. Besides the above enumerated birds there are five groups mounted under glass as medallions.

(3) **REPTILES.**—*Serpentes:* Python, 3 specimens, 2 species, one 22 feet long; Bungarus (*Bungarus fasciatus*), Banded Sea Snake (*Platurus fasciatus*), Hog-nose Snake (*Heterodon platyrhinus*), Painted Tree Snake (*Dendrophis picta*), Cobra de Capello (*Naja tripudians*), Northern Rattlesnake (*Crotalus confluentes*), Dipsas (*Dipsas dendrophila*).

*Lacertilia:* Gould's Monitor (*Monitor Gouldii*), Black and Yellow Cyclodus (*Cyclodus nigroluteus*), Mastigure (*Cromastix spinipes*), Horned Frog (*Phrynosoma cornutum*), Australian Rugose Stump-tail (*Trachydosaurus rugosus*), King's Frilled Lizard (*Chlamydosaurus Kingi*), Bearded Grammatophore (*Grammatophora barbata*), Tuberculated Iguana (*Iguana tuberculata*).

*Rhynchocephalina:* New Zealand Tuatara [Sphenodon] (*Hatteria punctata*).

*Sauria:* Florida Crocodile (*Crocodilus floridianus*), Indian Gavial (*Gavialis gangeticus*).

*Chelonia:* Madagascar Rayed Tortoise (*Testudo radiata*), Musk Tortoise (*Osotheus odorata*), Box Tortoise (*Cistudo carolina*), Emyda (*Emyda gambia*), Tryonx (*Tryonx rafeit*), Bornean Three-keeled Emys (*Emys tri-juga*), Snapping Turtle (*Chelydra serpentina*), Soft-shelled Turtle (*Aspionectes spinifer*), Speckled Terrapin (*Nanemys guttata*), Salt-marsh Terrapin (*Malacoclemys palustris*), Green Turtle (*Chelonia mydas*), Indian Carey (*Chelonia virgata*), Loggerhead (*Thalassochelys caonina*), Hawk-bill Turtle (*Eretmochelys imbricata*), Harp Turtle (*Sphargis coriacea*).

(4) **BATRACHIANS.**—*Urodela:* Japanese Giant Salamander (*Sieboldia mazima*).

*Anoura:* Bull Frog (*Rana mugiens*), Toad (*Bufo aqua*).

(5) **FISHES.**—Hammer-head Shark (*Zygana malleus*), Blue Shark (*Carcharias glaucus*), Port Jackson Shark (*Cestracion Philippi*), Tiger Shark (*Stegastoma tigrinum*), Saw Fish (*Pristia antiquorum*), Australian Wabblygong (*Crossorhinus barbatus*), Rhinobates, Eagle Ray, Protopterus (*Protopterus annectens*), European Sturgeon (*Acipenser sturio*), Paddle-fish (*Polyodon folium*), Polypterus (*Polypterus bichir*), Alligator Gar (*Lepisosteus productus*), Serranus, 2 species (*Serranus erythrogaster* and *Serranus sp.*), Sword Fish, 10 feet long (*Xiphias gladius*), Unicorn Fish (*Naseus unicornis*), Angler (*Lophius piscatorius*), Gurnard (*Dactylopterus volitans*), Flying Fish (*Exocetus volitans*), Lump Fish (*Cyclopterus lumpus*), Hog-fish (*Lachnolæmus falcatus*), Coris (*Coris aygula*), Ling (*Lota lotra*), Salmon (*Salmo trutta*), Electric Eel (*Gymnotus electricus*), Muræna (*Muræna helena*), Sygnathus, Hippocampus, Trigger Fish, 2 species (*Baliates conspicillum* and *B. vetula*), Horned Coffer Fish and 3 other species of Ostracion (*Ostracion cornutus*, *O. brevicaudalis*, *O. punctatus*, *O. auritus*), Puffin Fish (*Tetrodon lævigatus*), Balloon Fish (*Tetrodon hispidus*), Porcupine Fish (*Chilomycterus reticulatus*), Salt-water Lamprey (*Petromyzon marinus*), Lancelet (*Branchiostoma lanceolatum*).

The observations made relative to the systematic series of comparative anatomy or skeletons on a previous page will apply also to this cabinet of mounted (stuffed) specimens. A simple reading of the above enumerative lists will show how fully each



division of a systematic zoological classification is here represented by chosen typical forms. But this bare enumeration of the specimens is insufficient to give an adequate idea or appreciation of the scientific merit, the educational value, or the museum display of this cabinet. For this the collection itself must be inspected and measure taken of its qualities and comprehensiveness. A teacher walking slowly in front of the cases will see that he has before him exactly the specimens which he wishes to use in an extended course of lectures upon the animal kingdom. With small exception every specimen stands as a type-form in some greater or lesser group. And, conversely, he will not find a group of vertebrate animals which he cannot represent or illustrate from this collection.

The value of the individual specimens is in many cases very great—nearly a score of them being worth from \$100 to \$300 each. Such are the rhinoceros, hippopotamus, elk, moose, giraffe (13 feet high), walrus, sea-lion, camel, koodoo, bison, lion, tiger, manatee, two ostriches, swordfish, and others. All these forms—giant, stately, graceful, elegant, odd, quaint, bizarre—all join to make a museum of varied beauty and great attraction.

As a conclusion to the many hundred forms of mounted animals standing in and on the cases and along the gallery edge, described in the systematic series on the previous pages, there is a final case directly adjoining the great arched window on the east side of the museum, which is well worthy of notice.

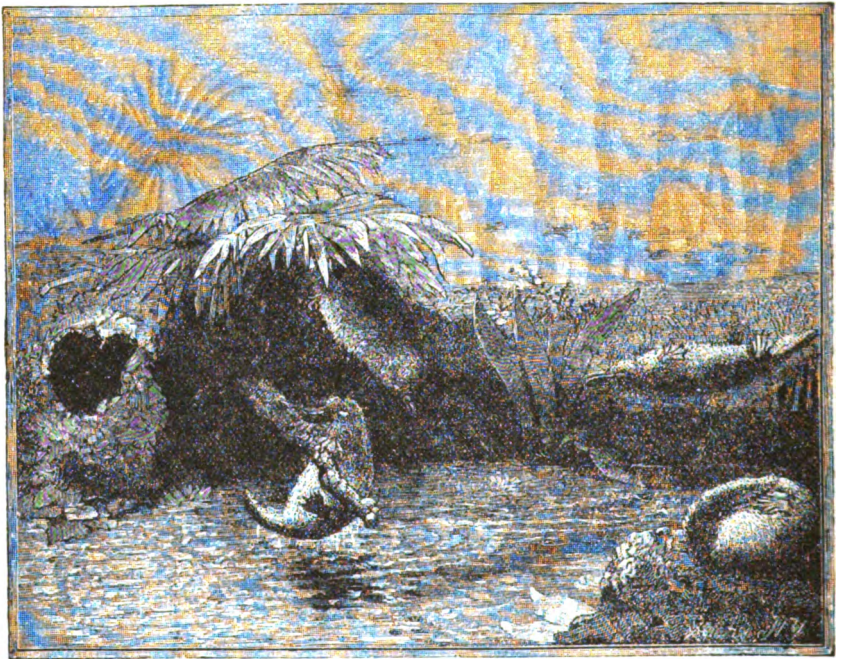


FIG. 64.—Group of Duck-billed Platypus (*Ornithorynchus paradoxus*).

This case contains a group of the Duck-billed Platypus (*Ornithorynchus paradoxus*), one of the most singular creatures in the entire mammalian world. In its body, tail, and feet it has some of the appearances of a mole and of a beaver, while its head, with the prolonged, wide, flattened beak, quite recalls a duck. It has a soft double fur like an otter, with like webbed feet, spurs like a cock, its tail flat like that of a beaver, although covered above with hair instead of scales.

The group, consisting of nine individuals—4 adult males, 4 females, and 1 young—represents these strange creatures in some of their habitual actions and attitudes—swimming in the water, seeking food at the bottom of a pond, coming from and entering their burrows, rolled up in sleeping attitudes, climbing overhanging limbs and basking on the banks.

Very little is known of the habits of the ornithorhynchus, and its mode of reproduction, whether viviparous or oviparous, has long been a mooted point—the opprobrium of Australian zoologists.



ANTHROPOLOGY AND ALLIED SUBJECTS.

Next to the group of oranges is a case devoted to anthropology and allied subjects. On its upper shelf are a number of busts of anthropoid apes, gorilla (male and female), chimpanzee, orang-outang, giving them in the order in which they recede from man, making cranial character the test. Here is also a bust of the *Neanderthal man*. This is an ideal restoration, based upon the famous "Neanderthal skull," found in 1857 in the Neanderthal, Rhenish Prussia.

Further is a series of 37 plaster casts of skulls of various races of mankind. They were taken from specimens in the museum of the Jardin des Plantes, at Paris, by Professor Flourens, the anthropologist and director of this department: Neanderthal man, Engis man, Ancient Inar, Aimara, Indian (Bolivia), Madura (Java), Chinook Indian, Tasmanian, Caucasian woman, Aztec, New Zealander, Mongolian, Malay woman, Chinese, Madagascarene, Druid (France), Laplander, Makoka, Nanaquois, Carib, Bochimian woman, Negress (Sierra Leone, Mozambique, Malabar), Bengalese, Patagonian, Bedouin, Lapland woman, Russian, Swede, Finlander, Kruman, Negritie, Tartar, Viti Islander (from Easter Isles [Rapa-Nis]), Mexican.

The following series, from the museum of the Royal College of Surgeons, at London, consists of casts of the interior of the cranial cavity, representing exactly the form and size of the brain (when covered by its membranes) of men of various races, and of many other species of animals:

- |                                                                |                                       |
|----------------------------------------------------------------|---------------------------------------|
| 1. Man. <i>European</i> .                                      | 25. Roussette bat.                    |
| 2. Man. <i>Turk</i> .                                          | 26. Tiger.                            |
| 3. Man. <i>Tartar</i> . (Remarkably brachycephalic.)           | 27. Dog.                              |
| 4. Man. <i>Chinese</i> .                                       | 28. Walrus.                           |
| 5. Man. <i>New Zealander</i> .                                 | 29. Porpoise.                         |
| 6. Man. <i>East African</i> .                                  | 30. Ducong.                           |
| 7. Man. <i>West African</i> .                                  | 31. Elephant.                         |
| 8. Man. <i>Bushman</i> .                                       | 32. Hippopotamus.                     |
| 9. Man. <i>Australian</i> . (Port Essington, compressed type.) | 33. Pig.                              |
| 10. Man. <i>Australian</i> . (Adelaide, depressed type.)       | 34. Ox.                               |
| 11. Gorilla, adult male.                                       | 35. Camel.                            |
| 12. Chimpanzee, adult male.                                    | 36. Horse.                            |
| 13. Orang, adult male.                                         | 37. American tapir.                   |
| 14. Siamang.                                                   | 38. Sumatran rhinoceros.              |
| 15. Entellus monkey.                                           | 39. Hyrax.                            |
| 16. Macaque monkey.                                            | 40. Capybara.                         |
| 17. Chacma baboon.                                             | 41. Beaver.                           |
| 18. Howling monkey.                                            | 42. Rabbit.                           |
| 19. Squirrel monkey.                                           | 43. Sloth.                            |
| 20. Ruffed lemur.                                              | 44. <i>Glyptodon clavipes</i> .       |
| 21. <i>Galeopithecus volans</i> .                              | 45. Kangaroo.                         |
| 22. Tupaia.                                                    | 46. <i>Thylacoleo carnifex</i> .      |
| 23. Tenrec.                                                    | 47. Wombat.                           |
| 24. Hedgehog.                                                  | 48. <i>Dasyurus ursinus</i> .         |
|                                                                | 49. <i>Echidna hystrix</i> .          |
|                                                                | 50. <i>Ornithorhynchus anatinus</i> . |

On the top of this and adjoining cases are busts—bronzed casts of life size—of the following distinguished naturalists: Agassiz, Buffon, Cuvier, Humboldt, Huxley, Linnæus, and St. Hilaire.

*Cabinet of Invertebrate Forms.*

The double-sloping, glazed case, 50 feet long, at the north end of the hall, on its east side, has been devoted to invertebrate life, mainly marine forms from our modern oceans. Here are arranged, on step-like shelves, series of specimens of varied and delicate colors and of most strange and fantastic forms. The specimens—more than one thousand in all—are of the choicest quality, and are so selected as to include all the important forms and species in the classification of these lovely gems of the ocean. The collection thus gives a full and scientific exposition of the entire realm of those animals which—with their wide class variations—have been united by systematic naturalists, in virtue of a negative character in common, under the title of invertebrates. The labels—one for each specimen—are carefully printed, and a catalogue of the whole is appended. An enumeration of the entire contents of this collection is quite impossible, but we call attention to some of the divisions, as follows—

(1) Protozoa are represented by actual specimens of the rhizopod shells, mounted for observation with a hand-lens, and accompanied by enlarged drawings. Also actual

foramenifera and radiolaria, together with models, enlarged 100 diameters, of several score of the strange, fantastical forms of this group of minute organisms.

(2) Sponges: There is a rich series of several score of specimens, from the clione, which incrusts and bores our oyster shells, to the massive Neptune's cup, which stands 3 feet in height, and of which there are here several fine specimens. Here are several euplectella, or Venus's flower-baskets, a foot long, whose delicate wicker work cylinders, with a strainer at the top, closely imitate an exquisite lace fabric, yet of a substance like woven glass. Another glass sponge is the hyalonema, from Japan. Here a delicate globular sponge is continued downward by a cable of many hundred strands of transparent glass thread, loosely twisted together. There are in view no less than five specimens of this rare species.

(3) Hydroid polyps: Feathery, branching sertularia, plumularia, campanularia, etc. Allied to these are the millepora, the only hydroids which produce a coral structure.

(4) Medusæ: Delicate jelly-fishes—the physalia (“Portuguese man-of-war”) from tropical oceans, and the berce, which feed the whales in the polar seas.

(5) The gorgonias, or sea-fans, afford infinite variety of form and color, imitating closely the sea-weeds and the ferns. There are many genera and species of them, hanging in elegant festoons in a separate case against an adjoining wall.

(6) Corals comprise among them every conceivable variety of form and color, snowy white, deep red, and purple or rich brown; mushroom corals, from the Red Sea and the Pacific Ocean; brain corals, from the West Indies; and hemispherical, leaf-like, incrusting, branching, spreading, or massive clusters from all over the world.

(7) The crinoids have two noble representatives in the pentacrinus caput Medusæ, which are mounted in separate cases with glass fronts. They are dredged in deep water in the Caribbean Sea off the Barbadoes, and are very rare as specimens in American cabinets. This crinoid is intensely interesting as the leading one of a very few modern representatives of a great natural order which played so conspicuous a part in geological times.

(8) Echinoderms are well represented by many species of star-fish and sea-urchins. Among the first are astrophyton, ophiocoma, asterias, solaster, oreaster, culcita, etc. The second comprise echinus, cidaris, clypeaster, scutella, bryssus, and metalia, as prominent genera. The forms are both handsome and grotesque.

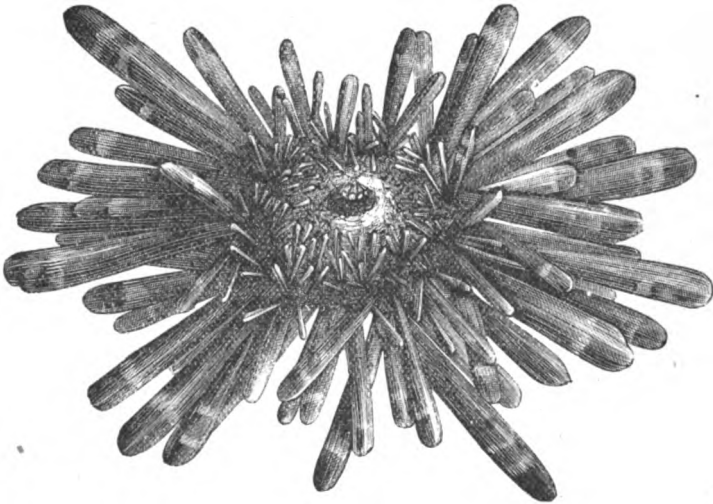


FIG. 65.—*Heterocentrotus trigonarius*.

(9) Shells as here arranged—filling nearly all one side of the case—exhibit a series of choice and beautiful forms, very rich in species, and scientifically complete as a representation of this department of nature.

(10) Crustaceans: Many species of barnacles, hermit crabs, crayfish, American and European lobsters, and other interesting species. One of the very rarest, strangest, and most striking specimens in the room is in this division. It is the giant crab (*Megachirus Kämpferi*) of Japan. Its extended legs have no less a spread than 8 feet! This “jumbo” of its class is especially interesting as showing the maximum of size to which crustacean life attains. The specimen—mounted on the roof-truss above the

case—is very choice and rare, there being to our knowledge but four others in American museums.

In the table-case is a series of the exquisitely made Blaschka models of actinians, acalephs, prosobranchiate and cephalopod mollusca, etc. These are of glass, beautifully colored, and show these different, delicate, and perishable forms of lower animal life with such perfection of detail as to render them invaluable for the illustration of these interesting groups, as well as charming to the eye.

Finally, as an adjunct to the specimens above enumerated, there are fourteen large colored zoological maps, showing the external form and inner structure of various invertebrate animals.

This great cabinet of invertebrate life is as complete in its systematic contents as in its display. It would be of the very greatest educational value in a college, academy, or ladies' seminary.

In a case to the left of the great arched window is a series of human skeletons and anatomical models. The latter are of both French and German make, and number about thirty pieces in all. Lack of space prevents their individual description.

In the collection briefly described in the preceding pages, Professor Ward has sought to display to the citizens of New Orleans and of the entire South some important portion of the wealth of natural objects which are ever to be seen at his natural science establishment in Rochester. The collections here displayed during the term of the present exposition are chosen expressly for their adaptation to the needs of science teaching in academies or colleges.

## PHYSICAL AND CHEMICAL APPARATUS.

This exhibit was located with the other exhibits of the Bureau of Education in the south gallery of the Government building. It occupied a space 35 feet deep with a frontage of 25 feet on the main aisle.

The arrangement was based on that of an ordinary class room for physics and chemistry. A hood for chemical work, a table used for experimental demonstration and furnished with a pneumatic trough, and two blackboards, faced a series of desks, lent for the purpose by the Buffalo School Furniture Company.

Around the sides of the space were four large cases holding the chemical and physical apparatus enumerated further on.

Many of the experiments in light and electricity require a darkened room for their proper presentation. This is provided for by having the class rooms furnished with proper arrangements for shutting out the daylight. As this was impossible in the present instance, a special dark room 8 feet wide and 16 feet long was constructed at one side of the space. In this room, by means of a large set of Crookes and Geissler tubes, in conjunction with a large Ruhmkorff coil, battery, and Toepler-Holtz machine, many beautiful and interesting experiments in electricity were shown; also a number on light by means of a *porte-lumière* and physical lantern with vertical attachment. As far as possible the apparatus was kept in working condition, and the experiments that could be performed with it shown to those interested.

In conjunction with Mr. Leckenby, in charge of the exhibit of Bausch & Lomb, and who had in his possession a large collection of fine microscopic specimens, projections with the solar microscope were thrown on a large screen, in full view of the visitors. The objects which seemed to give most satisfaction were specimens of crystals in polarized light, a drop of cistern water filled with animalcules, and the circulation of the blood in the foot of the living frog.

### PHYSICAL APPARATUS.

#### GENERAL SET.

*(Property of the United States Bureau of Education.)*

Apparatus illustrating general properties of matter, gravity, mechanics, etc., as follows:

Apparatus for diffusion of gases and liquids, for osmose of gases, and for osmose of liquids; gyroscope; inertia table; leaning tower; wedge: lever and fulcrum; model

of screw; meter and yard; marble plate and ivory ball (showing elasticity); collision balls on stand; pair of scales; set of weights; inclined plane.

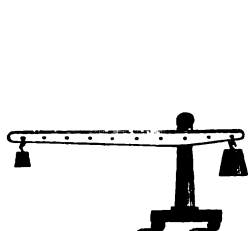


FIG. 66.—Lever and fulcrum.

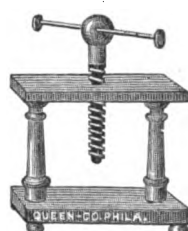
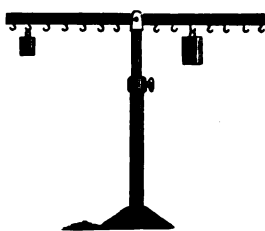


FIG. 67.—Screw.

Apparatus for illustrating principles of hydraulics, as follows: Large and small set of equilibrium tubes; siphon; set of capillary tubes; hydrometer and jar; Cartesian devil; Barker's mill; hydraulic press; illustration of overshot, breast, and undershot wheels.

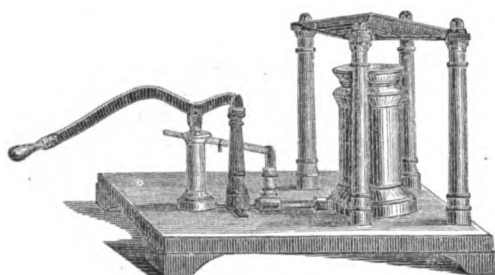


FIG. 68.—Hydraulic press.

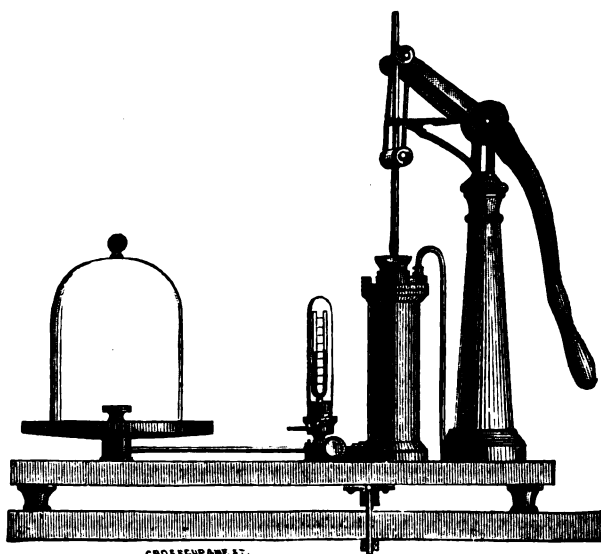


FIG. 69.—Lever air pump.

Apparatus for illustrating pneumatics, as follows: Lever air pump, Fig. 69; gauge for air pump; gallon receiver for air pump; guinea-and-feather tube; Magdeburg hemispheres; barometer tube and stand; Mariotte's law apparatus; hand and bladder glass; mercury.

Apparatus for illustrating sound, as follows: Siren; bow; sonometer; glass Chladni plate; clamp for holding plate; tuning fork on resonant box (Fig. 70).

Apparatus for illustrating heat, as follows: Glass tubing; tripod; flask; cryophorus of Wollaston; pulse glass of Franklin; air thermometer; compound bar; spirit lamp; model of Watt's low-pressure steam engine; pair of concave reflectors on adjusting stands (large); double radiometer (Fig. 71).

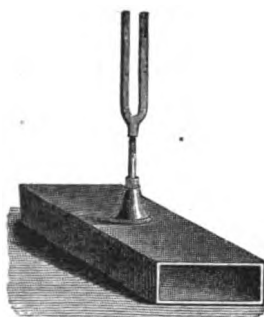


FIG. 70.

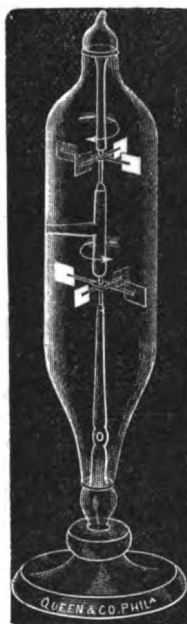


FIG. 71.

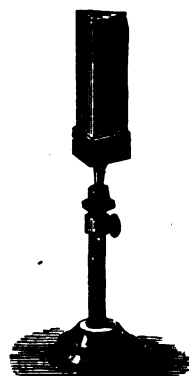


FIG. 72.

Apparatus for illustrating light, as follows: Concave and convex mirrors; set of demonstration lenses; equilateral prism; equilateral prism on stand (Fig. 72); Newton's disk; crystals of Iceland spar, showing double refraction; prism of rock salt for experiments on heat; apparatus for compressing glass for use with polarized light; black glass mirror on stand for polarizing light; complete apparatus for showing phenomena of polarized light, with adjustable stand; cube of uranium glass; magic

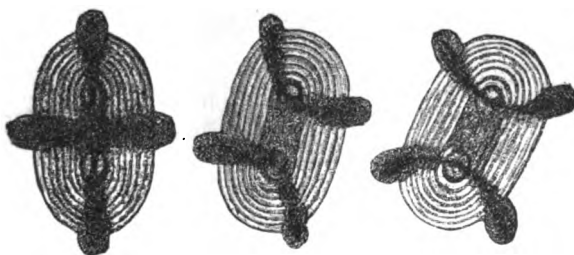


FIG. 73.—Phenomena of polarized light.

lantern for physical work; upright attachment, polarizer, and microscope attachment, for physical work; adjustable stand with prism, for physical work; Crookes's radiometer.

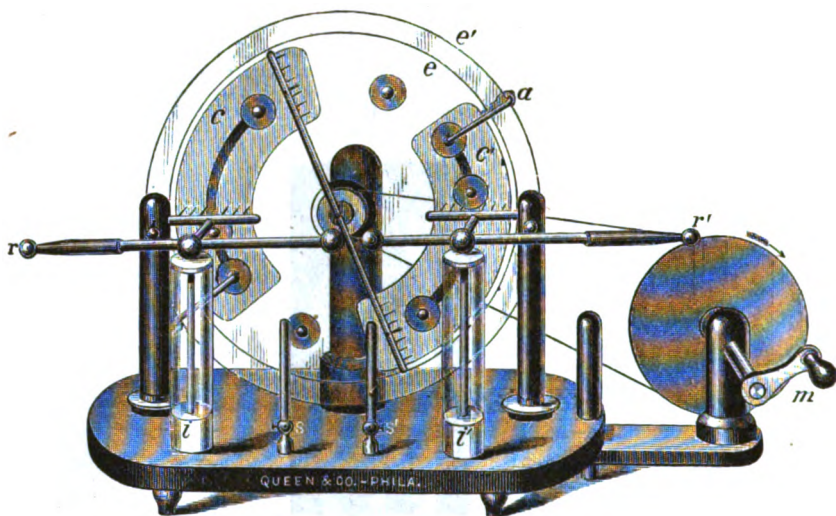


FIG. 74.—Toepler-Holtz electric machine.

Apparatus for illustrating magnetism and electricity, as follows: Dipping needle on stand; magnetic needle on stand; bar magnet, horseshoe magnet, and rolling armature magnet; large Toepler-Holtz electric machine, German form, with revolving plate 21 inches in diameter, giving sparks of 7 inches (Fig. 75); Leyden jar, quart; battery of 9 half-gallon jars in box; discharger; pair of image plates; images for same; 2 Geissler tubes; Epstein's condenser; 2-bell chime; ivory mortar; luminous tube 3 feet long; electric fier; Grenet galvanic battery, pint; electro-magnet; gun-powder cup; water decomposer; Ruhmkorff coil with commutator, giving sparks of

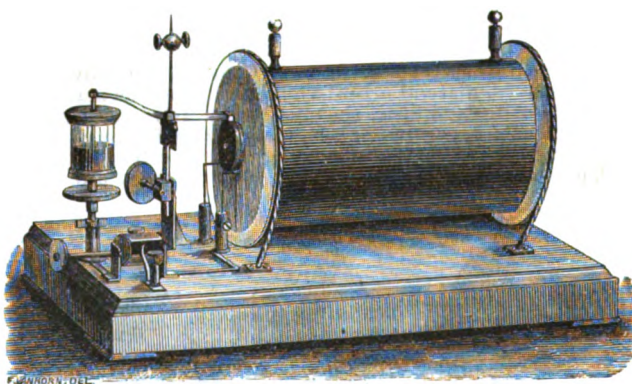


FIG. 75.—Ruhmkorff coil.

1 inch (Fig. 75); Ruhmkorff coil, fine, with commutator, Foucault mercury break, and Deprez vibrating break, giving spark of 9 inches; Rebeck thermo-electric battery, small size.

A fine collection of 25 Geissler tubes of various beautiful shapes and forms, some quite large, and one of them probably the largest in the country. It was specially made for the electrical exhibition of the Franklin Institute held in Philadelphia, September, 1884.

A large collection of Crookes's famous radiant-matter tubes, showing the results of some of his researches in high vacua, including No. 1, dark space tube; No. 2, tube showing effect of discharge on different kinds of glass; No. 4, ruby tube; two similar

tubes with different minerals; No. 5, potash tube for increasing or diminishing the vacuum; No. 7, tubes showing difference between Geissler and Crookes tubes, also

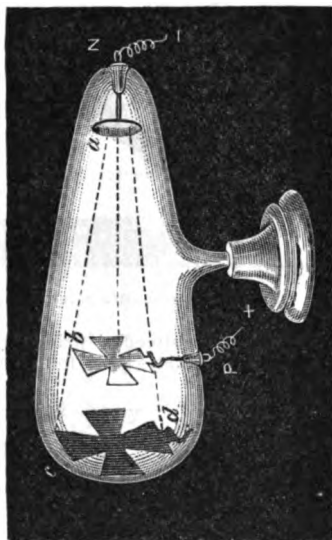


FIG. 76.—Shadow tube.

independence of positive pole in the latter; No. 9, shadow tube (Fig. 76); No. 11, railway tube; No. 16, Geissler tube for deflection by magnet; No. 17, Crookes mill-wheel

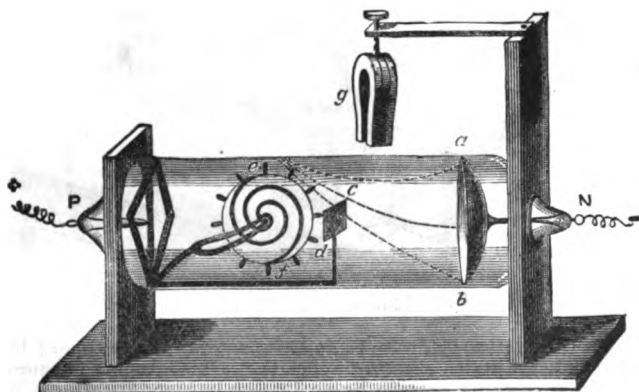


FIG. 77.—Mill-wheel tube.

tube (Fig. 77); No. 18, tube showing repulsion of radiant matter; No. 21, hot platinum tube.

APPARATUS LOANED BY QUEEN &amp; CO.

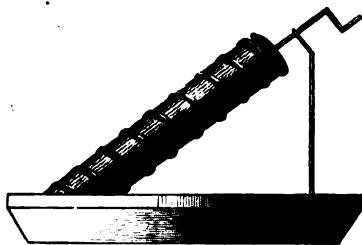
*(To be used in connection with that belonging to the Bureau of Education.)*

FIG. 78.—Archimedes' screw.

Gyroscope, large "brass" wheel; Archimedes' principle; Archimedes' screw (Fig. 78); small table air pump (Fig. 79); hand glass; fountain *in vacuo*; sliding rod re-

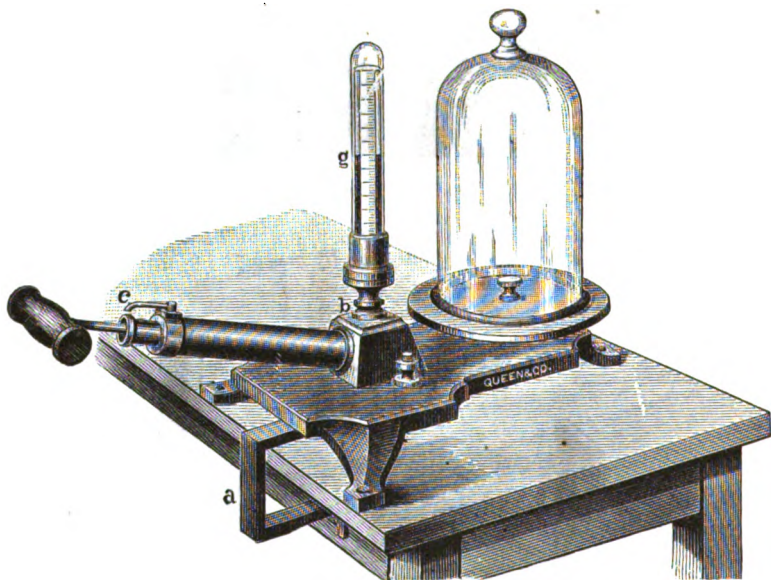


FIG. 79.—Air pump.

ceiver; Bacchus illustration; stop-cocks and connectors; sheet rubber; leather washers; pair brass Chladni plates showing sympathetic vibrations; Claque-Bois; Tyndall's apparatus for showing specific heat; Bunsen burner; spectroscope in portable case with stand; bottles of fluorescent solutions; table polariscope; 6 specimens of crystals for use with polariscope; crystal of Iceland spar; color glass for absorption; prism on stand; Hoffmann's bottle prism for bisulphide of carbon; catkin; rubber rod; insulated stool; magic circle; helix on stand; Ersted's apparatus; holder for wires; 2 contact keys; electro-magnetic bell; electro-magnet on stand; tangent galvanometer by Simmons, London; galvanometer for projections by Stöhrer, Leipzig; Foucault electric lamp for magic lantern (Fig. 80).

SET NO. 2 OF SCHOOL APPARATUS FOR TEACHING PHYSICS, LOANED BY  
E. S. RITCHIE & SONS, BOSTON, MASS.

*Laws of matter.*—Universal support; set of balls; set of wires; set of weights; cohesion hemispheres; adhesion disk; gravity block; momentum spring; whirling table; illustration of pulleys; illustration of levers; inclined plane and car.



*Pneumatics.*—Air-pump; spherical receiver; Magdeburg hemispheres; guinea-and-feather tube; barometer tube; bell in vacuum; stop-cock; sheet-rubber; mercury; rubber bag; Mariotte's law.

*Heat.*—Spirit lamp; bar and gauge; compound bar; lamp-stand; glass flask; palm glass; glass tube; conductometer; wire gauze; fire syringe; Wollaston's engine.

*Sound.*—Sonometer; violin bow; Savart's wheel; siren disk; Crova's disk; organ pipe; vibrating rod; diapason.

*Dynamics.*—Buoyancy vase; capillary tubes; capillary plates; pressure of liquids; Nicholson's hydrometer; hydrometer; lifting-pump; force-pump; siphon; Tantalus's cup; balloon and car; glass jar.

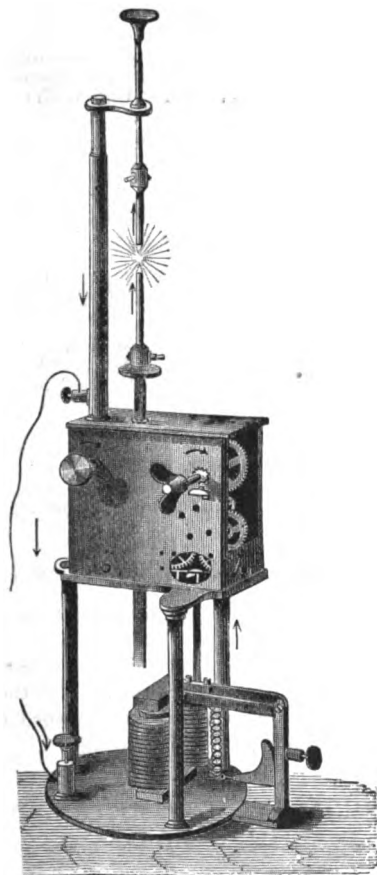


FIG. 80.—Electric lamp.

*Light.*—Kaleidoscope; thick mirror; convex and concave mirrors; prism; set of lenses; prismatic lens; color disk; persistency of vision; incidence and reflection; magnifying lens.

*Electricity.*—Pair of bar magnets; bar of soft iron; crane support; magnetic needle; iron filings; friction cylinder; gold-leaf electroscope; electrical machine; electroscope; test-needle; Leyden jar; discharger; electrical bells; bichromate battery; galvanometer; solenoid; electro-magnet; revolving magnet; induction coil; insulated wire.

PHYSICAL AND CHEMICAL APPARATUS, LOANED BY E. B. BENJAMIN, NEW YORK.

Barometer; thermometer (chemical); air pump and receiver for same; oxy-hydrogen blow-pipe; 2 lenses, convex and concave; 2 mirrors, convex and concave; Leyden jar; medical crank-battery; magnet H. S.; alcohol lamp; meter and yard.

Two nests beakers, lipped, 1-3; 3 nests beakers, lipped, 1-6; 1 nest beakers, plain, 0-3; 1 nest beakers, plain, 0-4; 1 nest beakers, plain, 0-6; 3 flasks, 1 oz.; 3 flasks, 2 oz.; 3 flasks, 4 oz.; 3 flasks, 16 oz.; 2 flasks, 32 oz.; liter flasks: 1 liter,  $\frac{1}{2}$  liter,  $\frac{1}{4}$  liter,  $\frac{1}{10}$  liter, 50 c. c., 30 c. c.; 2 test-tube racks; 12 test tubes, 4 inch; 12 test tubes, 6 inch; 2 test tubes, 7 inch; 1 test tube, 8 inch; 3 funnels,  $1\frac{1}{2}$  inch; 5 funnels,  $2\frac{1}{4}$  inch; 2 funnels,  $3\frac{1}{2}$  inch; 1 funnel, 4 inch; 1 funnel, 5 inch.

Four funnel-holders; 3 Bunsen burners; 6 feet rubber tubing; 2 iron retort stands; wash bottles: pint,  $\frac{1}{2}$  pint,  $\frac{1}{4}$  pint; 6 watch-glasses; 3 convex covers, 3 inch; 3 convex covers, 4 inch; 3 convex covers, 5 inch; 2 convex covers, 6 inch.

Burette, 50 c. c.; support for same; specific gravity bottle, 50 c. c.; 3 ground-glass covers, 3 inches; 3 ground-glass covers, 4 inches; 2 ground-glass covers, 5 inches; piece blue glass; 2 calcium chloride tubes; carbonic acid apparatus; 12 specimen tubes, corked; 2 desiccators; 1 lb. glass tubing; 6 stirring rods; 3 porcelain crucibles,  $1\frac{1}{2}$  ounce; 2 porcelain crucibles,  $1\frac{1}{4}$  ounce; nest evaporating dishes; 2 casseroles; 4-inch porcelain mortar; mouth blow-pipe; retort, stoppered, 16 ounces; receiver for same, 16 ounces; retort, 8 ounces; graduated cylinder, 25 c. c.

One foot platinum wire; platinum foil; round file; three-cornered file; set 6 cork borers; 2 steel forceps; 2 sand baths, 5 inches; 3 triangles, plain; 3 triangles, covered; test tube brush; bottle brush; horn spatula; 3 packages, 3-inch, 4-inch, and 6-inch filters; Swedish filter paper; set filter patterns; 12 rubber connectors; 2 pieces wire gauze; glazed water bath; pair watch glass clips; Fletcher's solid flame burner; Bunsen burner attachment; 6 ignition tubes; glass scoop for weighing; box gummied labels; book labels; volumetric pipettes, one to 5 c. c., one to 10 c. c., one to 25 c. c., one to 50 c. c., one to 100 c. c.

Troemner chemical balance, weighing 100 grammes, showing  $\frac{1}{10}$  milligramme, and set fine weights for above to 50 grammes; Bunsen filter apparatus; lecture endiometer; hydrochloric-acid apparatus; apparatus for demonstration of oxygen and hydrogen; decomposition of water apparatus; apparatus for burning sulphur; Daniell's hygrometer; bell-jar; platinum cone. Chemicals—Sulphur, iodine, iodoform, zinc oxide, strychnia, veratria; sulphuric, acetic, and tartaric acids; mercury, mercury red oxide, potassium chromate, alcohol, ether, atropia; muriatic, nitric, and tannic acids.

#### APPARATUS FOR EXPERIMENTS IN STATIC ELECTRICITY, LOANED BY CURT W. MEYER, OF NEW YORK.

Frictional electric machine; head of hair; electric bells; pith-ball electroscope; gas-pistol; Leyden jar.

#### APPARATUS TO ILLUSTRATE PNEUMATICS, FROM C. E. MCVAY, MT. HEALTHY, O.

Air-pump with reversible valves; detached pump plate and receiver; reservoir for condensed air, and a fruit-jar receiver.

A six-cell galvanic battery was kindly loaned by Professor Ayres, of Tulane University, for use in the dark room with the Crookes and the Geissler tubes, and a Toepler-Holtz machine and porte lumière were also loaned for use in same room by Dr. MacIntosh, of the MacIntosh Battery Co., Chicago.

### MODELS OF DESCRIPTIVE GEOMETRY, WITH CONSTRUCTION PLATES.

(Manufactured by J. Schroeder, Darmstadt, Germany.)

In these collections of models for examination, exhibited by the United States Bureau of Education, solid pear wood and mathematically accurate models, from the simplest to the most difficult, are combined with planes of projection, with accurate drawings corresponding thereto.

Models and drawings are worked out in round figures, in millimeters. The selection of solids and their description follow the special requirements of practical use, and have reference throughout to their application in theory and in practice.

**Projections.**—Plate 1. A model to explain the planes of projection, the projections of solid bodies, and their position in space with regard to each other. The model consists of a small drawing board, divided into two equal rectangles upon hinges, in order that the vertical projections may be brought into a vertical position, at right

angles to the horizontal projections, by which the solid substances are placed in proper relation to both projections.

Plate 2. Straight lines with revolutions and transpositions.

Plate 3. Straight lines and circular lines, with revolutions and transpositions.

Plate 4. Curving lines and double cone sides, with revolutions and transpositions.

Plate 5. Rhomboidal, rectangular, and circular planes, revolving on axes in different positions.

Plate 6. Rhomboidal and circular planes revolving on axes in different positions.

Plate 7. Transpositions of the quadrilateral plane.

Plate 8. Transpositions of the octagonal plane.

Plate 9. Transpositions of two parallel circular planes.

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Plate 12. Warped and helicoid surfaces.

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Plate 17. Transpositions of the sphere, with circumferences of the spherical and circular ellipsoid.

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Plate 19. Roller in form of a double cone, with transpositions.

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Plate 6. Sunk cone with shadow of incidence. Sunk sphere with shadow of incidence.

Plate 7. Sphere with shadow of incidence. Breaks as an application of the sphere, the hollowed sphere, and the hollowed cylinder, with shadows of incidence.

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Plate 24. Bearings.

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Willard, Emma. Geography for beginners; or, the instructor's assistant, in giving first lessons from maps, etc. Published by O. D. Cook & Co. Second edition. Hartford, 1829.

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Webster, Noah. An improved grammar of the English language. Published by Sidney Babcock. New Haven, 1842.

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Picket, A. and J. W. Introduction to Picket's expositor; containing exercises in English etymology, definition, and reading, being the sequel to the author's spelling-book and part I of the New juvenile instructor. Published by C. P. Barnes & C. Cropper. Cincinnati, 1837.

Ruter, Martin. New American primer and juvenile preceptor; containing easy lessons for spelling, reading, and recitation, together with a short scriptural catechism. Published by Martin Ruter. Cincinnati, 1821.

Stanford, Daniel. Art of reading: containing a number of useful rules exemplified by a variety of selected and original pieces, calculated to improve the scholar in reading and speaking with propriety and elegance; designed for schools and families. Printed by John Russell. Boston, 1800.

Webster, Noah. An American selection of lessons in reading and speaking, calculated to improve the minds and refine the taste of youth, and also to instruct them in the geography, history, and politics of the United States, to which are prefixed rules in elocution and directions for impressing the principal passions of the mind, being the third part of a grammatical institute of the English language, etc. Published by Isaiah Thomas and Ebenezer T. Andrews. Boston, 1797.

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Franklin spelling book. Published by R. Porter & F. Lucas, jr. Wilmington, Del., 1822.



Lamb, J. Child's primer; or, first book for primary schools. Published by Edward Smith. Burlington, 1833.

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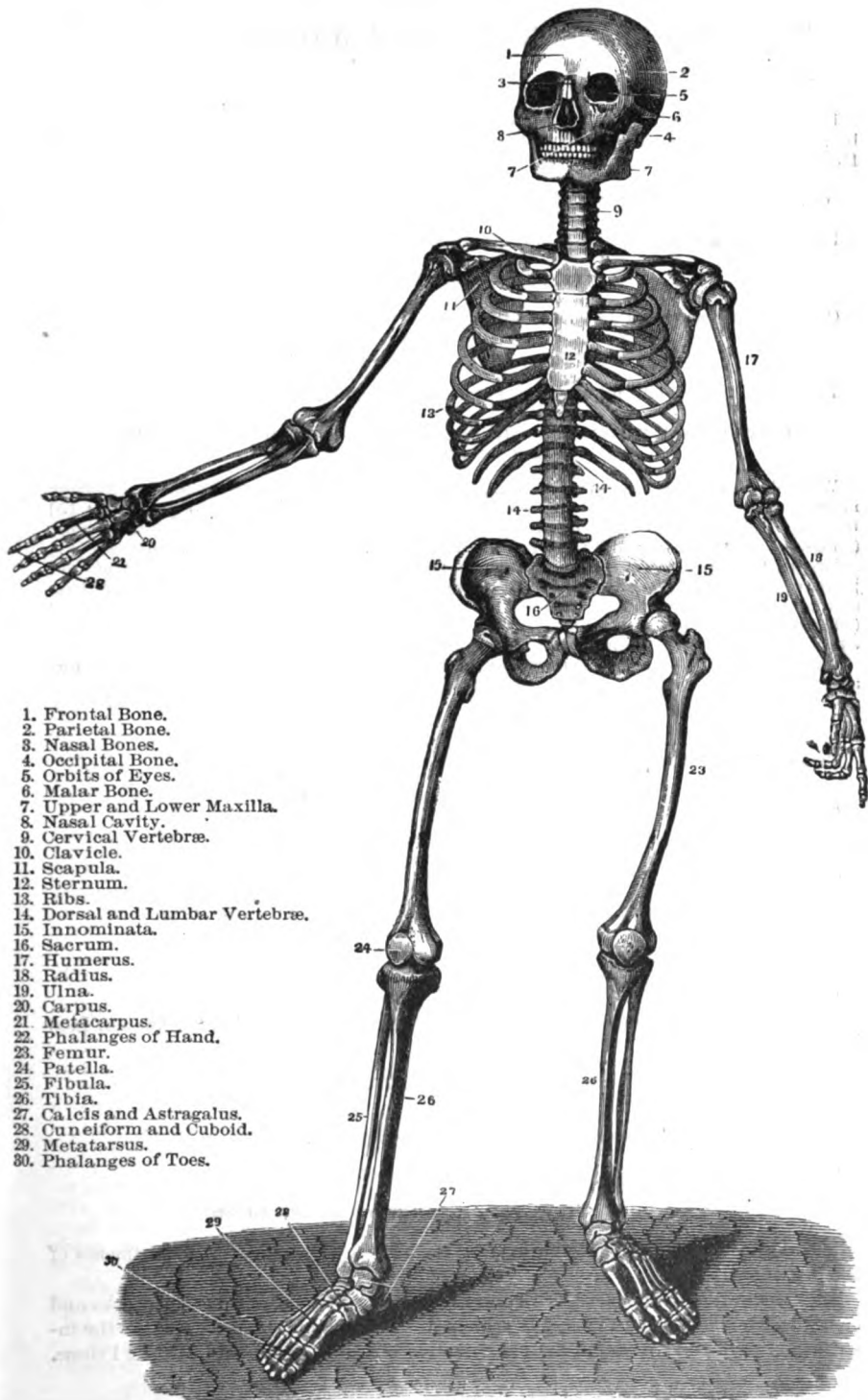


FIG. 81.—The human skeleton.

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Work done in the art department by pupils: (1) from life, charcoal sketch; (2) from nature, water color; (3) from nature, charcoal; (4) from still life, oil painting; (5) from still life, oil painting; (6) from still life, oil painting; (7) from cast, crayon; (8) from nature, water color; (9) free-hand, crayon; (10) from life, oil painting; (11) solar print, crayon; (12) free-hand, crayon; (13) from objects, crayon; (14) from objects, crayon; (15) from life, oil; (16) from nature, water color; (17) from still life, charcoal; (18) from still life, charcoal; (19) from cast, crayon; (20) from cast, crayon; (21) from cast, crayon; (22) from life, charcoal; (23) from objects, oil; 10 volumes of examination papers; 3 plaster casts; 11 pairs shoes; 1 pair boots; desk.

The above work was not prepared expressly for the Exposition, and was sent, not as specimens of fine work, but to illustrate the education of deaf-mute children.

FARLOW, KATE M., WICHITA, KANS.

Two copies of "Silent Life and Silent Language," by Kate M. Farlow.

DEAF-MUTE COLLEGE, DANVILLE, KY.

One painting.

KENTUCKY DEAF-MUTE OFFICE, DANVILLE, KY.

Seven volumes publications for the deaf and dumb.

CLARK INSTITUTE FOR DEAF AND DUMB, NORTHAMPTON, MASS.

Reports of institution.

INSTITUTION FOR DEAF AND DUMB, JACKSON, MISS.

Crib, 2 paintings, 1 photograph, 7 pieces china, quilt, 2 boys' suits, banner, lace handkerchief, 2 framed paintings, wall pocket.

RIES, ISAAC B., JACKSON, MISS.

Black-walnut bureau.

SLATE, MISS MATTIE P., OXFORD, MISS.

One quilt, containing 7,200 pieces; 4 handkerchiefs.

NEW YORK INSTITUTION FOR THE DEAF AND DUMB.

The exhibit consists of contributions by the artistic and industrial departments of the institution.

The instruction department is represented by class books, and special works and charts by Dr. Isaac Lewis Peet, the principal. The exhibit was prepared in the institution, within six weeks, under the direction of the principal and M<sup>me</sup> Le Prince,

manager of the art departments, after designs by Prof. A. Le Prince, who also superintended the erection of the stand at New Orleans.

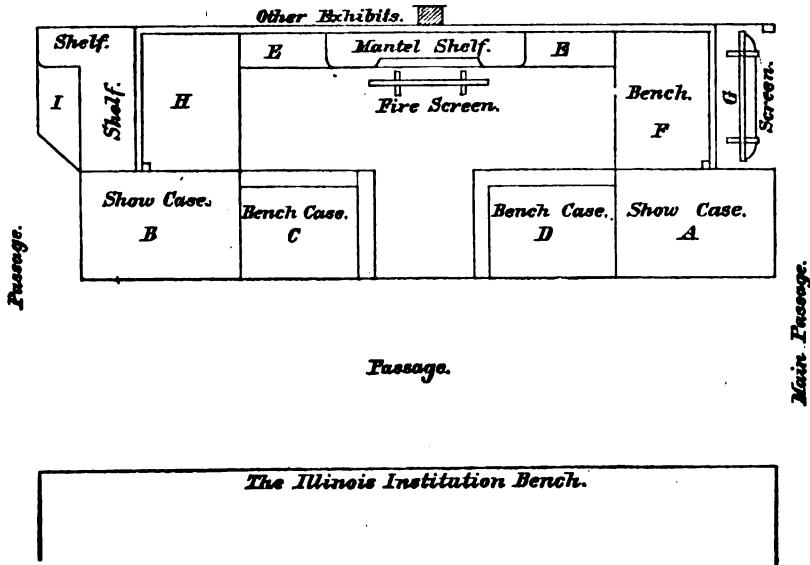


FIG. 82.—Plan of exhibit of New York Institution for the Deaf and Dumb.

Upright glass cases A and B (Fig. 82) and bench glass cases C and D stand on benches draped with dark maroon cloth, and paneled with "lincresta" and black walnut mouldings; an opening is reserved between cases C and D to allow closer inspection of drawings, panels, tiles, &c., hung on screens E and E, or standing on benches F and H. Other drawing and decorative works are hung on return screens I and G, or stand on shelves and platform at I, as described below.

*Cases A and C* (Nos. 1 to 18).—Needlework department, superintendent, Miss Lewis: lace, silk, and worsted tidies, flouncies, splashers, trimmings, collars, pincushions, etc., by Mary Branfuhr, age 11; E. Solomon, age 14; M. Bogatiska, age 14; Mabel Fish, age 15; E. F. Taylor, age 17; Nellie Long, age 18; Adelia Wolcott, age 18; Annie Kugler, age 18; B. Vogel, age 19; E. Coppock, age 21; L. Conklin, age 23; Isabel Van Varick, age 18. The two lay figures in case A were also dressed by this department.

*Case D*.—Printing department, manager, Mr. Hodgson: specimens of cards, menus, pamphlets, reports, etc., printed by the department; also two numbers of the *Deaf-Mute Journal*, edited and printed by Mr. Hodgson and his pupils.

Instruction department: class books; specimens of method of writing by Dr. I. L. Peet's system; yearly reports; by-laws of the Institution; works on the deaf-mutes, by Drs. H. P. and I. L. Peet.

*Case B* (Nos. 19-28).—Shoemaking department, manager, Mr. J. Léchthaler: 1 pair man's shoes, by T. Rudolph, age 19; 1 pair boy's low shoes, by E. McKeranhan, age 17; 1 pair lady's shoes, by A. Sinclair, age 18; 1 pair girl's shoes, by A. Sinclair, age 18. The small shoes of the lay figures were also made by this department.

Tailoring department, manager, Mr. Henry Roth: doll's suit, by J. Toohey, age 16; doll's suit, by G. Morrissey, age 17; man's suit, by T. E. Carlman, age 17; boy's suit, by H. Roth, age 18.

Carpenters' department, manager, Mr. H. Interman: wood toy pump, by A. Minotte, age 10 (two weeks in department); walnut table, by D. Zorn, age 17. This department has also executed all the woodwork of the stand, including benches, paneling, mouldings, woodwork of mantelpiece, etc.; some more work is shown on platform I.

*Screen E*.—Fine art, decorative, and technical art department; directors Prof. A. Le Prince and Madame Le Prince: No. 29, decorative panel, painted tapestry, by C. Thompson, age 18; Dr. I. L. Peet's charts of the predicates of the English sentence; No. 30, mantelpiece (modern renaissance); black-walnut shelves and mouldings (carpentering department).

Panels, *a, b, c, d, e, f, g, h*, oxidized silver on lincrusta; four "old blue" tiles and velvetene lambrequin decorated in lustra by technical art department; Nos. 31, 32, 33, 35, 37, 38, and 43, lincrusta mats by art department; No. 36, panel lincrusta decorated ware by art department; No. 39, panel lincrusta decorated ware by art department; No. 40, teapot stand, wild roses, tiles, by Miss Hawkins, age 20; frame made by Mr. Wormuth, age 13; No. 41, teapot stand, wild roses, tiles, by Miss Wells, age 18; frame made by Mr. Wormuth, age 13; Nos. 44 and 45, lincrusta panels, decorated terra-cotta, art department; No. 46, panel of lilac and snowballs painted on gilt lincrusta, by Miss Hawkins, age 20; No. 47, panel of apple blossoms, painted by Miss Wells, age 18; Nos. 48 and 49, teapot stands, morning glory tiles, by Miss Peterson, age 18; frame made by Mr. Wormuth, age 13; No. 50, water color, "Flowers," by Miss Peterson, age 18; No. 51, water color pots and tray, by Miss Martin, age 17; No. 52, water color, "Marguerite," by Miss Wells, age 18; No. 54, charcoal drawing, Japanese jar, by Miss Peterson, age 18; No. 55, charcoal drawing, Japanese jar, by Mr. Thompson, age 18; No. 56, charcoal drawing, apples, by Mr. Thompson, age 18; No. 57, charcoal drawing, flying dove, by Mr. Avens, age 11; 101 to 106, lincrusta mats on mantel board, technical art department; No. 58 and 59, umbrella stand, decorated lincrusta, technical art department.

*Screen F.*—No. 60, charcoal drawing, "Bust on books," by Mr. Thompson, age 18; No. 61, charcoal drawing, "Pewter pitcher," by Mr. Geary, age 20; No. 62, water color, "Horse and cart," by Mr. Thompson, age 18; No. 63, water color, "Cart," by Mr. Avens, age 11; No. 64, water color, "Old arch," by Miss Peterson, age 18; No. 53, "Foxglove," Miss Martin, age 17; Nos. 99 and 100, lincrusta mats, technical art department.

*Screen G.*—No. 65, water color, mediæval figure, Miss Wells, age 18; No. 66, water color, mediæval figure, Mr. Thompson, age 18; No. 67, oil, "Roses," Miss Gantz, age 17; No. 68, water color, "Models," Mr. Geary, age 20; No. 69, water color, "Vase and drapery," Mr. Durian, age 19; five o'clock tea fire screen, by carpentering and technical art department, dark cherry.

*Screen H.*—No. 76, charcoal drawing, "Servant girl," Mr. Avens, age 11; No. 77, charcoal drawing, "Apple branch," Mr. Durian, age 19; No. 78, water color, "Cow," Mr. Thompson, age 18; No. 79, water color, "Jar," Mr. Thompson, age 18; No. 80, water color, "Tower," Mr. Durian, age 19; No. 81, water color, "Small vase," Mr. Avens, age 11; No. 34, water color, "Small vase," Mr. Avens, age 11.

*Bench H.*—Nos. 107 and 108, lincrusta mats, technical art department; No. 97, by Mr. Henry, age 11, one month in carpenter's shop.

*Screen I.*—No. 74, lion's head, lincrusta decorated blue faience, technical art department; No. 75, lion's head, red faience, technical art department; No. 93, lion's head, oxidized silver, technical art department; No. 82, portrait of the late Rev. William Adams, D. D., late president of the institution, by Alfred Emmons. No. 70, charcoal drawings; No. 71, charcoal drawings; No. 72, charcoal drawings; No. 73 charcoal drawings.

*Platform I.*—No. 84, desk by L. G. Smith, age 19, carpentry department; No. 85, bureau by K. Zorn, age 16, carpentry department; No. 86, bureau by G. Glosque, age 18, carpentry department; No. 87, desk by P. Butterly, age 18, carpentry department; No. 83, frame by R. H. Grant, age 20, carpentry department; No. 89, frame by G. Wormuth, age 13, carpentry department; No. 90, frame by G. Wormuth, age 13, carpentry department.

#### TRESCH, J. F. J., 405 WEST FIFTIETH STREET, NEW YORK CITY.

Six framed oil paintings; framed ink sketch; framed crayon drawing; 6 wood cuts and 3 lithographs in a large frame.

#### INSTITUTION FOR THE IMPROVED INSTRUCTION OF DEAF-MUTES, NEW YORK CITY.

Photograph of building; 7 oil paintings; 4 pencil drawings; 5 pen-and-ink sketches; crayon portrait of Longfellow by a former pupil of the institution.

#### TENNESSEE SCHOOL FOR DEAF AND DUMB, KNOXVILLE, TENN.

Framed photograph of buildings.

#### MILWAUKEE DAY SCHOOL FOR DEAF CHILDREN, MILWAUKEE, WIS.

Large framed card with name of school, location, names of officers and teacher; plan of work and methods employed; specimens of work of pupils; publications of the Wisconsin Phonological Society.

**WEST VIRGINIA INSTITUTION FOR DEAF, DUMB, AND BLIND, ROMNEY, W. VA.**

The exhibit consists of the following articles in a black-walnut case: Half dozen brooms; mattress; boy's suit; 2 pairs shoes; 2 specimens of lace; knit hood, knit jacket, pair stockings; copies of reports.

**FOREIGN EXHIBITS.**

**MACKAY INSTITUTE, MONTREAL, CANADA.**

Two specimens of printing.

**ASSOCIATION FOR THE ORAL INSTRUCTION OF THE DEAF AND DUMB, LONDON.**

(1) Time table for the use of day schools for the deaf and dumb; (2) specimens of pictures used in object and language teaching (20 pictures); (3) spelling books, parts 1 and 2, by Wm. Van Praagh, part 1 illustrated and on boards (16 copies); (4) numerical table, by Wm. Van Praagh, for the use of deaf and blind children (the deaf see, the blind feel the hollows); (5) season table, or illustrated almanac, for deaf children.

Papers on the pure oral education of the deaf and dumb: Establishment of day schools for the deaf and dumb, by Wm. Van Praagh, 1871 (Trübner); Oral education of deaf and dumb, by Sir George Dasant, Society of Arts, 1872; Education of deaf and dumb by means of lip reading and articulation, 1872, and Educational treatment of incurably deaf children, 1880, by W. B. Dalby; Report of conference held by the Association for the Oral Instruction of the Deaf and Dumb at the International Health Exhibition, June 30, 1884; on the Oral education of the deaf and dumb, by Wm. Van Praagh, and on training colleges, by Wm. Van Praagh. (The last two papers are distributed gratis, and any number required can be sent.) Report for 1883 of the Association for the Oral Instruction of the Deaf and Dumb.

**SCHOOLS FOR THE BLIND.**

**AMERICAN BIBLE SOCIETY, NEW YORK CITY.**

The Bible in 8 bound volumes for the blind.

**BRITISH AND FOREIGN BLIND ASSOCIATION, 33 CAMBRIDGE SQUARE, HYDE PARK, LONDON.**

(1) Embossed books, printed and written; (2) relief maps; (3) stereo plates for printing; (4) frames for embossed writing; (5) arithmetic board, type for arithmetic board; (6) cards for pencil writing; (7) embossed music.

**INSTITUTION FOR THE BLIND, COLORADO SPRINGS, COLORADO.**

Two samples of worsted mat work; 2 samples of bead work; volume of kindergarten work.

**BUREAU OF EDUCATION, WASHINGTON, D. C.**

Twelve books for the blind, selected from the collection in the Bureau library.

**LOUISIANA INSTITUTION FOR THE BLIND, BATON ROUGE, LA.**

Five brooms; 2 whisk brooms; 2 bead baskets; 3 framed samples of reading for the blind; examination papers.

**MISSISSIPPI INSTITUTION FOR THE BLIND, JACKSON, MISS.**

Five samples bead work; composition; dress; flowers in worsted work; 2 hanging bead baskets; pair stockings; 2 tidies; worsted hood; worsted head dress; 2 crocheted tidies; "Death of Little Nell," framed.

**NEW YORK INSTITUTION FOR THE BLIND, NEW YORK CITY.**

Book describing the tangible system of writing and printing literature and music for the blind; the same in raised letters; slate and movable type for arithmetic, algebra, and harmony; tablet for tangible point-print writing; specimen of mat weav-

ing, kindergarten department; rug, imitation of Turkish; imitation Smyrna rug; embroidered rug; pair pillow covers made on sewing machine; pair stockings made on knitting-machine; pair silk stockings made on knitting machine; macramé lambrequin, crocheted; cape, crocheted. Specimen of kindergarten work in frame; model of hair mattress; cane-seated chair bottom.

#### NEW YORK STATE INSTITUTION FOR THE BLIND, BATAVIA, N. Y.

Two brush brooms; wax cross; framed bead wreath; knitted thread tidy; knitted worsted tidy; crocheted worsted tidy; worsted frame tidy; crocheted lambrequin; crocheted collarette; macramé broom case; crocheted pansy mat; knitted mittens; bead pincushion; crocheted infant's sacque; crocheted infant's shoes; crocheted puff mat; knitted teapot holder; bead basket; bead basket of flowers (white); bead basket of flowers (colored); bead broom case; bead bird; bead needle case; bead satchel; 2 bead wash-bowls and pitchers; bead sofa; bead basket; bead round basket; bead pitcher; bead napkin ring; bead cradle.

#### STATE INSTITUTION FOR DEAF, DUMB, AND BLIND, RALEIGH, N. C.

Thirty-five samples of bead work.

#### OHIO INSTITUTION FOR THE BLIND, COLUMBUS, OHIO.

*Crochetting and hand knitting.*—Cradle spread; wall pocket; basket; carriage boots; macramé tidy; 2 knit tidies.

*Bead work.*—Wreath of flowers; panel of flowers; 2 bead baskets; 2 vases; churn; basket; 2 cups and saucers; 2 watch cases; satchel; 2 napkin rings; waiter and set; bead wreath in frame.

*Machine sewing.*—Child's dress; lady's apron; doll's apron; underbody; skirt; handkerchief case.

*Hand sewing.*—Child's apron.

*Kindergarten work.*—Seven frames, woven mats; 5 frames, sewed mats.

Blocks for instruction in solid geometry.

#### CORINTH, MISS.

*Tschudi, Henry* (a blind boy 11 years of age).—Two published pieces of instrumental music; 5 unpublished songs; specimens of the above music as originally written in the characters employed by the blind.

## REFORM AND INDUSTRIAL SCHOOLS.

#### STATE INDUSTRIAL SCHOOL, GOLDEN, COLO.

Two uniforms; 2 pairs shoes; 12 large brooms; 6 small brooms; 4 plans of building; 4 framed pictures; handkerchief; shirt; 2 sacks.

#### NORTH BENNET INDUSTRIAL SCHOOL, BOSTON, MASS.

Twenty-three photographs of school.

#### SOUTH END INDUSTRIAL SCHOOL, BOSTON, MASS.

Two designs of boxes; 2 frames; sample mortise work.

#### STATE REFORM SCHOOL, MERIDEN, CONN.

Framed photographs of institution.

#### MINNESOTA REFORM SCHOOL, SAINT PAUL, MINN.

Black walnut book-case; 24 samples of mouldings; 5 sleds; wheelbarrow; 2 wagons; rocking horse; black walnut goblets; black walnut vase; black walnut light stand; curtain bracket.

#### NEWARK CITY HOME, VERONA, N. J.

*Girls' department.*—Uniform of institution; 1 set fancy goods needle-work; 1 set toys from smaller children.



*Boys' department.*—One set of shoe-brushes from stock; 1 set No. 1 polisher, dirt-brush, and dauber; 1 set No. 2 polisher, dirt-brush, and dauber; 1 set ladies' cloth-brushes.

WISCONSIN INDUSTRIAL SCHOOL FOR GIRLS.

*Photographs and publications.*—General view of school buildings; family building; main school-room, with pupils; cottage class-room; 2 kindergarten views; main home sewing-room; cottage sewing-room; cooking class; main home dining-room; laundry-washing; laundry-ironing; bedtime for the little ones; single room for older girls; preparing Thanksgiving dinner; dressing Christmas dolls for the little ones; older girls' picnic on shore of Lake Michigan; boys of Industrial School fishing by water-works; main school-room, empty; full file annual reports; 50 copies of 9th annual report.

*School and kindergarten.*—2 kindergarten scrap-books; 6 kindergarten charts; "C" class examination papers; "B" class examination papers; "A" class examination papers; maps of Wisconsin; miscellaneous maps.

*Industrial department.*—Knitted afghan; knitted skirt; macramé lambrequin; crocheted pincushion; embroidered plush toilet set; drawn-work towels; drawn-work towels, in colors; etched tidies; 2 etched splashes; sofa-pillow cover (silk patchwork); silk mittens; woolen mittens; knitted hose, black silk; crocheted slippers, skirt, and sack; infants' socks, 2 pairs; darned lace bureau cover; 3 darned lace tidies; infant's knit shirt; crocheted hoods, 1 pink, 1 blue, and crocheted sack; etched stand cover; crocheted hoods, 2 white and 1 black; woolen knitted hose, 2 pairs; sachet bags and pen-wiper; crocheted hoods, red and white; beginners' work, crocheting; crocheted tidy; table mats; pin balls; sunflower pen-wiper; hairpin cushion, hat; table mats; crocheted hood, red; darned lace apron; Japanese patchwork, mats; scrap bags, crocheted; slop-jar covers, crocheted; plain sewing, night-dress; 2 chemises; sheet and pillow-case; 2 aprons and drawers; silk and wool hood; silk patchwork; embroidered apron.

SCHOOLS FOR THE FEEBLE-MINDED.

KENTUCKY INSTITUTE FOR FEEBLE-MINDED CHILDREN, FRANKFORT, KY., JOHN Q. A. STEWART, M. D., SUPERINTENDENT.

The articles in this exhibit were manufactured by the inmates of the Kentucky Institution for the Education and Training of Feeble-Minded Children, located at Frankfort, Ky. They are not exhibited to the public as specimens of expert workmanship, but to show that idiots or feeble-minded persons may become self-helpful and useful citizens by the methods used in this institution for instructing this helpless class. Every article is just as it came from the hands of the boy or girl making it, having received instruction in the industrial departments from one to six years. This institution is a State charity, and the only one in the South. It is the only one in the world where industrial occupations are made a leading feature of instruction.

*Exhibits.*—Hammock; press; cutting-table; brooms, large and small; mattresses; shoes; shirts; shirts, showing laundry work of feeble-minded girls; coat; pantaloons; chairs bottomed by feeble-minded children.

MINNESOTA STATE SCHOOL FOR IDIOTS AND INEBRIATES, FARIBAULT, MINN.

Two handkerchiefs; 2 pin-cushions; splasher; hood; shawl; dressing-table cover; school satchel; holder; 4 doilies; brass plaque; head shawl; lambrequin.

PENNSYLVANIA TRAINING SCHOOL FOR FEEBLE-MINDED CHILDREN.

Volume containing 44 photographs of institution.

AMERICAN MISSIONARY ASSOCIATION.

ATLANTA UNIVERSITY, ATLANTA, GA.

Ten sets examination papers; 60 designs in pencil and color; 42 map drawings; drawing of buildings; 4 character sketches; plat of city of Atlanta; draft of stairs.

*Industrial work.*—Models of stairs, benches, saw-horses, corner bracket, banister, truss, rafter, and roof frame, table, &c.; sheet of samples of grains and grasses; case of cocoons; bottles of cocoons, &c.

**AVERY INSTITUTE, CHARLESTON, S. C.**

Thirteen sets examination papers.

*Industrial.*—Mahogany pen-and-ink rack; satin pincushion; Kensington embroidery; 6 child's aprons; 2 child's dresses; patchwork quilt.

**BEACH INSTITUTE, SAVANNAH, GA.**

Sixteen sets examination papers; frame of photographic views, students and buildings; 18 slates with examination work; 2 frames of slate work.

**FISK UNIVERSITY, NASHVILLE, TENN.**

Framed picture of Livingstone Hall; framed picture of Jubilee Hall; 17 map drawings; 16 volumes examination papers; 4 volumes herbariums; album of photographs of students; case chemicals; photographs of professors and students.

**GREGORY INSTITUTE, WILMINGTON, N. C.**

Fifteen sets examination papers; 2 sets views.

*Industrial.*—Two crocheted collars; 3 muslin collars, lace trimmed; 2 macramé tidies; tidy; patchwork quilt; 4 aprons; infant's dress; 2 star mats, crocheted.

**HAMPTON NORMAL AND AGRICULTURAL INSTITUTE, HAMPTON, VA.**

Case photographic views of buildings and students; set harness; samples of men's shoes; gaiters; fellos and rims of wagon wheels; tinware; iron hook and link; draft iron; hammer, &c.

**LE MOYNE INSTITUTE, MEMPHIS, TENN.**

Three volumes examination papers; 44 pencil drawings; 2 photographs of views.

*Industrial.*—Three child's aprons; apron; linen handkerchief; 2 tucked skirts.

**LEWIS NORMAL INSTITUTE, MACON, GA.**

Fourteen sets examination papers; 12 map drawings.

*Industrial.*—Two calico aprons; pillow-slip; macramé lambrequin; motto, worsted; 2 sets patchwork blocks; 2 covered boot-blackening stands; 2 brackets.

**LEXINGTON NORMAL INSTITUTE.**

Five sets examination papers; photographic view.

**SANTÉE NORMAL TRAINING SCHOOL (FOR INDIANS), SANTÉE AGENCY, NEBR.**

Reading chart and Bible (native language); volume examination papers; hymn book; geography; speller; 3 volumes writing; volume photographic views.

*Industrial.*—Pair mittens; child's skirt; pillow slip; knit tidy; crazy quilt; model of table; work box; truss; squares; joints and tenons; dumb bells; iron hooks; chain; pincers; hasps; bolts; shoes and gaiters; 4 specimen bricks.

**STORRS SCHOOL, ATLANTA, GA.**

Two sets kindergarten work; 7 sets examination papers.

**STRAIGHT UNIVERSITY, NEW ORLEANS, LA.**

Thirty-one sets examination papers; volume drawings; volume maps; volume samples penmanship; 17 pencil drawings; 70 letters from students; 2 volumes school paper, *Olio*; volume photographs; 6 frames photographs; 4 Kensington paintings; 2 oil paintings.

*Industrial.*—14 samples crocheted lace edging; crocheted bag; silk collar; worsted tidy; 2 worsted capes; worsted shawl; 2 worsted mats; Kensington embroidery pincushion; silk tidy; muslin and lace nurse cap; silk crocheted pincushion; 2 thread tidies; 3 doilies; 5 muslin aprons; 4 calico aprons; 6 sweeping cape; macramé scrap-bag; crocheted baby quilt; 2 pairs drawers; gingham apron; skirt.

**TALLADEGA COLLEGE, TALLADEGA, ALA.**

Seventeen sets examination papers; 5 sets kindergarten work; 3 pencilings of buildings; 12 sheets botanical analysis; photograph of students.

*Industrial.*—Dovetailed boxes; step ladders; gate; mitred pieces; splices; saw-horses, &c.; 2 tidies; Kensington outline; fancy apron; child's apron; set child's underclothes; pincushion.

TILLOTSON COLLEGIATE AND NORMAL INSTITUTE, AUSTIN, TEX.

Twenty-one copy books; set memory maps; 43 sets examination papers; framed picture of buildings.

*Industrial.*—Set pillow shams; 2 pillow slips; 3 fancy aprons; underwaist; sofa sham.

TOUGALOO UNIVERSITY, TOUGALOO, MISS.

Fifteen sets examination papers.

*Industrial.*—2 wagon wheels; case tinware—coffee pots, pails, sprinklers, pans, &c.; patchwork quilt; 2 knit worsted shawls; knit baby's sack; girl's dress; child's dress; night dress; pair drawers; man's shirt; 3 tidies; child's dress.

TRINITY SCHOOL, ATHENS, GA.

Eight sets examination papers; photographic view.

WARNER INSTITUTE, JONESBOROUGH, TENN.

Three sets examination papers; set maps.

*Industrial.*—Chair tidy; pair knitted pulse warmers; design crochet edging; 2 crochet mats; wash rag crochet; motto, worsted; crocheted chair tidy; 2 pin cushions, designs in pins.

WILMINGTON NORMAL SCHOOL, WILMINGTON, N. C.

Twelve sets examination papers; 12 drawings.

*Industrial.*—5 aprons; 5 child's aprons; reform waist and drawers; pair stockings reheeled; pair stockings darned; child's waist; child's dress.

## THE BROTHERS OF THE CHRISTIAN SCHOOLS.

### INTRODUCTORY STATEMENT.<sup>1</sup>

The "Brothers of the Christian Schools" is an order of the Roman Catholic Church, whose members devote themselves entirely to education. It originated about two hundred years ago, with John Baptist de la Salle, of Rheims, a young priest of splendid talents and high social standing.

As stated by the founder, the Brothers' object is "to banish ignorance, the source of every vice;" its labors, therefore, are largely devoted to the instruction of the poor.

La Salle laid his foundation so deep and broad and firm that, after many storms and sieges, after some alterations and additions, it is a noble, commanding, and symmetrical structure.

Established at a period of great intellectual activity, when large commercial interests were developing, when the natural sciences were taking a prominent position, La Salle framed a curriculum of studies and organized a system of education which met the new order of ideas. Exact gradations, simultaneous rehearsals, object lessons, normal schools, polytechnic schools, industrial schools, reformatory schools—all had a place in his inventive and capacious mind, and all were realized by his constructive genius.

A careful study of the intellectual world convinced La Salle that the demand for classical instruction was more than supplied. He therefore made the vernacular the groundwork of his instruction.

Skilled teachers were his first want. In 1683 he established a seminary for young teachers at Rethel, and another at Paris, two years later. These were for secular

<sup>1</sup>This sketch has been compiled chiefly from *Education* for November and December, 1885.

teachers. A similar institute for the training of young Brothers was founded at Vau-girard.

At St. Yon, near Rouen, La Salle opened a boarding school for the education of the sons of the gentry; and under his comprehensive direction it became, in reality, a polytechnic school, embracing in its curriculum history, physical geography, literature, rhetoric, the science of accounts, geometry, architecture, natural history, hydrography, mechanics, differential and integral calculus, and cosmography.

In the Irish Academy, Paris, established to receive the sons of exiled followers of James II, Brothers were selected to give these young gentlemen all the instruction needed to prepare them for the positions they were destined to occupy.

In the Sunday School, opened in Paris, 1699, La Salle received young men over twenty who had acquired the elements of a primary education; they were taught geography, bookkeeping, architecture, geometry, and drawing. A half-hour's religious instruction closed the classes.

The combination of technical and literary instruction was realized in the school of Rouen, where weaving formed part of the daily exercises.

The School of Discipline, where wayward sons of wealthy parents were sent for reformation, was one of La Salle's most successful institutions. It was established at St. Yon.

La Salle's motto was, "Principles of education are universal; their application must be local"; hence, the Brothers are alive to every change in the popular phase of education. They hold to nothing merely because it has the sanction of antiquity. They are ready to adopt what stands the test of experience. As a body, conservative yet progressive, they are saved from the disastrous effects of individual experimentation.

It is characteristic of the Brothers that wherever special talent is discovered it is fostered, encouraged, developed. The purpose is not to turn out a number of coins with exactly the same inscription and ornamentation, but rather to study the nature of each separate piece of metal and to subject it to such pressure and leave upon it such an impress as would best suit its character.

In the subjoined list will be found specimen work from the various grades of schools now established in the United States, the exhibit, with one exception, being exclusively from this country. It may be taken as representative of what is accomplished by a body of trained laborers, working under centralized authority.

The large and full exhibit made by the Brothers' schools from various parts of the country proves that the art element is duly appreciated by this order.

The exhibit of the colleges may be taken as a continuation of the work begun in St. Yon, in the first boarding school.

De la Salle Institute and the academies are evidence of the adaptability of the system to the requirements of commercial life. Saint James' School, Brooklyn, the Cathedral, New York, and others are fairly representative of the parochial schools directed by the Brothers.

The school museums of the Sacred Heart Academy, Westchester (preparatory department of Manhattan College), Buffalo, Yonkers, Syracuse, and Chicopee, are illustrative of the application of instruction to local industries.

Drawing, free-hand, mechanical, perspective, and ornamental, is a development in the same direction.

The New York Catholic Protectory, Feehanville Industrial School, and Peekskill Farm are repetitions, in part, of the School of Discipline at St. Yon.

Saint Joseph's Normal College, with its specimens of local herbaria, woods, &c., realizes the instructions of De la Salle to his first normal scholars.

The manuals of method, notes of lessons, &c., from Amawalk and Ammendale, give views of the detailed methods of procedure.

The whole exhibit is varied, systematic, complete, suggestive, instructive.

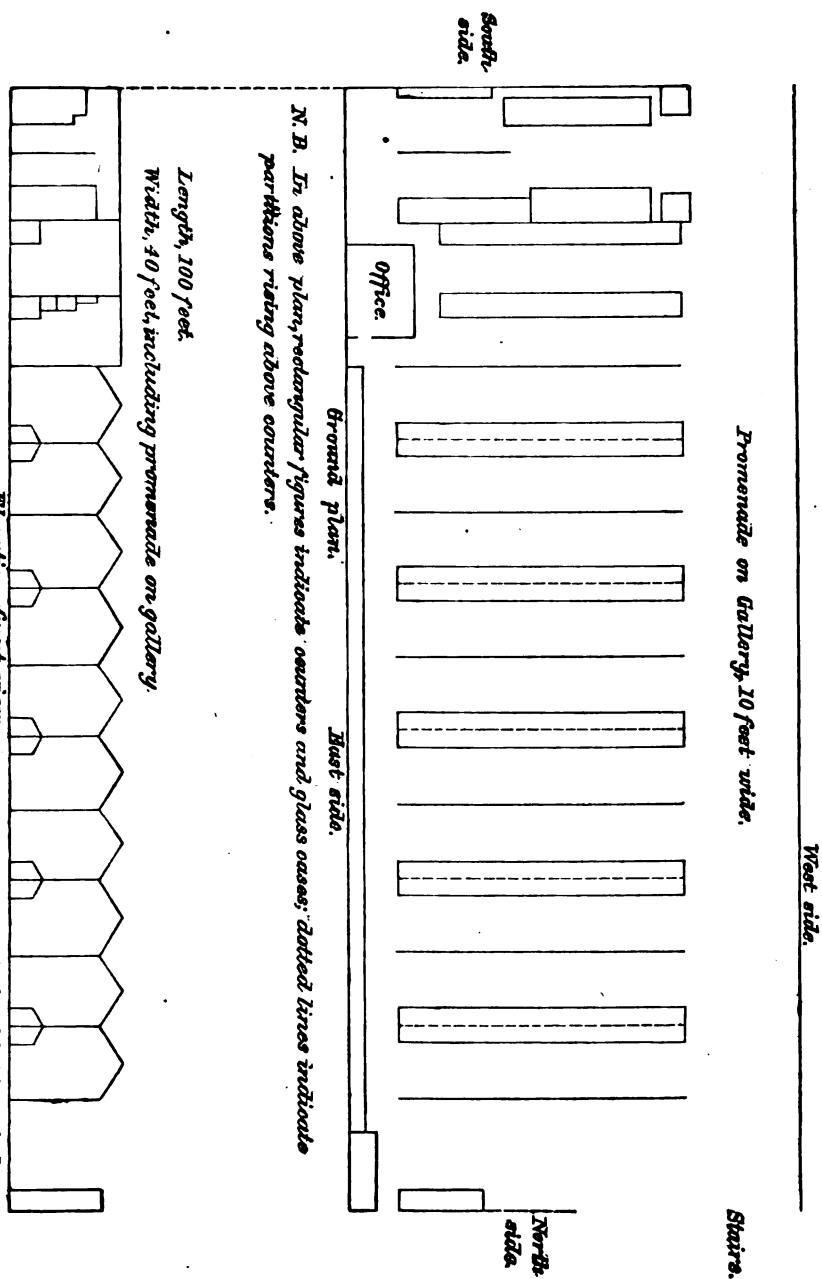


FIG. 82.—Plan of the Christian Brothers' exhibit.

## PAROCHIAL SCHOOLS.

About forty of the Brothers' parochial schools contributed exhibits for the Exposition. We would call attention to the practical character of the work in Christian doctrine, arithmetic, mensuration, bookkeeping, geography and map drawing, history, grammar, and composition. It illustrates the Brothers' methods. Those methods are such as are best calculated to fit youth for business and industrial pursuits.

*Cathedral School, New York City.*—Set of 21 photographs of students and professors in album; Christian doctrine, 1 album, 10 copies; co-ordination of reading and composition, 3 albums; co-ordination of reading and composition, with photograph opposite each student's work, 1 album, 19 copy-books; language lessons, 1 album, 8 copy-books; miscellaneous class work, 2 albums, 23 copy-books; arithmetic, 1 album; maps, 1 album, 22 specimens; maps and description of rock formations in New York State, 1 album, 16 copy-books; sketches and description of Jeannette expedition, containing a portrait of Lieutenant De Long, a map of the route of the expedition, and scenes in the Arctic regions, 1 album; penmanship, 1 album, 26 specimens; free-hand drawing, 2 albums, 50 specimens; 11 maps and description of the Holy Land, accompanied by a short history of the Jewish people in the students' own words.

*Cathedral School, Philadelphia, Pa.*—Grammar, 1 album, 23 copy-books; miscellaneous exercises, 1 album, 15 copy-books; arithmetic, 1 album, 18 copy-books; algebra, 1 album, 22 copy-books; bookkeeping, 3 albums, 37 copy-books; penmanship, 2 albums, 46 copy-books.

*Cathedral and Saint Mary's Schools, Saint Paul, Minn.*—Christian doctrine, spelling, grammar, composition, arithmetic, algebra, geometry, mensuration, natural philosophy, bookkeeping, and commercial law, 1 album, exercises, 48 examination papers, and copy-books; series examination questions, 1 album; penmanship, 24 copy-books.

*Immaculate Conception Parochial School, Baltimore, Md.*—Grammar, arithmetic, and mensuration, 1 album, 18 copy-books; miscellaneous exercises, 1 album, 12 copy-books; bookkeeping, 3 albums, 18 copy-books; penmanship, 3 albums, 36 copy-books; free-hand drawing, 1 album, 6 copy-books.

*Immaculate Conception Parochial School, New York City.*—Christian doctrine, 2 albums, 11 copy-books; spelling, punctuation, 3 albums; grammar, arithmetic, and algebra, 5 albums, 48 copy-books; compositions, 1 album; geography, illustrated by maps, 1 album; bookkeeping, 2 albums, 18 copy-books; linear drawing, 2 albums.

*St. Ann's Parochial School, Philadelphia, Pa.*—History and grammar, 1 album, 10 copy-books; mathematics, 1 album, 16 copy-books; bookkeeping, 3 albums, 36 copy-books.

*St. Alphonsus' Parochial School, Baltimore, Md.*—Spelling, geography, and arithmetic, 1 album, 23 copy-books; English and German grammar, and translations, 1 album, 22 copy-books; bookkeeping, 2 albums, 30 copy-books; penmanship, 3 albums, 30 copy-books.

*St. Bridget's Parochial School, New York City.*—Christian doctrine, 1 album, 9 copy-books; mensuration, 1 album (specimens); penmanship, 2 albums (specimens); linear drawing, 2 albums (specimens).

*St. Gabriel's Parochial School, New York City.*—Christian doctrine, spelling, penmanship, geography, grammar, history, arithmetic, algebra, mensuration, book-keeping, 1 album, 31 examination papers; compositions, 1 album; bookkeeping, 1 album, 31 examination papers; penmanship, 28 copy-books.

*St. James' Parochial and Commercial School, Brooklyn, N. Y.*—Spelling, 19 copy-books; miscellaneous class work of 1854, 1855, and 1857, 5 bound volumes; language lessons, 1 album, 12 copy-books; grammar, composition, arithmetic, algebra, type-writing, phonography, and bookkeeping, 2 albums; short-hand notes of sermons and speeches transcribed in long-hand or on type-writer, 10 copy-books; bookkeeping, 12 copy-books; ornamental penwork, 2 copy-books; writing, 54 copy-books.

*St. James' Parochial School, New York City.*—Catechism, 4 albums, 76 copy-books; grammar, arithmetic, and history, 4 albums; algebra, geometry, and mensuration, 1 album, 5 copy-books; bookkeeping, 1 album; linear drawing, 1 album.

*St. John's Parochial School, Baltimore, Md.*—4 photographs of classes; miscellaneous exercises, 1 album, 12 copy-books; bookkeeping, 3 albums, 18 copy-books; penmanship, 1 album, 22 copy-books.

*St. John's Parochial School, Syracuse, N. Y.*—Grammar and miscellaneous class work, 2 albums, 25 copy-books; arithmetic, 32 copy-books; geometry, 1 album (specimens); 9 historical maps; penmanship, 1 album, 25 copy-books; 1 photograph of buildings, students, grounds, &c.

Museum for object teaching.—Three specimens gypsum, or sulphate of lime, colored by oxide of iron; 15 specimens of salt from Syracuse mines; 73 specimens of wood.

*St. Joseph's Cathedral School*, Buffalo, N. Y.—An excellently selected museum of 600 specimens for object lessons, including the various industries of Buffalo.

*St. Joseph's Parochial School*, Chicopee, Mass.—Catechism, grammar, geography, maps, arithmetic, algebra, and geometry, 1 album, 12 copy-books; museum, 26 specimens of cotton, twine, and paper industry.

*St. Joseph's Parochial School*, New York City.—Catechism, 1 album, 10 copy-books; miscellaneous class work, 1 album; grammar, arithmetic, &c., 22 copy-books; bookkeeping, 4 copy-books; writing, 35 copy-books.

*St. Mary's Parochial School*, Jersey City, N. J.—Miscellaneous exercises, 1 album, 12 copy-books; arithmetic, 1 album of 12 pages; compositions, 2 albums of 28 pages; bookkeeping, 3 albums, 36 copy-books; penmanship, 2 albums, 34 specimens.

*St. Mary's Parochial School*, Melrose, N. Y.—Catechism, grammar, arithmetic, and geography, 1 album; German and English exercises, 2 albums; penmanship, 2 albums.

*St. Mary's Parochial School*, New York City.—Grammar and maps, 2 albums; arithmetic and mensuration, 1 album; penmanship, 2 albums, 189 specimens.

*St. Mary's Parochial School*, Yonkers, N. Y.—Catechism, grammar, history, arithmetic, and algebra, 7 albums, 73 copy-books; geography, illustrated by photographs and maps, 1 album, 4 copy-books; penmanship, 1 album, 9 copy-books.

Museum for object lessons.—Silk industry, 23 specimens; felt industry, 15 specimens; carpet industry, 20 specimens.

*St. Michael's Parochial School*, West Hoboken, N. J.—Grammar, 1 album; United States and Bible history, 2 albums; arithmetic and algebra, 2 albums; mensuration, 1 album; bookkeeping, 3 albums, 15 copy-books; writing, 1 album, 50 specimens.

*St. Nicholas's Parochial School*, New York City.—Catechism, spelling, arithmetic, grammar, algebra, and German, 6 albums, 45 copy-books; English and German writing, 2 albums; linear drawing, 3 albums.

*St. Patrick's Parochial School*, Hartford, Conn.—Christian doctrine, composition, geography, arithmetic, and algebra, 39 copy-books; manuscript historical charts, kings of England A. D. 1066-1837; bookkeeping, 2 albums, 41 copy-books; writing, 22 copy-books; photograph and specimens of writing by John Morgan, age 11, a boy without fingers; 54 specimens of wood collected by students.

*St. Patrick's Parochial School*, New York City.—Catechism, grammar, arithmetic, algebra, and mensuration, 3 albums; penmanship and writing, 1 album, 6 copy-books; linear drawing, 2 albums.

*St. Paul's Parochial School*, Philadelphia, Pa.—Arithmetic and algebra, 1 album, 16 copy-books; bookkeeping, 3 albums, 70 copy-books; penmanship, 1 album, 20 copy-books.

*St. Peter's School*, Baltimore, Md.—Miscellaneous exercises, 1 album, 8 copy-books; arithmetic and algebra, 1 album, 15 copy-books; geometry and mensuration, 1 album, 20 copy-books; bookkeeping, 3 albums, 21 copy-books; linear drawing, 7 copy-books, 74 specimens; figure and ornamental drawing, 2 albums, 3 specimens (crayon free-hand).

*St. Peter's Parochial School*, New York City.—Christian doctrine, 2 albums, 22 copy-books; spelling, 32 copy-books; coördination of reading and composition, 1 album, 6 copy-books; compositions, 1 album, 5 copy-books; arithmetic, 2 albums, 20 copy-books; geometry, 2 albums, 13 copy-books; bookkeeping, 1 album, 10 copy-books; penmanship, 3 albums, 150 specimens; penmanship, 33 copy-books; linear drawing, 3 albums.

*St. Peter's Parochial School*, Philadelphia, Pa.—Bulletin showing the results of monthly competitions, English and German grammar, 2 albums, 24 copy-books; English and German compositions, 1 album, 8 copy-books; arithmetic, algebra, and mensuration, 2 albums, 45 copy-books; bookkeeping, 3 albums, 27 copy-books; 12 large maps, 10 small ones; English and German writing, 2,044 specimens, for 1880, 1881, and 1884, and 38 additional copy-books; linear drawing, 2 albums; free-hand drawing, 33 specimens.

*St. Teresa's Parochial School*, New York City.—Grammar, arithmetic, and geography, 1 album, 6 copy-books; maps, 1 album, 21 maps; writing, 2 albums and copy-books, 100 specimens.

*St. Vincent's Parochial School*, Baltimore, Md.—Miscellaneous exercises, 1 album, 16 copy-books; bookkeeping, 3 albums, 32 copy-books; penmanship, 1 album, 6 copy-books; ornamental drawing, 4 books.

Sundry parochial schools from New York City, Philadelphia, Pa., Newark, N. J., Detroit, Mich., and Chicago, Ill., sent the following class work for the exhibit:

Catechism, grammar, geography, arithmetic, and mensuration, 17 copy-books; miscellaneous exercises, 1 album; bookkeeping, 74 copy-books; English and German writing, 64 copy-books; linear and free-hand drawing, 4 albums and specimens.

## INDUSTRIAL SCHOOLS AND ORPHANAGES.

Industrial schools and orphanages are also within the sphere of the Brothers' mission. Most noted among these, and the most deserving of the careful study of visitors, is the Male Department of the New York Catholic Protectory. This institution was incorporated by the legislature of New York in 1863, and is under a board of managers composed of 24 members, among whom may be mentioned Mr. Henry L. Hognet, president, Mr. Eugene Kelly, treasurer, and the Rt. Rev. Monsignor Quinn, advisory chaplain.

## INDUSTRIAL SCHOOLS.

*New York Catholic Protectory, Westchester, N. Y.*—Male department (in charge of the Brothers of the Christian Schools).—Set of framed photographic views of the buildings, grounds, class rooms, members of the band, music room, drawing class, refectory, boys, and Brothers, also of the workshops for printing, electrotyping, shoemaking, tailoring, chair caning, stocking knitting, and silk weaving.

Christian doctrine, 1 album; miscellaneous class work, 33 copy-books; bookkeeping, 12 copy-books; penmanship, 2 albums and 25 copy-books; towns and villages in Westchester county, New York, 17 maps; ground plan of the Protectory and profile of its main sewer; plans of the Protectory and maps of the United States, 15 specimens; geometrical tracing and linear drawing, 3 albums, 117 specimens; free-hand figure and ornamental drawing, 5 albums, 149 specimens.

Industrial department.—Wax figure of boy, in glass case, with complete outfit, which was manufactured at the Protectory.

Museum showing all material and processes used in printing and electrotyping, and specimens resulting from each process. Sixty-six specimens of job-work done at the Protectory for mercantile firms of New York and other cities. Specimen of bird's-eye view of the Protectory property printed in six colors. Twelve volumes printed at the Protectory. A short sketch of the Protectory from its origin in 1863 to the present time.

Museum of industry in tanning hides, showing the 87 consecutive operations in preparing a shoe for market; 23 pairs of shoes of all kinds and sizes made in the Protectory.

Museum of chair-caning industry, showing successive operations in caning, and specimens of chair seats and backs completely caned.

Three suits of clothes made at the Protectory, with photographs of the boys who made the suits.

Stocking factory.—Ten pairs fancy colored socks and stockings made with knitting machines at the Protectory.

Four specimens of silks and satins woven at the Protectory.

Female department (in charge of the Sisters of Charity).—Set of photographic views of class-rooms, dormitory, workshops, and girls at work; wax figure of girl in glass case, with complete outfit, manufactured at the Protectory; 39 specimens of clothing in plain and fancy sewing; table-cloth and lambrequin embroidered with satin in flowers, &c.; one crocheted toilet set.

Museum of kid-glove industry, showing different stages in manufacture of gloves; 6 samples kid skins, assorted colors; 2 black kid skins, lettered in gilt; 24 pairs kid gloves, assorted sizes; 1 pair unsewed kid gloves; 1 stuffed kid.

*St. Mary's Training School, Feehanville, Ill.*—Specimens of writing by Indian students, 1 album; 2 lists of names of comrades written by Indians; 4 pairs of shoes and 2 suits of clothes made by pupils in industrial department; 2 photographs of 50 Indian pupils.

## ORPHANAGES.

*Roman Catholic Male Orphan Asylum, St. Joseph's School, Troy, N. Y.*—Catechism, 4 albums; grammar, &c., 1 album; writing, 76 copy-books; 25 maps; 1 school museum for object lessons; 153 specimens representing industries of iron, paper, cotton, woolen manufacture, &c.

*Roman Catholic Male Orphan Asylum, Peekskill, N. Y.*—Christian doctrine, 4 copy-books; writing, 51 copy-books; 1 framed photograph of buildings and pupils.

## ACADEMIES.

Contributions from twelve academies have been sent. These academies are select pay-schools in our principal cities. It will be noticed that the order of work is of a higher grade than that of the parochial schools.



*Assumption Academy*, Utica, N. Y.—Christian doctrine, 1 album; miscellaneous class-work, 1 album; geography illustrated by 36 maps, 1 album; bookkeeping, 3 albums, 12 copy-books; 1 framed set of 8 photographs of buildings, students, and professors; 1 museum, 17 specimens cotton-mill industry.

*Christian Brothers' Academy*, Albany, N. Y.—Exercises in language and composition, 7 copy-books; compositions, 2 albums; arithmetic and algebra, 2 albums, 11 copy-books; geometry, 2 albums, 10 copy-books; 3 large sheets tracings of buildings—ground plan, elevation, &c.

*De la Salle Institute*, New York City.—Development of solids, 1 album (by one of the Brothers); Christian doctrine, 5 albums, 20 copy-books; exercises in language and compositions, 14 albums, 33 copy-books; rhetoric, 2 albums, 9 copy-books; English literature, 1 album, 5 copy-books; Milton's *Paradise Lost*, with stereopticon illustrations, 1 album; Shakespeare's *Richard III.* with stereopticon illustrations, 1 album; ancient history classics, 1 album, 4 copy-books; ancient and modern languages, 12 albums, 57 copy-books; arithmetic and algebra, 4 albums, 16 copy-books; geometry and mensuration, 5 albums, 28 copy-books; trigonometry and surveying, 4 albums, 22 copy-books; astronomy, 1 album, 3 copy-books; analytical geometry, 1 album, 5 copy-books; natural philosophy, 2 albums, 12 copy-books; chemistry, 2 albums, 6 copy-books; physics, 1 album, 5 copy-books; miscellaneous exercises, 1 album; book-keeping, 6 albums; business forms and commercial calculations and correspondence, &c., 4 albums; 12 historical maps, with descriptions; maps and description in long- and short-hand, 1 album, 7 maps; penmanship, 2 albums, 40 specimens; mechanical drawing, 5 specimens (framed); mechanical drawing, water color, 1 specimen (framed); linear drawing, 3 albums, 44 specimens; 2 crayon free-hand drawings (framed); museums for object lessons; history of a pen, 18 specimens; vegetables, cereals, seeds, &c., 31 specimens.

*La Salle Academy*, Providence, R. I.—Normal department.—Method of teaching composition to beginners; method of teaching oral and written composition; lectiones, method of teaching conversation in the ancient languages, by aid of short-hand; notes on teaching short-hand; essay, *A Christian Education*; poem, *The Flag of Erin*; 1 set 5 photographs of professors and students.

Class work by students.—Christian doctrine, 10 copy-books; essays by students, 10 papers; miscellaneous class work, 4 copy-books; study of words by the use of phonography, 2 copy-books; verbatim report in short-hand of testimony of witnesses, and charge to the jury by the Hon. C. Matteson, in *Anson W. Aldrich vs. Geo. H. Slade et al.*, and same report deciphered by each student, in long hand, 10 copy-books; bulletin with record of 210, 202, 190, 184, 184, 181, 179, 175, 167, and 167 words per minute, by students in phonography; ancient and modern languages, 20 copy-books; geology, 2 copy-books; practical surveying, 5 copy-books.

*Manhattan Academy*, New York City.—Christian doctrine, grammar, geography, rhetoric, arithmetic, algebra, geometry, phonography, and penmanship, 3 albums exercises and examination papers; bookkeeping and mathematics, 4 albums.

*Sacred Heart Academy*, Westchester, N. Y.—Ground plan of the academy property; Spanish, French, and German exercises; geography and natural philosophy, 2 albums, 19 copy-books; maps, 2 albums, 74 maps; linear drawing, 5 copy-books, specimens; museum for object lessons, 6 charts, 120 specimens, representing manufacture of lead pencils, pins, tobacco, felt, &c.

*Sacramento Institute*, Sacramento, Cal., and *St. Joseph's Academy*, Oakland, Cal.—Arithmetic, algebra, mensuration, composition, epistolary correspondence, English literature, physiology, and physics, 3 albums examination papers; penmanship, 1 album and specimens; free-hand drawing, 1 album and specimens.

*St. Joseph's Academy*, Calvert Hall, Baltimore, Md.—Grammar and language exercises, 2 albums, 79 copy-books; compositions, 2 albums, 47 copy-books; home work of students, 1 album, 24 copy-books; arithmetic, 1 album, 24 copy-books; algebra, 1 album, 30 copy-books; arithmetic and geometry, 1 album, 15 copy-books; mathematics, 1 album, 16 copy-books; phonography, 1 album, 13 copy-books; bookkeeping, 6 albums, 144 copy-books; teachers' registers, 1 album, 10 books.

*St. John's Collegiate Institute*, Washington, D. C.—Language exercises, mathematics, business correspondence, &c., 13 copy-books; crayon free-hand drawings, 17 specimens.

*St. Mary's Academy*, Troy, N. Y.—Grammar, language exercises, and ancient languages, 2 albums; compositions, 1 album, 6 copy-books; geography, 1 album; arithmetic, 1 album; algebra, 4 copy-books; geometry and trigonometry, 3 albums; phonography, 6 albums; business forms, 1 album; penmanship, 1 album.

*St. Patrick's Commercial Academy*, Chicago, Ill.—Two albums with specimen work in Christian doctrine, grammar, arithmetic, commercial bulletin, bookkeeping, phonography, penmanship, &c.

## COLLEGES.

Eleven of the Brothers' colleges sent in exhibits. These colleges are all incorporated, with full power to confer degrees and academic honors. The work on exhibition from some of these institutions shows that a high standard is maintained in English literature and composition, the ancient and modern languages, the higher mathematics, and the natural sciences.

## COLLEGE OF THE CHRISTIAN BROTHERS, SAINT LOUIS, MO.

*Normal department.*—Thirty-six academic free-hand crayon studies.

*Essays.*—All power from God. Skepticism. Excellence and utility of logic. Theories regarding the origin of the world. Divinity of the Church historically proved. Dignity of labor. Nature and source of certitude. Monuments of mind. De intellectu atque ejus dependentia a ceteris animæ potentiis. De existentia Dei. Anima humana immortalis est. De lingua. *Περὶ τούτης φωνῆς Ἑλληνικῆς Ἀξιόματος.*

Natural philosophy, 7 copies; bookkeeping, 3 albums, 36 copies; 6 free-hand crayon figure drawings, framed; 17 free-hand crayon figure drawings, framed; 108 free-hand crayon figure, ornamental, and landscape drawings.

## MANHATTAN COLLEGE, NEW YORK CITY.

*Normal department.*—Paper from professor showing method followed in teaching logic; same, in teaching Latin.

*Class work by students.*—Evidences of religion, 8 essays (selected from those written by students each month on subject treated at instruction); notes taken by students during catechetical instruction on evidences of religion (transcribed), 6 copy-books.

*Essays.*—Extrinsic evidence not the only source of certitude. Absolute unity an impossibility. Pantheism. Nature of the human soul. The existence of God. The necessity of a First Cause. The necessity of religion. The supernatural. The possibility of revelation. Miracles—natural, supernatural. Mesmerism. Prophecy. Necessity of revelation. Primitive man not a savage. Existence of revelation. Prehistoric man. Moses and geology. Genuineness of the Pentateuch. Christian marriage the conservative element of society. Influence of the Church on the development of individual character. Influence of climate on character. Influence of Bacon on scientific knowledge. Uses of scientific and industrial expositions. Aims in life. The existence of a visible Church. The right of suffrage. Arbitration *vs.* war. The early traditions of the human race in proof of monotheism.

De ente in genere. De potentia et actu. Discrimen inter ideam entis in genere et ideam entis infiniti. De possibilitate—interna, externa. De essentia et de existentia. De principijs quæ a notione entis dimanant. De communibus entis proprietatibus. De substantia. De supposito et de persona. De qualitate. De quantitate. De principijs et causis. De principio causalitatis. De causa finali. De perfectione. De ente simplici et composito. De ente finito et infinito. De pulchro et de ordine. De natura animæ humanæ. De natura corporea.

De recenti naturalismo. De absoluta unitate. Nature et origine du pouvoir civile. Evolutionism (German). Modern journalism. Immortality of the soul.

Translations from the ancient authors, 7 classical themes by each of 17 students; English classics—L'Allegro, Il Penseroso, Gray's Elegy, Pope's Essay, Hamlet, and Macbeth—copiously annotated by students, some in short-hand work of students as collected from explanations given by professors, 20 copy-books; extract taken from the "Culture of the Spiritual Sense," translated into ancient and modern languages, 12 copy-books (given as a class exercise); exercises in scansion (ancient and modern languages), 20 copy-books; mathematics, surveying, navigation, and analytics, 12 copy-books; notes taken from lectures on hygiene; essays in ancient languages, 2 papers; exercises in ancient and modern languages, written by the students during the months of November and December, showing daily corrections by professors, 40 books; fortnightly essays on various subjects (these essays read before the class), 24 papers; subjects of natural science, showing the ground gone over by the students during half scholastic year, 8 essays; on orations delivered at the musical and literary entertainments given by class clubs, 8 essays.

## CHRISTIAN BROTHERS' COLLEGE, MEMPHIS, TENN.

*Normal department.*—India ink sketch of college buildings, by one of the Brothers; crayon drawing after Raphael (framed), by one of the Brothers; set of 12 photographs of college building, grounds, professors, students, cornet band, orchestra, and music

classes; album of college papers, blank diplomas, honorable mention, testimonial of merit, reports, programmes, addresses to graduates and alumni, society memorials; set of 28 anatomical models for instruction in physiology; scrap book containing scraps, essays, chapters, reports, and history of education.

From its collection of rare books the college exhibits the following: The Pyramids of Gizeh, by J. E. Perring, Esq., C. E.; *Syntagma Juris Universi atque Legum pene omnium Gentium et Rerum Publicarum*; Bible in Latin and German, with annotations in Latin and illustrated by old line copper engravings, printed 1751.

*Class work by the students.*—Christian doctrine and evidences of religion, 1 album, 23 examination papers; language lessons, 3 albums, 53 copy-books, exercises; rhetoric, 1 album, 9 copy-books, examination papers; ancient and modern history, 2 albums, 28 copy-books, examination papers; ancient languages, 2 albums, 30 copy-books (extracts and translations from authors, with exercises in prose composition and scansion); weekly composition and literary exercises, 10 albums; English literature, 2 albums, 13 copy-books, examination papers, and 12 copy-books, exercises supplementary to text book; logic, 1 album, 7 copy-books.

*Essays.*—The living energy of the Catholic Church. Literature and the fine arts as elements of refinement. National morality. Prosperity of the United States. The South. Value of labor. Amusements. The Mississippi Valley. The battle of life. Electricity. The Mississippi River. Education. The curiosities of the press. The resources of the South. The effects of cotton upon civilization. Waste not, want not. The improvement of the Mississippi River. The "Taxing district" formerly "City of Memphis." Monuments of antiquity. A century of progress. Memphis reconstructed. Yesterday and to-morrow. The first strife is half the battle. Road to success. The influence of woman. The language of silence. A trifle, yet a power. Vacation experience. Good manners. Hogarth's line of beauty.

*Debates.*—"Resolved, that the United States is more indebted to her statesmen than to her warriors"; "Country life is preferable to city life"; "Resolved, that a republican form of government is productive of more good than a monarchy."

Arithmetic, 2 albums, 35 copy-books; natural philosophy, 1 album, 11 copy-books; chemistry, 2 albums, 36 examination papers; physiology, 2 albums, 30 examination papers; algebra, 3 albums, 48 copy-books; geometry, 4 albums, 46 copy-books, and 23 examination papers; plane and spherical trigonometry, with applications to surveying and navigation, 4 albums, 34 copy-books; astronomy, 1 album, 3 examination papers; analytical geometry and calculus, record of class work, 2 papers.

Bookkeeping, business forms, commercial calculations, correspondence, &c., 11 bound volumes and 59 copy-books; ornamental penwork, 11 specimens, including one extra large size, illuminated, fourteenth century style, all framed; penmanship, 14 albums, 1,105 specimens, by students since 1873, also 68 copies and prize penmanship from preparatory department of students under 13 years of age.

Crayon free-hand drawing, figures, groups, and landscapes, 34 specimens in frames; free-hand crayon and linear drawing, 2 albums, 203 specimens; perspective drawing, 1 album, 21 specimens.

*Museum for object lessons.*—Cotton, 48 samples of prize and standard grades from the United States, South America, Africa, and British India; 10 samples of processes in manufacture of cotton goods from mills; cotton-seed industry, showing samples of seed, hulls, lint, ashes, pearlash, lye, crushed seed, oil cake, meal, crude, lubricating, lighting, and cooking oils, and soap—all from cotton seed.

Specimens of Tennessee woods, marbles, vegetable products, silk, birds' eggs, and Louisiana rice; specimens of all industries, minerals, cereals, &c., systematically arranged, 26 charts, 828 specimens.

#### DE LA SALLE COLLEGE, PHILADELPHIA, PA.

Christian doctrine, 1 album; examination papers, preparatory department, for March, 1884; language lessons and miscellaneous class work, 7 albums.

*Essays.*—Development of electricity. The Church and science. What the future may bring. Lights at the electrical exhibition. The political campaign. Be true to the dreams of youth. The Papacy vindicated. Growth of juvenile iniquity. The Inquisition. History of the Councils of Constance and Basle. The Inquisition as seen in its true light. Silent cities. The political outlook. Is the Church an enemy to science. False position of materialists. Beer gardens. France of to-day. France of the future. Life and work of Archbishop Wood. Reflections on the "Humanum genus." Charles Reade.

Ancient and modern languages, 7 albums, 47 copy-books (translations); algebra, 3 albums, 30 copy-books; geometry, trigonometry, and surveying, 3 albums, 18 copy-books; mathematics, 3 albums, 37 copy-books (exercises); bookkeeping, 6 albums, 73 copy-books, and additional album of balance sheets; penmanship, 3 albums, copy-books, and specimens; linear drawing, 10 bound volumes; crayon free-hand drawing, 2 albums, 50 specimens; mechanical drawing, plain and water color, 6 albums, 142 specimens.

# 160 EDUCATIONAL EXHIBITS AT THE NEW ORLEANS EXPOSITION.

## ROCK HILL COLLEGE, ELLICOTT CITY, MD.

*Normal department.*—History of Rock Hill College, prepared for the Bureau of Education; prospectus of the college; album of college regulations, reports, and testimonials; Philosophy of Literature, a text-book prepared for advanced students, by a Brother of the college; Development of English Literature, Old English Period, a text-book prepared upon the Old English, or Anglo-Saxon, period of literature, for the class in English literature, by a Brother of the college; Spencer's "Philosophy of Style," by a Brother of the college; On Thinking, an address delivered to the senior class, by the president of the college; Culture of the Spiritual Sense, an address to the senior students, by the president of the college; Psychological Aspects of Education, a paper read before the convocation of the University of New York, June 11, 1877, by the professor of English literature.

*Class work by students.*—Explanation of Christian doctrine and evidences of religion, 1 album, 8 copy-books; Christian ethics, being notes upon Culture of the Spiritual Sense, 1 album, 11 copy-books.

*Theses in philosophy.*—Ex psychologia. Ex theologia naturali. Ex metaphysica generali.

Language lessons, 3 albums, 31 copy-books, exercises and examination papers; rhetoric, and ancient and modern history, 9 albums, 87 copy-books; compositions, 3 albums, 35 copy-books; English literature, 2 albums, examination papers.

*Students' essays.*—(1) Prize essays—Samuel Johnson, his genius and influence. The Renaissance. Pope, his genius and influence. Shakespeare, his historical plays and his times. Martin Luther. Mary Tudor. (2) Commencement essays—Cesarism. Science and no science. Progress of nations. Public opinion. The relations of Governments to the Church. Myths in modern science. Contrasts. Godless education. Financial crises. Wycliffe. Organized charities. Life lessons. Education vs. instruction. Social and literary prejudices. Joan d'Arc. Prince Gallitzin. France and Gambetta. Charles O'Connor. Christianity and society. The third term. Morality of literature. Charlatanism. The Chinese and their civilization. Social reform. Idea of liberty in France. Mormonism. (3) Weekly essays—junior class: Pope's Essay on Criticism; sophomore class: The Norman kings of England; class of special study: Financial crises; second preparatory class: Maryland toleration; primary class: A letter on home.

Ancient languages (exercises and translations), 3 albums, 24 copy-books; chemistry, 1 album, 23 copy-books; physics, 2 albums, 25 copy-books; miscellaneous exercises, 3 albums, 29 copy-books; algebra, 2 albums, 10 copy-books; geometry, mensuration, 2 albums, 16 copy-books; trigonometry, 1 album, 7 copy-books; linear drawing, 5 albums, 160 specimens; water-color drawing in shade and shadow, 1 album, 25 specimens; profile, 13 feet by 4 feet, route of Panama ship-canal; profile axis of railroad.

## SAINT JOSEPH'S COLLEGE, CLAPHAM, LONDON, S. W., ENGLAND.

*Normal department.*—Electricity and electrical measurement; notes on chemistry.

*Class work.*—Notes on physics, 1 album; biology and chemistry, 1 album; notes on mechanics, optics, and heat, 1 album; notes on electricity and electrical measurement, 1 album; notes on algebraical geometry (Todhunter's), straight line and circle, 1 album; problems (Todhunter's Spherical Trigonometry), 1 album; notes on Dynamics of a Particle, 1 album; practical science work in hydrostatics, hydrodynamics, light, and heat, 3 albums; problems from Godfrey's Astronomy, 1 album; experimental determination of the specific resistance of German silver wire, 1 album; notes on Todhunter's Conic Sections and Addison's Solid Geometry, 1 album; differential and integral calculus (Todhunter's), 1 album.

SAINT JOSEPH'S COLLEGE, BUFFALO, N. Y., SAINT MARY'S COLLEGE, NEW ORLEANS, LA., AND SAINT MICHAEL'S COLLEGE, SANTA FÉ, N. MEX.

One set photographic views from New Mexico; language lessons, 2 albums, 16 papers; ancient languages, 2 albums, 18 papers, and essay by professor on method of teaching same; phonography, 12 copies; algebra, 2 albums, 14 papers; miscellaneous exercises in mathematics, 3 albums, 20 copy-books; geometry and mensuration, 1 album, 10 papers; trigonometry, 1 album, exercises; bookkeeping, 36 copy-books; penmanship, 5 albums, 47 copy-books; museum of grape sugar industry, 13 specimens.

## SACRED HEART COLLEGE AND SAINT MARY'S COLLEGE, SAN FRANCISCO, CAL.

Christian doctrine and evidences of religion, 1 album, copies, and 17 examination papers; compositions, preparatory department, 52 examination papers.

*Essays.*—The Church and science. Toleration. Civil government. The Pope. De urbanitate. De amicitia. De viis ferreis. Jean Baptiste de la Salle. Resources of

California. Importance of the International Exposition. The Pyramids. American oratory. Californian scenery. American toryism. The missionary in America. Trials of Leo XIII. The Deserted Village.

Logic, 12 examination papers; algebra, 2 albums, examination papers; geometry and mensuration, 2 albums, examination papers; plane and spherical trigonometry, 3 albums, 20 examination papers; surveying and astronomy, 5 albums, 36 examination papers; bookkeeping, 3 albums, 36 copy-books; penmanship, 1 album; free-hand crayon and mechanical water-color drawings.

### NORMAL DEPARTMENT.

The contributions to literature, the manuals of methods of instruction and school management, the ingenious appliances invented by the Brothers for communicating knowledge and for simplifying problems and propositions, as well as the artistic work of the normal students, are worthy of the serious attention of educators, as they convey an idea of the very superior system which the world owes to the venerable J. B. de la Salle and his disciples. It may be a matter of information for some that the first normal school that ever existed was established by the founder of the Brothers.

*St. Joseph's Normal College, Amawalk, N. Y.*—Portrait of the Ven. J. B. de la Salle, founder of the Order of the Brothers of the Christian Schools, and portraits of the superiors-general since the founding of the Order in 1680. Works by Brothers of the normal department: The Life and Work of the Ven. Jean Baptiste de la Salle, founder of the Brothers of the Christian Schools, an original study from the archives in the Mother House, Paris. The Ven. De la Salle, an appeal to Catholic youth, a smaller "Life." The Brothers on the Battle-Field and in the Hospital, 1870-71. The Christian's Duty," by the Ven. J. B. de la Salle; a new translation, with poetical selections, proving the doctrines of Christianity, chiefly selected from non-Catholic sources, to which are added foot-notes and questions. Christian Politeness, translated from the original of the Ven. J. B. de la Salle, with "Good words" and questions. Meditations on the School. School Government; or, The Brothers. Manual of Methods of Instruction and School Management, with an appendix on the virtues and duties of the educator. Charts for teaching Grammar. Notes on Teaching, being resumés of lectures on Methods. Hints; or, how to Teach Reading. How to Teach Geography. Questions on Commercial Law and Bookkeeping. Notes on Physiology and the Science of Living. Method of Composition for Beginners. Notes on Teaching Short-hand. An Easy Method of Learning to Converse in the Ancient Languages by the Aid of Short-hand. A Method of Learning Written and Oral Composition, Aided by Short-hand. An Easy Method of Teaching Analytical Geometry. How to Teach Moral Philosophy. Electricity and Electrical Measurement. Notes on Chemistry. Elementary Course in Botany. Elementary Course in Agriculture. The Christian Brothers' Series of Penmanship Copies. The Christian Brothers' New Series of Readers, especially prepared to elicit thought and facilitate English composition. New Series of Arithmetics, especially compiled according to the method of teaching in the Order. Introductory Lessons in United States History. Elements of Logic. American Battles, chronological review of principal engagements, dates, commanders, and victories. Set 14 maps, the world and continents; 1 commercial planisphere (hand work); 2 mute maps for blackboard exercise; 1 map illustrating courses taken by African explorers from Mungo Park, 1795, to Serpa Pinto, in 1879 (hand work); 10 atlases for geographical exercises. Series of manuals for teaching geography; 1 diagram for illustrating the points of the compass; 1 map of Europe, showing extent of mineral products, industries, and commerce. 6 hypsometrical casts, ideal and local, submersible. Designs in wood for drawing from nature various styles of mortises, general ideas of carpentry, etc. Series of conic sections in zinc for class talks and sense analysis previous to the study of text; also for use in crayon and stub drawing from nature. Light pasteboard skeletons on which to attach any desired design or model. Set of plaster casts for teaching drawing, design, and construction, consisting of 220 casts of the orders of architecture, buildings, culverts, arches, vases, ornamental work, etc. 1 set 60 charts for instruction in linear drawing. 1 set 38 charts for instruction in free-hand drawing. 2 sets of movable pasteboard projections for illustration of geometrical principles. Safe for pens and holders of pupils.

Herbaria, 7 volumes, over 3,000 specimens, collected by professors and students. Collection of drawings from nature and the flat, the result of year's work (by students of the normal college). Essays.

Series of drawing copies for linear drawing, geometrical tracing, perspective drawing, ornamental drawing, figure, animal, and landscape drawing, shades and shadows. Sixty specimens of woods from Westchester county, New York, in which normal school is situated (collected by Brother professor of natural science and his junior

students in class walks). Plans, detailed, of normal college grounds and vicinity (prepared and designed by junior normal students). Specimens of ornamental pen-work, maps, and sketching (by professor of penmanship in normal college).

*Ammendale Institute*, Ammendale, Md.—Philosophy of Literature, Development of English Literature, Spencer's Philosophy of Style, On Thinking, Culture of the Spiritual Sense, Psychological Aspects of Education, by Brothers of the normal department. Projections of solids in relief by means of wire and silk threads, 24 models. Linear drawing, 9 albums, 36 copy-books; free-hand crayon drawing, 3 albums, 12 copy-books; ornamental drawing, 1 album, 19 copy-books; shades, shadows, and projections, in water color, 24 specimens; plans and miscellaneous exercises, 2-28 specimens.

### FREEDMAN'S AID SOCIETY, METHODIST EPISCOPAL CHURCH.

BISHOP J. M. WALDEN, LL. D., *President*.

REV. R. S. RUST, LL. D., *Corresponding Secretary*.

REV. J. C. HARTZELL, D. D., *Assistant Corresponding Secretary*.

REV. EARL CRANSTON, D. D., *Treasurer*.

REV. A. F. HOYT, A. M., S. T. B., *Superintendent of Exhibit*.

Annual reports of F. A. S. from 1867 to 1879, bound volume; annual report of F. A. S. for 1884.

*Andrews Collegiate Institute*, Andrews Institute, Ala.—Examination papers (selected) in algebra, arithmetic, English grammar, physics, and physiology.

*Baldwin Seminary*, Baldwin, La.—Maps (water colors) of Central America and West Indies, Canada, Louisiana, Mississippi, Arkansas, California, and Nevada. Examination papers (selected) in geography, U. S. history, arithmetic, and English grammar. Technical work in photography and printing, samples.

*Bennett Seminary*, Greensboro', N. C.—Examination papers (entire class) in Latin (beginning), geometry, geography, Anabasis, ancient history, algebra, Latin, and history; examination papers (selected) in English grammar and arithmetic.

*Brown Seminary*, Leicester, N. C.—Miscellaneous examination papers in grammar, arithmetic, and natural philosophy.

*Centenary Biblical Institute*, Baltimore, Md.—One catalogue, 1884-'85; examination papers (selected) in orthography, arithmetic, grammar, and geography; (entire class) in algebra and geometry, Latin, algebra, natural science, and history; geography (two classes), history (two classes), grammar (four classes), arithmetic (two classes), and orthography (two classes).

*Central Tennessee College*, Nashville, Tenn.—Examination papers in Cæsar, Anabasis, geometry (two classes), algebra (two classes), arithmetic (two classes), grammar, orthography and penmanship, Latin reader, physiology, natural history, and U. S. history; photographs—college hall, group of students and teachers, and school building; two pillow-shams.

*Meharry Medical Department*.—Catalogues, 1884; photograph of Meharry Medical College building, photograph of graduate class; examination papers in theory and practice, obstetrics, practice in medicine, surgery, anatomy, chemistry, physiology, and materia medica.

The exhibit of the industrial department consisted of 16 white aprons, with edging; also 5 fancy aprons, with edging; 14 models, specimens carpentry work; 11 specimens plain and fine darning and patching; 1 pair knit woolen stockings; 1 patch-work quilt; 3 figured holders; 1 pair crocheted wristlets; 2 specimens C. T. C. Record; 1 initial-worked towel; 4 crocheted lamp mats; 1 crocheted child's sack; 1 crocheted cap; 1 pair embroidered pillow shams; 1 tidy, macramé lace-work; 2 fancy collars, with edging; 1 crocheted thread collar; 1 wood engraving, a group of college buildings; 1 photograph, group of industrial class; 2 photographs, group of medical graduating class; 3 frames of collected pictures of medical graduating class; 1 photograph, Dr. McKinley; 1 specimen composition and press work; examination papers (entire class) in algebra, geometry, and grammar (four), arithmetic, orthography, Latin, and Greek.

*Clafin University*, Orangeburg, S. C.—Catalogue 1883-'84; the specimens of technical and industrial work exhibited were as follows: hand bag; five collets crochés; embroidered pocket; embroidered tidy; hand-painted palette; table mat in crochet work; tidy-worked design; pair of slippers; thermometer holder, embroidered; bedstead model, wood-work; writing desk, wood-work; what-not model, wood-work; panel door model, wood-work; double screen blind for door, wood-work; oil painting, ocean scene; examination papers (entire class) in Greek (Herodotus), Latin (Horace, Odes), Latin (Cicero against Catiline), and Latin (Horace, Satires and Epistles); class 801

in grammar, orthography, arithmetic, geography, chemistry, natural philosophy, algebra, physiology, Greek (beginning), rhetoric (entire class), Greek (Anabasis), and Greek (Iliad).

*Clark University*, Atlanta, Ga.—Catalogue 1884; special papers (selected): compositions (two classes), bills of lumber for students' building designs, and penmanship; examination papers (entire class) in history, Latin (Virgil), natural science, literature (four classes), grammar, Greek (Plato's Apology), geometry, Greek lessons, and arithmetic; examination papers (selected) in grammar (two classes); the technical and industrial work exhibited consisted of the college journal, printed by the students; carpenter work, 24 specimens; front elevation of house, 5 pencil designs; ground plan of house, 4 pencil designs; ground plan of stable, pencil design; front elevation of stable, pencil design; 6 photographs (by students), house and school buildings; 2 photographs (by students), groups; 4 pieces of female under-clothing.

*Cookman Institute*, Jacksonville, Fla.—Examination papers (selected) in arithmetic (two classes) and geography; special papers (specimens) in penmanship.

*East Tennessee Wesleyan University*, Athens, Tenn.—Annual catalogue, 1883-'84; special papers (orations, essays, and sermons); specimens of commencement and society programs; specimens of business and ornamental penmanship; examination papers in Latin (selected): Horace (Odes), Æneid, and Lessons; examination papers in Greek (entire class): Odyssey and Lessons; examination papers in Greek (class 801): De Corona, Iliad, and Plato's Apology; examination papers in English grammar (two classes), rhetoric, Latin (De Bello Gallico and De Natura Deorum), geology, Christian ethics, physical geography, geometry, algebra, trigonometry, and mechanics.

*Ellijay Seminary*, Ellijay, Ga.—Examination papers (selected) in Latin, arithmetic, grammar, and geography.

*Gilbert Seminary*, Winsted, La.—Special papers: Map of Louisiana and Arkansas; essays; two maps of Mexico and map of North America; examination papers (miscellaneous) in algebra, Greek, and Latin.

*Holston Seminary*, New Market, Tenn.—Examination papers (entire class) in grammar, natural philosophy, Latin, and navigation.

*Houston Seminary*, Houston, Tex.—Annual catalogue, 1883-'84; examination papers (selected) in physiology and geography; examination papers (entire class) in United States history, arithmetic, grammar, and household economy.

*Kingsley Seminary*, Bloomingdale, Tenn.—Annual catalogue, 1883-'84; specimen of penmanship.

*La Grange Seminary*, La Grange, Ga.—Examination papers in United States history; examination papers (entire class) in grammar (two classes), arithmetic, and natural philosophy; examination papers (selected) in natural philosophy; special papers (maps).

*Little Rock University*, Little Rock, Ark.—Examination papers (entire class), in Latin lessons (first and second years), Caesar, and Latin (junior year); examination papers (entire class) in Greek (Anabasis, freshman year), physiology, trigonometry, algebra, (two classes), English literature, rhetoric, arithmetic (two classes), and German (sophomore year); special papers (selected): essays (junior college) and German penmanship; two maps; specimens in botany (two entire classes).

*Morristown Seminary*, Morristown, Tenn.—Examination papers (entire class) in arithmetic, grammar, geography; examination papers (selected) in arithmetic.

*Mount Zion Seminary*, Mount Zion, Ga.—Ground plan of seminary; three maps; examination papers in arithmetic, geography, grammar, and history.

*New Orleans University*, New Orleans, La.—Annual catalogues, 1882, '83, '84; oration; compositions (entire class); examination papers (selected) in arithmetic (three classes), and in English grammar (two classes).

*Philander Smith College*, Little Rock, Ark.—Examination papers (selected) in algebra, arithmetic, and Greek; examination papers (entire class) in physiology; maps.

*Rust University*, Holly Springs, Miss.—Annual catalogue, 1883-'84; portrait of R. S. Rust; photograph of buildings; students' paper, *The Enterprise*, sample; examination papers (entire class) in natural science, English composition, rhetoric, English grammar, geometry, algebra, and Greek; examination papers (selected) in bookkeeping, natural science, and general history; six drawing books (school work); map drawing from memory; penmanship.

*Texas Wesleyan College*, Fort Worth, Tex.—Pencil drawing, mountain goats; crayon drawing, rural scene; drawing of fruit in pencil; maps: Middle States, with two pencil drawings, Southern States with pencil drawing, Europe with four pencil drawings, United States with two pencil drawings, Asia with two pencil drawings, Africa with two pencil drawings, Indian Territory with one pencil drawing, and New England States with one pencil drawing.

*Wiley University*, Marshall, Tex.—Annual catalogue, 1883-'84; examination papers (entire class) in physical geography, Latin lessons, mental arithmetic, and geography; select orations; essays; map drawing.

DEPARTMENT OF COLORED EXHIBITS.

JAMES J. SPELMAN, *Superintendent.*

EXHIBITORS.

- Virginia.*—Richmond Normal School, Richmond.  
*Tennessee.*—Tennessee Central College, Nashville.  
*Kentucky.*—State University, normal and theological, Louisville.  
*North Carolina.*—Biddle University, Charlotte.  
*South Carolina.*—Schofield School, Aiken; Morris Street School, Charleston.  
*Alabama.*—Cuba Street School, Mobile; Tuskegee Normal School.  
*Arkansas.*—Union High School, Little Rock; Arsenal High School, Little Rock; and public schools.  
*Ohio.*—Wilberforce University, Xenia; public schools of Gallipolis.  
*District of Columbia.*—Sumner, John F. Cook, Lincoln, Stevens, Anthony, Bowen, Chamberlain, and Miner Schools, Washington.  
*Indiana.*—Governor, Independence, and Clark Street schools, Evansville; public schools, Indianapolis.  
*New Jersey.*—Mt. Vernon School, Camden.  
*New York.*—Public school, New York City; Public School No. 1, Brooklyn.  
*Michigan.*—Mason High School, Mason.  
*Louisiana.*—Leland University, New Orleans.



## FOREIGN EXHIBITS.

### ENGLAND.

*Association for the Oral Instruction of the Deaf and Dumb*, 11 Fitzroy Square, London, England (see page 147).

*Birmingham School Board, England.*—10 volumes of manuscripts of examinations; 1 box illustrating the teaching of magnetism; 4 drawing folios; 1 kindergarten folio; 1 map folio; 1 domestic economy folio; 1 box of kindergarten specimens; 1 lot of selected specimens of papers on mechanics; 1 picture of science department; needle-work; mariner's compass, by G. E. Seymour; levers, by I. H. Smith; wheels and cord, by B. Alvey; inclined plane, by R. Crookes; Chinese windlass, by R. Crookes; to change motions, by Alfred Dowler; pile engine, by Alfred Dowler; mariner's compass, by John Hadley; windlass, by Samuel Hirst; force of gravity, by F. Llewellyn; inclined plane, by C. Waters; to change circular motions, by W. R. Adams; 1 lot of mechanical diagrams; model of Foundry Road School.

*British and Foreign Blind Association*, Cambridge Square, Hyde Park, London.—Nordenfellt, Th., 53 Parliament street, London, S. W., England—school gymnasium on the Swedish (Ling) system.

*Riggs, James*, 11 Queen Victoria street, London, E. C., England.—Mechanical models, as follows:

Subject II: Machine construction—single-riveted lap-joint; single-riveted butt-joint; double-riveted lap-joint; 12 examples of bolts and board for same; 4 cast-iron plates, etc.; junction of cast-iron plates; corner of cast-iron tank; knuckle-joint; proportions of cotters; gib and cotters; hydraulic joint; wrought-iron crank-shaft; half-lap coupling; disengaging coupling; wall-plate with pedestal; wall-plate and bracket; bracket bearing; wall box for supporting pedestals; foot-step bearing; stepped speed cone; ordinary strap-pulley; wrought-iron hook for 6-ton crane; wrought-iron hook for 2-ton crane; plate link-chain; hand lever, treadle lever; winch handle; wrought-iron crank; crank-pin and shaft-journal; cast-iron crank and crank-pin; disk crank and pin; strap connecting-rod end; box connecting-rod end; coupling-rod joint; forked connecting-rod end; wrought-iron slide bars; cylinder cover, gland, and stuffing-box; air-pump valve; lift or puppet valve; engine slide-valve; gas plug-tap.

Subject III: Building construction—king post; trussed partition; trussed timber beam; iron-roof principle (3 models).

Subject VI: Theoretical mechanics—Professor Willis's arrangement of the mechanical powers, including three small iron tripods; skew bevels; 3 eccentric and elliptic tooth wheels; mangle wheel reciprocating motion; double rack reciprocating motion; 2 spur wheels of wood; worm wheel and worm; eccentric pen and slit bar; Roberts' slow motion; screw returning into itself; Whitworth's quick-return motion; triple tooth rack; wrapping contact; hoop and pin wheel; transmission of axial motion; 2 parallel axes; Boehm's motion; rotary or oscillatory motions; oscillations multiplied; alternate intermittent motion; silent click; variable link work.

Subject XXII: Steam—compound steam-engine; steam-engine; reversing gear; 5 parallel motions.

*Roth, Dr. M.*, 48 Wimpole street, Cavendish Square, W. London.—(1) A large table of elementary positions and exercises according to Ling's system, for the development of the various parts of the body; (2) models and patterns of hygienic dress, shoes and boots, stays, stockings, etc.; (3) model showing three different school ventilators; (4) drawing of a Russian bath, including the application of steam, and cold and warm water in various forms; (5) diagrams of bad positions during the time of education, causing lateral curvature and other complaints; (6) diagrams of bad positions while writing; (7) models of hygienic school benches and chairs, permitting the student to lean comfortably during his occupations in school; (8) means for the physical education of the senses.

*Sheffield School Board Central Schools.*—Wood and iron work made by boys from 13 to 16 years of age.

Mechanical drawings by day and evening scholars.

## JAMAICA.

## SELECTED SPECIMENS.

16 sets of scholars' work in copy-books, dictation, and arithmetic (under prescribed conditions), from the following schools:<sup>1</sup> Belvedere (1st prize), Spanish Town Model School (2d prize), Wesley (3d prize), Friendship (1st prize, copy-book work alone), Duncans (2d prize, copy-book work alone, 1st prize, dictation alone), New Bethlehem (2d prize, dictation alone, 1st prize, arithmetic alone), Retreat (2d prize, arithmetic alone), Barry Street, Kettering, Elletson, Port Royal (Wesleyan), Mizpah, Yallahs (Baptist), Moore Town, Mico, and Campbell's Castle.

6 sets of maps from pupils of the following schools: Belvedere (prize), Spanish Town Model School, Kettering, Mico, Friendship, New Bethlehem.

13 sets of sewing (under prescribed conditions) by pupils of the following schools: Dry River (1st prize), Retirement (2d prize), Alligator Pond, Port Royal (Wesleyan), Belvedere, Kettering, New Hope, Wesley, Snowden, Campbell's Castle, Yallahs (Baptist), Mizpah, and Friendship.

7 sets samples of fancy work by pupils of the following schools: St. Martins (did not compete for prize), Mount Horeb (prize), Duncans, Friendship, Mizpah, Spanish Town Model School, Alligator Pond.

11 sets of time-table and extracts from logbook of each of the following schools: Retreat (1st prize), Kettering (2d prize), Friendship, Moore Town, Wesley, Spanish Town Model School, Belvedere, Duncans, Mount Ward, Elletson, Port Royal (Wesleyan).

4 sets elementary school reports (1882-'83), 12 sets official documents and forms, 12 sets circulars and instructions respecting the exhibits, statistical exhibits respecting shilling reading clubs and school reading clubs, established by Assistant Inspector Hicks.

JAPAN.<sup>2</sup>

## INTRODUCTION.

The following catalogue, with explanatory notes on the more important articles, is published in the hope that it may be of use to visitors as a reference.

The official communication from the United States Government, requesting the Japanese Government to participate in the International, Industrial, and Cotton Centennial Exhibition, to be opened in New Orleans, La., in December of the present year, and especially an urgent request from the Bureau of Education of the Department of the Interior in regard to educational exhibits from this country, were only received by the Education Department in August. Though we have made strenuous efforts to prepare as many specimens as possible, so as to meet the request of the United States Government, yet the time allowed (the exhibits were shipped on November 26) was too short to enable us to make a complete collection. Especially it is to be regretted that during the months of August and September, almost all schools are closed for the summer vacation, so that very few schools have been able to accept the invitation of this Department; and most of the exhibits sent by these schools are incomplete, owing to the want of time.

There are many schools established by other Government Departments, but as they are not under the control of this Department, no exhibits are sent from them.

It is to be remarked here that articles that are not attractive in appearance, and are simple and rude in construction, have been left in their original state, and have not been specially prepared for this exhibition. As regards articles the use of which may not easily be understood by visitors, short explanatory notes are placed on the labels accompanying them; and as to the work of students or pupils, their names and those of their schools are appended; while in the case of elementary schools, the age of pupils is also added, so that visitors may be able to compare and appreciate the value of the various exhibits.

<sup>1</sup> Work of 5 classes (II to VI) from each school, 3 scholars from each class.

<sup>2</sup> The following list was originally prepared under the direction of the Japanese Commissioner for the use of visitors at the Exposition.

Visitors are especially requested to understand that the articles here exhibited are not intended to give full information in regard to our educational system, and, therefore, those who are desirous of obtaining further information are referred to another publication, "General outline of education in Japan," which has been compiled and printed in order to give general information regarding our educational system.

ICHIZO HATTORI,  
Commissioner.

By order of the Minister of Education.

## EXHIBITS.

### *Eighth group—Educational and Technical Instruments, Apparatus, and Methods*

#### CLASS DCCCL.—HOME EDUCATION AND KINDERGÄRTEN.

Nos. 1-3, children's toys, 3 cases. These are "instructive toys." The bows and arrows, rifles, and tops are used by boys; the shuttlecocks and battledores, hand-balls, and kitchen utensils, by girls. They are sometimes used for instruction in village schools. No. 4, cards, Sugoroku and Musashi, 8 kinds. Among the cards, those called Utakaruta (cards on which parts of verses are written) are a collection of one hundred pieces of ancient poetry, by means of which the art of versification is taught. I-ro-ha-tato-hi-karuta (alphabetical cards) are a collection of old Japanese parables, beginning with i-ro-ha (Japanese syllabary). They are used to teach the syllabary at the same time as they inculcate moral maxims. Natural history cards (Tango-Musashi), a kind of checkers, are used for teaching the forms and names of animals and other objects. Sugoroku (a kind of backgammon) are used by both boys and girls, but the varieties now exhibited are used by girls. They teach them about women celebrated for virtue and noble qualities, etc. No. 5, kinds of pictures, 2 books. No. 6, fancy papers, 1 book. These are used to decorate boxes, etc., or are made into envelopes and other wrappers. No. 7, ornamental box, and wrappers manufactured from fancy papers, together with objects enclosed, 1 case. The folded objects in the box are forms of animals and tools, made by cutting and folding the paper. Those in the box covered with glass are models showing the manner in which children are taught to make such objects at home. These objects develop the inventive faculty of children and conduce to manual dexterity.

*Kindergärten.*—Kindergärten have only lately been established in Japan, and consequently there are as yet only a few such schools. Many of them form the infant departments of elementary schools. Only those Kindergärten which exhibit specimens in the present exhibition are here mentioned.

No. 8, regulations of the Kindergarten attached to the Tokio Female Normal School, English translation. No. 9, Kindergarten toys, 1 basket. These toys (No. 9) are used to develop the mental and physical faculties of the children of the Kindergarten and Female Elementary School attached to the Tokio Female Normal School. No. 10, picture showing the children and the pupils of the Female Elementary School attached to the Tokio Female Normal School, at play, 1. No. 11, Kindergarten gifts, cases Nos. 1 and 2. These (No. 11) are such selections of teachers' gifts as are found suitable to Japanese children. They are used in the above-mentioned Kindergarten. Nos. 12-13, ruled blackboards, Nos. 1 and 2. These boards, used in the guiding room of the Kindergarten attached to the Tokio Female Normal School, are hung on the wall near the conductor's seat; upon them block laying, plank laying, stick laying, and line drawing are done. The full-sized boards are 12½ shaku (1 shaku is equal to about 1 foot) long and 4 shaku wide. The lines on the models exhibited are, however, of full size. No. 14, moral story charts, 2 sheets; Nos. 1 and 2. These charts (No. 14), made by the Tokio Female Normal School, are intended to illustrate certain moral stories told to the children in the Kindergarten. Chart No. 1 is the picture of a boy named Mankichi, aged 12, a native of the province of Ise, who supported his aged mother on the little money he earned by carrying travelers' baggage. Chart No. 2 is the picture of a cunning Suzeme (a common bird in Japan), which, having taken possession of a sparrow's nest, was by the latter walled up with mud, and so perished miserably. There are many other such charts used in the Kindergarten, although these two specimens only are exhibited. No. 15, book on Kindergarten games, 1 vol.; No. 16, diagrams of Kindergarten gifts, 9 packages; No. 17, specimens of Kindergarten toys, 4 packages; No. 18, book on Kindergärten, 3 vols. Nos. 15 and 18 explain the method of guiding and the use of the various "gifts." They serve as reference books for the conductors of the Kindergarten attached to the Tokio Female Normal School. No. 19, work by the infants of the Kindergarten attached to the Tokio Female Normal

School, 1 group. No. 20, ditto, 1 case. Nos. 19 and 20 were made by the Kindergarten children.<sup>1</sup> No. 21, pea work, 1 case. No. 22, straw work, 11 cases. No. 23, paper weaving, paper folding, and paper plaiting, 1 book. No. 24, paper sewing, paper cutting, and paper perforating, 1 book. Nos. 21-24 were done by the infants of the Kindergarten attached to the Koto Public Elementary School at Honjio, Tokio. No. 25, work by Kindergarten children, 1 book. No. 26, weaving by Kindergarten children, 1 case. Nos. 25 and 26 were done by the children of the private Kindergarten in Ushigome, Tokio. No. 27, work by the children of the Gumba-ken Kindergarten, 1 book. No. 28, ditto, 1 book. Nos. 27 and 28 were done by the children of the Kindergarten established by the Gumba-ken at Mayebashi, Higashi, Gumbagari, Kozuke Gumba-ken.

*Elementary schools.*—In former times chairs were not used in our schools, but the pupils sat on the floor before short-legged tables. These, being both inconvenient and unhealthy, have now been replaced by chairs and tables. Other school furniture, apparatus, &c., have also undergone radical changes. The programme of elementary schools, consisting formerly of moral lessons, reading, writing, and sometimes arithmetic, has been enlarged by the addition of such subjects as elementary geography, history, physics, chemistry, and natural history. Consequently, many new books have been compiled and models manufactured. The few specimens following may give some idea of the work done:

No. 29, photograph of the Elementary School attached to the Tokio Normal School, 1 copy. No. 30, photograph of the Yokohama Public Elementary School, Kanagawa-ken, 1 copy. No. 31, photograph of the Oimatsu Elementary School, Kanagawa-ken, 1 copy. No. 32, photograph of the Kashiwagi Public Elementary School, Hakodate-ken, 1 copy. No. 33, ground plans of the Nananoye and Ainuma Public Elementary Schools, Hakodate-ken, 1 book. No. 34, ground plan of the Mita Public Elementary School, Tokio, 1 vol. No. 35, ground plan of the Meiji Public Elementary School, Tokio, 1 vol. No. 36, photograph of the Meiji Public Elementary School, Tokio, 2 copies. No. 37, architecture of Elementary Schools, Miyagi-ken. No. 38, ground plan of the Annaka Public Elementary School, Gumma-ken, 1 vol. No. 39, model of the Kamiyama Public Elementary School, Gumma-ken, 1; made by Tskazawa Seitaro, one of the school committee of the Kami Satomi village, in the Usaigori in the province of Kozuke (Gumma-ken). He is said to exert himself for encouraging education among the children of his village. No. 40, ground plan of the Matsuzaka Public Elementary School, Miye-ken, 1 vol. No. 41, ground plan of the Yo-sei Public Elementary School, Miye-ken, 1 vol. No. 42, photograph of the Kaichi Public Elementary School, Nagano-ken, 1 book. No. 43, ground plan of the Kaichi Public Elementary School, Nagano-ken, 1 vol. No. 44, ground plan of the Takashima Elementary School, Gagan-ken, 1 vol. No. 45, ground plan of the Takuki Public Elementary School, Shiga-ken, 1 vol. No. 46, ground plan of the Senda Elementary School, Shiga-ken, 1 vol. No. 47, ground plan of the Tsurucate Elementary School, Shiga-ken, 1 vol. No. 48, ground plan of the Seirio Elementary School, Shiga-ken, 1 vol. No. 49, photograph of the Seirio Elementary School, Shiga-ken, 1 copy. No. 50, photograph of the Nissin Elementary School, Shiga-ken, 1 copy. No. 51, ground plan of the Tanabe Elementary School, Aomori-ken, 2.

No. 52, regulations of the Elementary School attached to the Tokio Normal School (Japanese), 1 vol. No. 53, ditto (English), 1 vol. No. 54, regulations of the Female Elementary School attached to the Tokio Female Normal School (Japanese), 1 vol. No. 55, regulations of the Female Elementary School attached to the Tokio Female Normal School (English), 1 vol. No. 56, the course of study of the Hiogo-ken Elementary School, 1 vol. No. 57, the course of study of the Yamanashi-ken Female Elementary School, 1 vol. No. 58, desks and chairs used in the Elementary School attached to the Tokio normal school, No. 1. Accessories of the same: Ink box, dictation paper, slate pencil, ruler, abacus, copy book (for Japanese pen brush), writing brush. The outer board of the desk is threefold and can be lifted to the upper part, thus affording convenience both for writing and arithmetic, both of which require a flat-surfaced desk, since in writing we use a solution of Indian ink in an ink stone, while arithmetical operations are performed entirely by means of the abacus. No. 59, desk and chair (No. 2), 1. Accessories of the same: Paper, slate, abacus, ink box, dictation paper, ruler, lead pencil, blank paper. This desk is for the use of senior pupils, and is simpler in construction than the foregoing one. No. 60, drawing table, 1. This table is used for drawing, and two scholars can be accommodated at the same time. On the front or near part of the table is inserted a copper plate, which is used as a support in sharpening the pencil. The horizontal piece of wood on the back or

<sup>1</sup>The Kindergarten attached to the Tokio Female Normal School is situated in Tokio and is under the control of the Department of Education. It is complete in its organization and serves as a model for all other Kindergartens.

further part is for hanging the drawing book. No. 61, bench, 1. This is used together with the table just mentioned. No. 62, drawing instruments, 1 set. Accessories of the same: Clamp, lead pencil, drawing board, drawing book, and drawing paper. No. 63, model of blackboard for school room use. The model is one-third of the original. It consists of two boards, which can be freely raised and lowered by means of the pulleys fastened on each side. This arrangement was made because children cannot reach the upper part of the board when they are required to write. Hence, they now write on the lower half, which is then raised, while the other part is simultaneously lowered. No. 64, ink-box used in Female Elementary School attached to the Tokio Female Normal School, 1 set. No. 65, red-ink box for use of teachers. No. 64 is furnished for the use of scholars in writing or composition. No. 65 is used by the teacher in making corrections and in marking written exercises. Both kinds are in very general use. No. 66, luncheon box for the use of scholars of the Female Elementary School attached to the Tokio Female Normal School, No. 1, No. 2. Accessories of the above: Chopsticks, tea cup, cloth, bag, chopstick pouch. No. 1 is for the use of the senior, No. 2 for junior scholars. The latter is accordingly lighter, and is inclosed in a bag, instead of being wrapped in a cloth. No. 67, instruments for collecting and preserving insects, 1 case. No. 68, instruments for collecting and drying plants, 1 case. These instruments are for the use of scholars in elementary schools, who are encouraged to collect insects and plants and to study the same. No. 69, paper slate. No. 70, paper blackboard, 1 sheet. Nos. 69 and 70, which are made in Shinseido, Tokio, may be used in common schools, as they are light and not broken easily. No. 71, chalk, prepared in Japan. This chalk, made by Aoki Yasuho, of Tokio, is used in common schools, and is produced at various places. No. 72, water-writing copy-book, 1 case. Accessories of the same: Ink stone, ink, very soft lead pencil, writing brush and lead pencil. This copy book was invented by Ikeda Joten-taro, of the province of Kaga (Ishikawa-ken). Its peculiarity is that the characters are traced by a brush dipped in water instead of ink. The writing remains visible sufficiently long to be inspected and corrected by the teacher, and then disappears altogether, leaving the paper free for the operation to be repeated. This method not only keeps the hands and faces of the young pupils free from ink stains, but it is also a very great saving of paper, since Japanese characters are of large size and occupy much space. The ink stone may be used on both sides, one side being for the "water writing," just described, the other side for ordinary ink. The ink here exhibited is very cheap, but of inferior quality. The very soft pencil and lead pencil are the production of the province Kaga, and are the manufacture of a man named Kakizawa Rihei. No. 73, wooden slate for school use. This was manufactured by Karai Boku, Wada Soichi, and Yuno Hajimu, residents of the province of Higo (Kumamoto-ken). It is used by school boys in the place of the ordinary slate, and is very convenient for carrying about; it is hard, but light, and is not easily broken.

No. 74, apparatus used in teaching fractions in the Female Elementary School attached to the Tokio Female Normal School, 1 set. Accessories of the same. No. 75, explanation of Bunsu Keisanki. No. 76, cube, 1 case. No. 77, model of clock, 1. No. 78, apparatus for teaching spelling, 1 set. No. 79, numerical apparatus, 1. No. 80, geometrical figures, 1 set. No. 81, cabinet of weights and measures, 1 set. These are Japanese weights and measures, and are used to show their use to the pupils. No. 82, zoological specimens, 1 set. These specimens (No. 82) are a collection of Japanese small beasts, birds, fishes, and mollusks, and are used in teaching the elements of zoology. No. 83, specimens of wood, 1 case.

No. 84, specimens of dried plants, 1 case. These specimens (No. 84) are collections of Japanese plants, and are used in teaching the elements of botany. No. 85, specimens of minerals. These specimens (No. 85) are a collection of Japanese minerals, and are used in teaching the elements of mineralogy. No. 86, minerals arranged in scale of hardness, 1 case. These minerals (No. 86) are used to show the scale of hardness, in teaching the elements of mineralogy. No. 87, specimens of object lessons, 1 case. These specimens (No. 87) are a collection of more than 200 Japanese common objects, and are used in giving object lessons. No. 88, simple apparatus of physics and chemistry, 1 case. No. 89, physical and chemical apparatus, 1 case. This apparatus (No. 89) is used in teaching the elements of physics and chemistry in ward and village schools, where it is difficult to get good and complete apparatus. No. 90, geared tellurian. No. 91, geographical apparatus for common school use, 1 case. No. 92, geographical model, 1. No. 93, abacus, 1. No. 94, school-room abacus, 1. The abacus is an apparatus for performing numerical calculations; the teacher hangs it on the wall or blackboard, and by raising and lowering the balls the pupil is taught how to work with it. Each ball in the upper line of No. 94 is marked with [ . : . ], and each in the lower line with [ . ], so that the pupils can easily understand that the former represent five, the latter, one. No. 94 is to be used in computation when pupil has acquired some familiarity with the apparatus. No. 95, physical apparatus. This apparatus has been manufactured by

Kioikuhin Seizo Gaiasha (a private company in Tokio), by order of the Tokio Educational Museum. No. 96, simple physical apparatus for school use, 1 set. This apparatus has been made out of objects of daily use which can be easily obtained. Among others, bamboo can be got everywhere in Japan, and as it is flexible and hollow it is very useful and convenient as a substitute for glass pipes. These instruments are, of course, very rude in point of form and structure, especially the electrophorus and the air-pump cylinder; but these specimens have been in daily practical use and are not merely theoretical. They have been manufactured by the students of the Tokio Normal School, under the direction of instructors, and two objects have been kept in view in the construction of such apparatus: one is to make the students perform practical experiments whereby they may discover the truth of physical laws, and the other is to give them sufficient manual dexterity to enable them to construct rough but serviceable apparatus from materials easily accessible to them in rural schools to which they may hereafter be appointed teachers, and where they may not be able to secure the regular apparatus. No. 97, explanatory notes of simple physical apparatus for school use (English), 1 vol. No. 98, chemical apparatus, 1 set. This apparatus has been manufactured by Seirenssha (a private company that makes and sells educational and medical apparatus), by order of the Tokio Educational Museum. No. 99, simple chemical apparatus for the use of schools, 1 set. These instruments have also been made from materials readily accessible, such as boxes, earthenware, plates, etc., which are all very cheap. It might perhaps be doubted whether bamboo pipes or paper air bags could be of any practical use. But these specimens have, as in the case of the physical apparatus just mentioned, all been examined and tested. Of course, they are not very durable; but when properly handled they are found to serve their purpose quite well. They have been manufactured by the instructors of chemistry in the Tokio Female Normal School, and the mode of manufacture, as well as their use, has been explained to the female students. The objects kept in view have been explained above. No. 100, instruments for making simple physical and chemical apparatus, 1 set. These instruments, which have been selected from those used in wards and villages, are for making simple chemical and physical apparatus. No. 101, explanatory notes of simple chemical apparatus for the use of schools (English), 1 vol. No. 102, photograph of simple physical apparatus. This is a photograph of the physical apparatus made by K. Ōshima, a teacher of the Kaitatsu Public Elementary School, of Shiga-ken, with materials easily obtained in villages.

No. 103, drawing copies, 2 cases. No. 104, writing copy for Kaisho (formal hand), 1 vol. No. 105, writing copy for Giosho (easy hand), 1 vol. No. 106, writing copy for Sosho (running hand), 1 vol. No. 107, text books of arithmetic, 3 vols. These books (No. 107) were published by the Tokio Normal School, and are used in the elementary school attached thereto. No. 108, text books of the female elementary school attached to the Tokio Female Normal School, 1 group. No. 109, outline maps of Japan and continents, 7 rolls. Outline maps (No. 109) are used in the female elementary school attached to the Tokio Female Normal School. No. 110, book on needle work, 2 vols. No. 111, charts for sewing and cutting, 10 sheets. No. 112, charts for cutting, in two pouches. Text books No. 110, charts No. 111, and charts No. 112 are published by T. Takahama, the principal of the Takahama Private Elementary School in Tokio, and they are used in the sewing department of his school. No. 113, text books of abacus arithmetic, 2 vols. No. 114, Hokkai Shobunten (grammar of the language of the inhabitants of the Yezo), 1 vol. The inhabitants of Yezo are ignorant of letters, and as their ideas are communicated only by means of the spoken language which is peculiar to themselves, in Hokkai Shobunten, which was published by Hakodate-ken, the two different languages are arranged side by side in order to teach the inhabitants of Yezo the language and idiom of the main land. No. 115, elementary school readers, 4 vols. No. 116, elementary school readers, 6 vols. No. 117, First Lesson in School, 1 vol. No. 118, Charts of Phrases, 10 sheets. No. 119, Charts of Reading Lessons in Elementary Schools, 10 sheets. No. 120, Moral Books for Elementary Schools, 6 vols. No. 121, Manners and Etiquette in Elementary Schools, 3 vols. No. 122, Elementary Natural Philosophy, revised, 3 vols. No. 123, Roscoe's Chemistry (Science Primer), translated by W. Ichikawa, 3 vols. No. 124, Cooley's Easy Experiments in Physical Science, translated by J. Naomura, 1 vol. No. 125, Elementary School Arithmetic, 5 vols. No. 126, Brief Geography of Japan, 4 vols. No. 127, Brief Geography of the World, 4 vols. No. 128, Outline Map of Japan, with Explanatory Remarks of the Symbols Used, 1 vol. No. 129, Outline Map of the World, 1 vol. No. 130, Simple Lectures sur les Sciences, par Carrigues, translated by K. Tanaka, 15 vols. No. 131, Botanical Charts, 5 sheets. No. 132, Zoological Charts, 5 sheets. No. 133, Mineralogical Charts, 1 sheet. No. 134, Brief History of Japan, 2 vols. No. 135, Outline of Universal History, 4 vols. No. 136, Drawing Copies for Common use in Elementary Schools: A, 12 vols, B, 12 vols. No. 137, Map Drawing, 3 vols. No. 138, Geological Charts, 2 vols. No. 139, Principles of Political Economy, 2 vols. No. 140, First Lessons in Reading, 1 vol. No. 141, Charts for Reading Lessons, 14 vols. No. 142, Vocabulary, 3

vols. No. 143, Primer, 1 vol. No. 144, Primary School Reader, 4 vols. No. 145, charts of the Japanese syllabary and others up to the multiplication table, 8 sheets. No. 146, Elements of Writing, 1 vol. No. 147, copy books, 59 vols. No. 148, book on gymnastic exercise, 1 vol. Works Nos. 103 and 147 were compiled and published by the Bureau of Compilation in the Department of Education, for elementary schools. However, they are used not only in many elementary schools, but also in normal schools.

No. 149, writing by pupils of the female elementary school attached to the Tokio Female Normal School, 1 vol. No. 150, writings by pupils of the public elementary schools, Tokio-fu, 1 vol. No. 151, compositions by pupils of the public elementary schools, Hakodate-ken, 1 vol. No. 152, writings and compositions by the children of the inhabitants of Yezo, 1 vol. No. 153, compositions by pupils of the Kozimachi Public Elementary School, Tokio-fu, 6 sheets. No. 154, compositions by pupils of the Sakurada Elementary School, Tokio-fu, 1 roll. No. 155, compositions by pupils of the Mita Elementary School, Tokio-fu, 1 roll. No. 156, compositions of the Ikuyei Public Elementary School, Tokio-fu, 1 book. No. 157, compositions by pupils of the Negishi Public Elementary School, Tokio-fu, 1 vol. No. 158, compositions by pupils of the Oimatsu Public Elementary School, Kanagawa-ken, 1 roll. No. 159, compositions by pupils of Kotobuki Elementary School, Kanagawa-ken, 1 roll. No. 160, compositions by pupils of the Genkai Elementary School, 1 book. No. 161, drawings and compositions by pupils of the elementary schools, Miyagi-ken, 2 vols. No. 162, compositions by pupils of the Tomioka Public Elementary School, Gumba-ken, 1 vol. No. 163, compositions by pupils of the Annaka Elementary School, Gumba-ken, 1 roll. No. 164, compositions by pupils of public elementary schools, Miye-ken, 1 vol. No. 165, compositions by pupils of public elementary schools, Gifu-ken, 1 vol. No. 166, compositions by pupils of the Aomori Public Elementary School, Aomori-ken, 1 vol. No. 167, compositions by pupils of public elementary school, Shiga-ken, 2 vols. No. 168, drawings by pupils of the female elementary school attached to the Tokio Female Normal School, 1 vol. No. 169, drawings by pupils of Kojimachi Public Elementary School, Tokio-fu, 1 vol. No. 170, drawings by pupils of Nankai Elementary School, Tokio-fu, 1 vol. No. 171, drawings by pupils of Sakurada Elementary School, Tokio-fu, 1 vol. No. 172, drawings by pupils of Mita Elementary School, Tokio-fu, 1 sheet. No. 173, drawings by pupils of Shinsei Elementary School, Tokio-fu, 1 vol. No. 174, needle-work, drawings, and compositions by pupils of Takahama Private Elementary School, Tokio-fu, 1 vol. No. 175, drawings and compositions by pupils of Toda Public Elementary School, Tokio-fu, 1 vol. No. 176, drawings by pupils of Ikuyei Public Elementary School, Tokio-fu, 2 sheets. No. 177, drawings by pupils of Meiji Public Elementary School, Tokio-fu, 5 sheets. No. 178, drawings by pupils of Negishi Public Elementary School, Tokio-fu, 2 sheets. No. 179, drawings by pupils of Kotobuki Public Elementary School, Kanagawa-ken, 2 sheets. No. 180, drawings by pupils of Tomioka Public Elementary School, Gumba-ken, 1 roll. No. 181, drawings by pupils of Kumafu Public Elementary School, Kumamoto-ken, 1 vol. No. 182, drawings by pupils of the Aomori Public Elementary School, Aomori-ken, 1 book. No. 183, drawings by pupils of the Sekizen Seirio Kenki Public Elementary School, Shiga-ken, 1 book. No. 184, drawings by pupils of elementary schools, Shiga-ken, 1 book. No. 185, needle work by pupils of the female elementary school attached to the Tokio Female Normal School, 1 case. No. 186, needle work by pupils of the Kojimachi Public Female Elementary School, Tokio-fu, 1 group. No. 187, needle-work by pupils of the Kojimachi Public Female Elementary School, Tokio-fu, 2 groups. No. 188, needle work by pupils of Nankai, Koto, and Matsuchiyama Public Elementary Schools, Tokio-fu, 1 group. No. 189, needle work by pupils of the Shinobuoka Public Elementary School, Tokio-fu, 1 group. No. 190, needle work by pupils of the Toda Public Elementary School, Tokio-fu, 1 group. No. 191, needle work by pupils of the Rinboku Public Female Elementary School, Tokio-fu, 3 cases. No. 192, needle work by pupils of the Asakusa Public Elementary School, Tokio-fu, 2 cases. No. 193, needle work by pupils of the Meiji and Negishi Public Elementary School, Tokio-fu, 1 group. No. 194, needle work by pupils of the Oimatsu Public Elementary School, Kanagawa-ken, 1. No. 195, needle work by pupils of the Tomigaoka Public Elementary School, Gumba-ken, 1 group. No. 196, needle work by pupils of the Gifu Female School, and Kobun, Kansho, and Furukawa Public Elementary Schools, Gifu-ken, 1 group. No. 197, needle work by pupils of Koko and Tokunjun Public Elementary Schools, Shiga-ken, 1 group. No. 198, needle work by pupils of Kiosen, Jishiu, and Takuki Elementary Schools, Shiga-ken, 1 sheet. No. 199, table-cloth by pupils of the Kiosen Elementary School, Shiga-ken, 1 sheet. No. 200, needle work by pupils of the Shindo Elementary School, Shiga-ken, 3 sheets. No. 201, relief work. No. 202, needle work by pupils of the Chishiu Elementary School, Shiga-ken, 2 sheets. No. 203, needle work by pupils of the Shisei Elementary School, Shiga-ken, 1 sheet. No. 204, needle work by pupils of the Kaibun Elementary School, Shiga-ken, 1 sheet. No. 205, cloth for wrapping by pupils of the Kaibun Elementary School, Shiga-ken, 1. No. 206, needle work by pupils of the Seirio Elementary School, Shiga-ken, 1 sheet. No. 207, needle work by pupils of the Uchidehama Elementary School, Shiga-

ken, 1 group. No. 208, needle work by pupils of the Kenki and Yurin Elementary School, Shiga-ken, 1 group. No. 209, needle work by pupils of the Kenki Elementary School, Shiga-ken, 1 vol. No. 210, needle work by pupils of the Otawara Public Elementary School, Tochigi-ken, 1 case. No. 211, needle work by pupils of the Kuma-fu Public Elementary School, Kumamoto-ken, 1 case.

The above work (Nos. 149-150 and No. 211) is the result obtained by pupils of the elementary schools, of government, public and private establishments. But it is to be remarked here that we are unable to make a large collection of these results, as the time of the exhibition is very pressing and we have but a few days for such collection, so that we are obliged to show the results of a few schools. Moreover, handwriting and compositions are all in Japanese or Chinese, and it is regretted that their quality cannot be understood by foreigners. As to the drawings here exhibited we have made no special selection, and it is to be observed that only ten years have elapsed since the introduction of pencil drawing into our elementary education. In regard to the instruction of female pupils in needle work, according to the programme of elementary schools, a short explanation will be necessary. In Japan it is considered as the duty of the wives of common people to make the clothes of the members of their families, and even in rich or noble families the superintendence of needle-work devolves on wives, though they themselves do not sew. Such being the case, needle-work is universally practiced by both the lower and higher classes, and it is considered an essential element of female education, and it is taught with the same care as reading, arithmetic, etc.

No. 212, table showing examination marks, etc., at the end of the school term of the elementary school attached to the Tokio Normal School, 1 roll. No. 213, table showing the physical growth and development of pupils of the same school, 1 roll. No. 214, weekly record of the same school, 1 vol. No. 215, specimen register of pupils of the same school, 11 vols.

*Schools for deaf and dumb and blind.*—Education for the deaf and dumb and other afflicted persons has never been neglected in Japan, and there are many blind who learn music or the art of shampooing or acupuncture; and in the case of the deaf and dumb, there are many who take some handiwork for their occupation. But it is only in recent time that our educators, as well as philanthropists, have directed their attention towards the improvement of the method of instruction, which has not yet become complete. A number of schools have, however, been instituted specially for this class of persons in Kioto, Tokio, and Osaka; that of Kioto was established at public expense, while those of Tokio and Osaka are supported at private expense. As to the period of establishment, that of Kioto is the first in order.

Now, considering the quality of work by pupils of the Kioto blind and mute institution, it will be observed that not only talent and virtue can be developed, but also manual dexterity can be got by the method of instruction now adopted. Visitors are referred to the articles mentioned below:

No. 1, ground plans of a private blind and mute school, Asaka-fu, 2. No. 2, regulations of a private blind and mute school, Asaka-fu, 1 vol. Accessories of the same: Regulation of school management, course of study, brief notes as to the maintenance of the school. This school had originally been established by Osaka-fu, but some time after some philanthropists in that fu determined to support it by contributions, and called it "Jizen Kai" (philanthropic society).

No. 3, stereotypes of relief letters for the blind. No. 4, picture of finger arithmetic for the blind. No. 5, picture of finger language for the mute. These are used in a private blind and mute school, Osaka-fu.

No. 6, paper cigarettes, 2 cases. No. 7, carved tea tray. No. 8, relief-worked figure, 1. No. 9, composition and drawing, 1 copy. All these are the work of mute pupils of the private blind and mute institution, Osaka-fu. No. 10, screen, 1. This is the joint manufacture of both blind and mute pupils of Blind and Mute Institution, Kioto-fu. To speak more minutely of the respective parts undertaken by them: Firstly, the dragon's head and cloud on the shitan (a kind of wood) board have been carved by four male mutes; the embroidery and a bird on the left side of the fore part has been worked by two female mutes, and the embroidery, moon, and pine tree on the right by three female mutes; the sun in the cloud and the fittings of gold on tablet board, the engravings of cherry flower, momiji (a red-leaved tree), of pine tree and cone, made with gold and copper, and the figure drawn with silver on the leg, are the product of six male mutes; a silk thread nest on the lower part has been manufactured by a blind boy, and the two hanging thread nests by a blind girl; a class on the back part has been woven by a blind girl with delicate thread made of paper; lastly, a picture papered on the back has been drawn by a male mute, and a verse has been composed and written by a blind boy. Now, this screen may be used either as tatami (a kind of screen), or as a two-folding screen; if the legs be appended and put upright,



it becomes tsutate; while if they be taken away and put in a way to make an angle, it becomes a folding screen. As to its construction, it differs from those commonly found, being intended for a room where chair and table are provided. Thus flowers and leaves engraved on the middle part are mostly horizontal to surface of the table, so that they can be seen directly by one on a chair. The lower part of the screen has nothing but thread hanging, through which air can freely circulate. Lastly, it can be freely folded on either side, unlike common ones. This last is the invention of the institution itself. The institution gives at first elementary education in general, after which, the blind are taught music and shampooing as principal, and language, Japanese and Chinese literature, moral lessons, and history, as branch subjects, and kamiyori (making thread with paper) work and weaving in technics; the mutes, drawing, both Japanese and foreign writing, and writing speech (speech by writing) as principal, and engraving, joinery, gold lacquering, and sashinui (a kind of embroidery) in technics; and the female mutes, sewing in addition; all with intention that they can establish themselves with them as their profession after leaving the school.

CLASS DCCCL.—SECONDARY EDUCATION, INSTRUMENTS, APPARATUS, ETC., OF MIDDLE SCHOOLS.

Middle schools are those in which higher instruction is given in the common branches of study, and such branches are taught as are necessary to prepare students for liberal pursuits or for the more advanced schools. One foreign language, either English, French, or German, is introduced in the curriculum of these schools. Middle schools are established in most fu and ken, and some private establishments also exist. A model middle school has been instituted by the Department of Education, which has also issued the standard outline of the course of study of middle schools and the general regulations of middle schools for the guidance of such schools throughout the Empire. The following are the exhibits relating to middle schools:

No. 1, exterior and interior views of the Osaka Middle School. This is the model middle school, under the control of the Department of Education, referred to above. No. 2, photograph of the Tokio-fu Middle School, 1 copy. No. 3, picture of the Miyagi-ken Middle School, 1 roll. No. 4, picture of the Middle School department of Kayogakko of Gifu-ken, 1 roll. No. 5, picture of the Gumba-ken Middle School, 1 roll. No. 6, photograph of the Gumba-ken Middle School, 1 copy. No. 7, regulations of the Osaka Middle School, 1 vol.

Text books for middle schools and other institutions published by both the Government and private individuals are very numerous, yet as they are mostly either in Chinese or Japanese, they are not exhibited.

No. 8, compositions by the students of the Miyagi-ken Middle School, 1 vol. No. 9, compositions by the students of the Gumba-ken Middle School, 1 vol. No. 10, compositions by the students of the Shiga-ken Middle School, 1 vol. No. 11, compositions by the students of the Aomori-ken Middle School, 2 vols. No. 12, compositions by the students of the middle school department of the Gifu-ken Kayogakko, 1 vol. No. 13, compositions by the students of the Migo-ken Middle and Normal Schools. No. 14, compositions by the students of the Tochigi-ken First Middle School. No. 15, drawings by the students of Tokio-fu Middle School, 10 sheets. No. 16, drawings by the students of the Miyagi-ken Middle School, 1 book. No. 17, drawings by the students of the Gumba-ken Middle School, 1 book. No. 18, drawings by the students of the Aomori-ken Middle School, 2 vols. No. 19, calendar of the Osaka Middle School, 1 vol.

**Normal Schools.**—Normal schools are established in each fu and ken to train teachers of elementary schools. Students are admitted from every gun (civil division of a province) in the fu or ken, and are trained at the public expense. After the completion of the course of study, they must serve in the elementary schools within their respective fu or ken during a prescribed period. Sometimes students pursue their studies at their own expense. As models, the Department of Education has established two normal schools, one for males and the other for females. Outlines of the course of study of normal schools and general regulations of the same are also issued by the Department for the guidance of normal schools throughout the Empire. The following are the exhibits relating to normal schools:

No. 1, photograph of the Tokio Female Normal School, 1 copy. Photographs of Kindergarten and the Female Elementary School. No. 2, ground plan of the Tokio Female Normal School, 1 copy. No. 3, picture of the Tokio Female Normal School, 1 copy. The Tokio Female Normal School is established as a model, under the control

of the Department of Education, and a female elementary school, a female higher school, and a kindergarten are attached to the same, also to serve as models. There is also a normal school for males under the control of the same Department, and two courses of study are organized, one for training elementary school teachers, and the other for middle school teachers. But this school was lately burnt, and is now in course of reconstruction, so that no plans, photographs, etc., of it can be exhibited. No. 4, picture of the Gumba-ken Normal School, 1 roll. No. 5, photograph of the Gumba-ken Normal School, 1 copy. No. 6, picture of the Miyagi-ken Normal School 1 roll. No. 7, picture of the normal department of the Kayogakko of Gifu-ken, 1 roll. No. 8, picture of the Ishikawa-ken Normal School, 1 roll. No. 9, photographs of the Akita-ken Normal School, 2 copies. No. 10, photograph of the Akita-ken Female Normal School, 1 copy. No. 11, pictures of interior and exterior views of the Akita-ken Female Normal School, 2.

No. 12, regulations of the normal school course for training middle school teachers of the Tokio Normal School, 1 vol. No. 13, regulations of the normal school course for training elementary school teachers of the Tokio Normal School, 1 vol. No. 14, regulations of the Tokio Female Normal School, together with tables, etc., 1 vol.

No. 15, lecture room desk used in the Tokio Normal School. One desk is given to each student. No. 16, needle-work case. No. 17, apparatus for needle-work, 1 case. Accessories—instruments for preparing relief work. These two are used in the Tokio Female Normal School. The needle-work case is for the needle-work apparatus. The apparatus for needle-work is that in common use. The board for cutting is a small model of one-quarter of the original; the smoothing-irons, etc., are different in shape from those used in foreign countries, while they are used in a different manner also. Relief work is taught in the female school, together with sewing and cutting. These instruments and apparatus are not only used in the Tokio Female Normal School, but also in other schools, and generally by the people. They are found sufficient for all practical purposes. No. 18, instruments of water-color painting and color painting, 1 case. These are used in the Tokio Female Normal School, and also by painters in general. No. 19, models of the kitchen utensils used in the dormitory of the Tokio Female Normal School, 1 case. This dormitory is established for instruction and training students generally, as well as for the convenience of those who come from distant places. There are a kitchen, bath-room, hair-dressing room, wash-house, etc., so that the students may practice the various branches of daily domestic economy. Moreover, these utensils are in general use by the people.

No. 20, Modern History of Europe (with supplement), 10 vols. No. 21, drawing copy-books, 2 cases. No. 22, drawing copy-books, 1 set. These were published by the Tokio Normal School, for the students.

No. 23, Japanese verses by students of the Tokio Female Normal School and the Higher Female School attached to the Tokio Female Normal School, 1 tablet. No. 24, compositions by students of the Miyagi-ken Normal School, 1 book. No. 25, compositions by students of the Gumba-ken Normal School, 2 vols. No. 26, compositions by students of the normal department of the Gifu-ken Kayogakko, 1 vol. No. 27, compositions by students of the Akita-ken Female Normal School, 1 vol. No. 28, compositions by students of the Aomori-ken Normal School, 1 book. No. 29, compositions by students of the Shiga-ken Female Normal School and Middle School, 1 vol. No. 30, drawings by pupils of the middle and elementary normal departments of the Tokio Normal School, 1 case. No. 31, drawings by students of the Miyagi-ken Normal School, 1 book. No. 32, drawings by students of the Gumba-ken Normal School, 1 vol. No. 33, drawings by students of the normal department of the Kayogakko of Gifu-ken, 1 vol. No. 34, drawings by students of the Ishikawa-ken Normal School, 3 rolls. No. 35, handwriting and drawings by students of the Tokio Female Normal School and the Higher Female School attached to the Tokio Female Normal School, 1 book. No. 36, drawings by students of the Tokio Female Normal School and the Higher Female School attached to the Tokio Female Normal School, 1 book. No. 37, drawings in rolls by students of the Tokio Female Normal School and the Higher Female School attached to the Tokio Female Normal School, 8 rolls. These are the work of students of the Tokio Female Normal School and the Higher Female School, the apparatus (No. 18) being used. No. 38, drawings by students of the Aomori-ken Normal School, 1 book. No. 39, drawings by students of the Nagano-ken Normal School, 1 vol. Nos. 40 and 41, needle-work by students of the Tokio Female Normal School and the Higher Female School attached to the Tokio Female Normal School, 2 cases. No. 42, relief-work, weaving-work, knot-work, and folding-work by students of the Tokio Female Normal School and the Higher Female School attached to the Tokio Female Normal School, 1 case. No. 43, relief-work by students of the Tokio Female Normal School and the Higher Female School attached to the Tokio Female Normal School, 1 tablet. No. 44, needle-work by female students of the Hakodate-ken Normal School, 1 group. No. 45, needle-work by female students of the Ishikawa-ken Normal School, 1 group. No. 46, relief-work by female students of the Ishikawa-ken Normal School, 1 tablet. This is relief-work representing Isueo Tayu, a maid of

honor, who is presenting a verse together with a branch of a cherry tree to an emperor. No. 47, needle-work by students of the Akita-ken Female Normal School, 2 groups. No. 48, needle-work by students of the Shiga-ken Female Normal School, 7. No. 49, relief-work by students of the Shika-ken Female Normal School, 1.

No. 50, table showing the term examination marks, etc., of the students of the normal course for training middle school teachers of the Tokio Normal School, 1 roll. No. 51, table showing the term examination marks, etc., of the students of the normal course for training elementary school teachers of the Tokio Normal School, 1 roll. No. 52, table showing the physical growth and development of the students of the normal course for training elementary school teachers of the Tokio Normal School, 1 roll. No. 53, specimens of school registers, etc., of the normal course for training elementary school teachers of the Tokio Normal School, 5 vols. No. 54, statistical table showing the physical growth and development of the students of the Gumba-ken Normal School, 1 roll. No. 55, table showing the physical growth and development of the students of the Hakodate-ken Normal School, 1 vol.

*Higher female schools.*—In the higher female schools higher instruction is given to those who have completed the elementary school course. There are many such schools established by fu or ken. They are either independent or are departments of middle or normal schools. The higher female school in the Tokio Female Normal School was organized as a model of this sort of school. The following are the exhibits relating to these schools:

In female schools, sewing and cutting, domestic economy, and etiquette are taught, in addition to the common branches of study. In the female elementary school, instruction on these subjects is only introductory, while in the higher female school it is somewhat advanced.

The dormitory teaches the management of the kitchen, cooking, &c., and in addition silk-worm breeding is taught, if the circumstances of locality admit it. Sometimes verse-making is added to the course. Poetry being a matter of taste, assists the development of esthetic ideas, and also to compose sentences in "Kana," and for this reason it is included in the curriculum of these schools.

No. 1, picture of the Gumba-ken Higher Female School, 1 roll. No. 2, photograph of the Gumba-ken Higher Female School, 1 copy. No. 3, regulations of the Higher Female School attached to the Tokio Female Normal School, 1 vol. (This is combined with the regulations of the Tokio Female Normal School.) No. 4, regulations of the Kioto-fu Female School, 1 vol.

No. 5, compositions by students of the Gumba-ken Higher Female School, 1 roll. No. 6, verses written on colored paper by the students of the Gumba-ken Higher Female School, 1 book. No. 7, verses written on rectangular pieces of paper by the students of the Gumba-ken Higher Female School, 1. No. 8, compositions and verses by students of the Gifu-ken Female School, 1 vol. No. 9, compositions by students of the female department of the Tochigi-ken First Middle School, 1 book. No. 10, handwriting and drawings by students of the Atonigakko (private school), Tokio, 1 book. This school was established by Atomi Kakei; and the common branches of study, in addition to lessons in etiquette, koto (musical instrument), and tea-making ceremony, are taught. Nos. 11 and 12, drawings by students of the Gumba-ken Highee Female School, 5 rolls and 1 book. No. 13, water-color paintings by students of the female department of the Tochigi-ken First Middle School, 2 sheets. No. 14, drawings by students of the Gifu-ken Female School, 1 vol. No. 15, needle-work by students of the Gumba-ken Higher Female School, 1 group. No. 16, needle-work by students of the Gifu-ken Female School, 2 groups. No. 17, needle-work by students of the Female Department of the Tochigi-ken First Middle School, 1 case.

*Schools of female handiwork.*—Schools of female handiwork are established everywhere in the country. The chief object of the schools is to educate females in manual work, such as cutting and sewing, weaving, and other fine work, so that they may become useful wives, or that they may earn their own living after leaving the schools. In some schools moral lessons, reading, and arithmetic are taught in addition to the above subjects. In the Kioto-fu Female School not only cutting and sewing, but sashinui (a sort of embroidery), weaving, taudzuriori (a kind of embroidery), relief-work, bordered relief-work, silk-worm breeding, and drawing from life are taught. The following are the exhibits from schools of this class:

No. 1, plan of Sho-so Private Female School, Miyagi-ken, and photograph of the school-room arrangement, 1 roll. This school was instituted by Kashiwazawa Miyogi to teach cutting and sewing.

No. 2, regulations of the Sho-so private school, Miyagi-ken, 1 vol.

No. 3, specimens of various handiwork, 1 case, containing (1) specimen of *sashinui* (a kind of embroidery); (2) specimen of *tsudzuriori* (a kind of embroidery); (3) specimen of relief-work; (4) specimen of bordered relief work; (5) specimen of *hanuwase* (a kind of embroidery); (6) specimen of *nuiawase* (a sort of embroidery); (7) specimen of *sashimono* (a sort of embroidery).

These specimens show the order of the handiwork as taught in the Kioto-fu Female School. The following is a brief explanation of them:

Firstly, *sashinui*: *Sashinui* is of very ancient origin. It is of the finest and most tasteful description. Figures, such as animals, plants, etc., are drawn with spelter on silk cloth or muslin, which is then fastened to a frame and is sewed with colored silk or golden threads. This being done, the spelter outside the figure is wiped away. When carefully and skillfully done this kind of work is very effective. It may be used as a decoration of folding screens, *sho-ji* (window or door sashes covered with their paper), table-cloths, wrapping cloths, and curtains, or of dresses, hats, etc. Although this kind of work is not laborious, nor does it require complicated apparatus, yet long practice is necessary in order to acquire skill and delicacy in it. Book No. 1 has been worked out with *sashinui*, strictly so called, and the second is of what is commonly called *nuitori*, a mixture of *soranui* (which have seams) and *keshinui* (very minute work), while the other is what is called *rosashi*, as it has been worked on *ro* (a kind of gauze silk). Both *nuitori* and *rosashi* may be used for table-cloths when the piece is large, and for bags when it is small.

Secondly, *tsudzuriori*: This has also been known from olden times. It is to weave out figures by inserting various colored silk cloth on the warp. In working this out, skill consists in this, that both warp and woof are correctly interwoven, lengthwise and across, and do not intermingle with each other. The instruments used are a frame for insertion, a reed loom, a bamboo pipe, comb, and *ito-maki* (a spool for winding thread on). The result of the work may be seen on Nos. 3, 4, and 5, in the Handiwork Manufacture Book. Cloth of this sort is made into curtains, table-cloths, wrapping-cloths, bags, etc.

Thirdly, relief-work: This is worked out by drawing a picture which is then cut out on thick paper. On it is pasted silk cloth or crape, by which flowers, fruit, stems, or branches of plants or trees are formed, and in case of animals, cotton is enclosed to form the body. The instruments used are a table, cutting-board, knife, scissors, spatula, smoothing iron, *kemetsuke* (a small thin plate used for marking), and *hanabasami* (a kind of scissors). The result of the work may be seen in Nos. 6, 7, and 8, in the Handiwork Manufacture Book. They may be made into tablets, *kakemono* (pictures hung on walls, etc.), *tanzakukake* (on which thick paper, used for writing verses on, is hung), or small boxes.

Fourthly, bordered relief-work: This has also been known from olden times. *Mii Takayoshi*, a resident of Kioto-fu who possesses one manufactured two centuries ago, devised a new method of work in the seventh year of *Maji*, which has since been called *Takayoshi's* bordered relief-work. The mode of working is as follows: at first a colored picture is cut out, on the back of which is pasted cloth in layers according to the size and color of the object itself, and the direction of rays. By this way the form, the raised or lowered parts of the object itself, may be clearly represented. The instruments used are nearly the same as in the case of relief-work. The work may be made into folding screens, *kakemono*, tablets, fans, etc. This work is very complicated and needs much practice in pasting the pieces one by one. For the result, see Nos. 9, 10, and 11, in the manufacture book, and other manufacture by students of other schools.

Fifthly, *haneawase*: The process is the same as in the relief-work. The only difference is that the former is done by fitting into plain surface, while this is done by pasting one after another. The craft is usually taught in conjunction with cutting and sewing. They may be made into tablets and boxes. The instruments used are the same as in the case of relief-work and bordered relief-work. For the result, see No. 12 of the manufacture book.

Sixthly, *nuiawase*: This belongs to the branch of cutting and sewing. It is a kind of patch with woolen thread and is therefore economically important. If, for instance, costly dresses be torn or charred, they may be repaired by this process. It is worked out by cutting thick paper into forms of animals, plants, etc., to which size the cloth itself is cut, and sewed together. The instruments used are the same as in the ordinary work of cutting and sewing. For the result see No. 13 in the manufacture book. The above mode is pursued in other schools also.

Seventhly, *sashimono*: By this various designs are sewed out simply by the eye. Accordingly this cannot be made use of in cases where living objects, such as animals, plants, etc., are to be represented. The only instrument used is a needle. This is taught as one subject in the school, in order to teach students how to work with needles.

No. 4, tools for making bordered relief work, 1 case. No. 5, tools for making relief work, 1 case. No. 6, models showing how to cut out cloth, 19 in all. They are used

in the Sho-so private school, Miyagi-ken, to teach students how to cut out cloth. No. 7, bordered relief work tablet with peony flower, 1. This has been manufactured in accordance with the method devised by Mii Takayoshi, mentioned before, and is in fact the manufacture of Takayoshi himself. He is a man seventy-seven years of age. He once taught bordered relief work in Kioto Female School, and it is in this connection that he has exhibited his work.

No. 8, model of the hanging picture for cutting and sewing course, 1 roll. No. 9, hanging picture of instruments used for cutting and sewing for school-room use, 1 roll. No. 10, hanging picture showing how to cut out cloth for dresses, 1 roll. These are made use of in the Sho-so private school, Miyagi-ken. No. 11, domestic economy pictures for female schools, 6 sheets. They have been published by the Model Female School, Tochigi-ken, to teach pupils spinning and weaving, cutting and sewing, and domestic economy.

No. 12, handiwork manufacture book, 1 copy. The specimens have all been made by pupils of the female school, Kioto-fu. Nos. 1 and 2 are of sashinui, Nos. 3, 4, and 5 are of tsuzuri, Nos. 6, 7, and 8 are relief work, Nos. 9, 10, and 11 are bordered relief work, No. 12 is of hamiawase, No. 13 is of nuiawase, Nos. 14, 15, 16, and 17 are drawings from life, Nos. 18, 19, and 20 are Japanese sentences, and No. 21 is of sashimono. Compare models in No. 3. No. 13, two-folding screen with sashinui, and objects drawn from life on both sides, 1. The sashinui is the joint manufacture of pupils of the female school, Kioto-fu, and the picture was drawn by Atomi Tamaye, female teacher of the school. No. 14, relief-work table, with ten flowers, both of trees and plants, 1. This was manufactured by pupils of female school, Kioto-fu. No. 15, tsuzuri, table-cloth, 1 piece. This is the joint manufacture of pupils in the female school, Kioto-fu, on which is sewn representations of old social customs. No. 16, lace, A, 1 case. No. 17, lace, B, 1 case. These are the manufacture of pupils in the female school, Kioto-fu, and well fabricated after the European method. No. 18, children's hats, 1 case. These are the manufacture of pupils in the above-mentioned school. Those made of crape are for winter, while those of kaureisha (a kind of gauze-silk) are for summer use. No. 19, wrapping-cloth, with figure of Guanshi, mother of Confucius, 1 piece. The picture has been made with thread by pupils in the central public school of cutting and sewing, Osaka-fu. No. 20, tablets made out by interweaving silk cloth, 3. They have all been sewed together with thread by pupils in the central public school of cutting and sewing, Osaka-fu. Number 1 is the picture of a court-lady playing on the koto (musical instrument) in the moonlight; number two that of Fujiwara Yasumasa playing the lute in a garden one autumn night; number three that of the famous Shidzuka dancing; all representing events in our history. No. 21, round bags fabricated by interweaving silk cloth, 2. They have been sewed with thread by pupils in the central public school of cutting and sewing, Osaka-fu. Number A is a picture of Oye Masafusa criticising the tactics of Minamoto Yoshiie, and number B is that of Minamoto Yoshimitsu playing the sho (a musical instrument) on Mount Ashigara, Sagami province; both representing events in our history. No. 22, round bag worked out by nuikomi (inserting by sewing). This has been sewed with thread by pupils in the public southern school of cutting and sewing, Osaka-fu, and represents Fujiwara Teika singing a ballad in snowy weather. No. 23, tablets with pictures of flowers, both plants and trees. This has been fabricated by embroidering silk cloth by pupils of the private Ai-kei Female School, Osaka-fu. No. 24, fine work by pupils of private Ai-kei Female School, Osaka-fu, 7. No. 25, tablets worked out by inserting crape, 2. These have been sewed together with thread by pupils of the cutting and sewing department of Toto School, Osaka-fu. Number A represents Ukon, a famous woman in Japanese ancient history. No. 26, a long loose robe worn by women over their other garments, made by pupils of the Sho-so School, Miyagi-ken, 1 suit. No. 27, shiromuku aidagi (a white under-garment), made by the same, 1 suit. No. 28, woman's garment, made by the same, 1 suit. No. 29, woman's shirt, made by the same, 1 suit. No. 30, woman's belt, made by the same. These five form one set and are worn by women of high social rank. No. 31, other articles made by the same, 6.

#### GYMNASTICS.

No. 1, photographs of interior and exterior views of the gymnastic institution, 2 copies. The gymnastic institution, which is under the control of the Department of Education, has been established for the purpose of teaching the art of gymnastics. Lectures on physical education are given, and the maneuvers of infantry are also taught. The detailed account of the institution may be seen in "Explanatory Notes on Gymnastics." Those who learn gymnastics are the instructors sent from fu and ken, and the students and pupils of the schools under the control of the Department of Education, and many of those who have learned the art, are now engaged to teach it in various localities. Though archery apparatus and fencing apparatus are not used in the institution, yet as they are employed in schools for gymnastic purposes, some specimens are exhibited.

No. 2, Regulations of the Gymnastic Institution (Japanese), 1 vol. No. 3, Regulations of the Gymnastic Institution (English), 1 vol. No. 4, gymnastic apparatus. This is used not only in the gymnastic institution, but also in schools. The bean-bag is only for females. No. 5, Explanatory Notes on Gymnastics (English), 1 vol. This is an explanation of the gymnastic apparatus (No. 4). No. 6, the dakiu apparatus, 1 set. The game of dakiu has been in existence in Japan from ancient times. Its object is to show skill on horseback. At present it is applied to school gymnastics and practiced on foot, by school boys. It is a kind of "polo." The upper division of the picture shows the game of dakiu on horseback, in ancient times, by the military class; and the lower division the game on foot, at present, by school boys. No. 7, picture of the dakiu game on horseback and on foot, 1 vol. No. 8, books on gymnastics, 6 vols. No. 9, picture of gymnastic exercises, 1 sheet. No. 10, book on gymnastics, 1 vol. No. 11, apparatus for archery, 1 set. Archery was formerly much practiced for military purposes in Japan, and during the feudal period it was a duty of the military class to practice it. But it is now adopted as a gymnastic exercise for school boys. No. 12, fencing apparatus, 1 set. The art of fencing was practiced formerly like that of archery by the military class, and at present by policemen, naval and military officers, and the common people. It has been recently adopted as gymnastic exercise for school boys. The swords (shinai) used are made of bamboo.

#### PROFESSIONAL SCHOOLS.

In the general outlines of education, referred to in the introductory notes, agricultural, commercial, and industrial schools are not particularly enumerated among the professional schools, but here, for the convenience of visitors, things exhibited from those schools are arranged under this class. Professional schools have been established in various parts of Japan. The medical schools are most numerous, and next to them are the agricultural schools. Besides, there are many commercial schools, industrial schools, schools of pharmacy, law schools, scientific schools, literary schools, schools of drawing, schools of navigation, schools of mathematics, schools of architecture, schools of fine arts, schools of manufacturing porcelain, etc., which schools have been unable to send exhibits to this exhibition, owing to the short notice which they received. Therefore the specimens, etc., here exhibited, being very few, do not adequately show the present state of Japanese higher education.

No. 1, photograph of interior and exterior views of Tokio Industrial School. This is a technical school established by the Department of Education to educate those who wish to become teachers in such schools, or foreman or managers of manufactories, and to serve as a model for similar schools, which will be established in various parts of the country as soon as circumstances admit. As this school has been very recently established, and as it has only just got into working order, no specimens worthy of exhibition have yet been produced by the students. No. 2, plan of Sumiyoshi Private School of Drawing in Tokio-fu. This school has been established by Koichi Sumiyoshi for teaching Japanese painting. No. 3, plan of Shiru Kogiokusha (a private school), in Tokio-fu. This school is the private establishment of Kondo Makoto, and provides instruction in navigation and mathematics. No. 4, photograph of Osaka-fu Nautical School, Osaka, seen from the front. No. 5, photograph of the same, seen from the side. No. 6, photograph of Yokohama Private School of Commerce, Kanagawa-ken. This school was founded by a few merchants at Yokohama, and it provides a course consisting of subjects relating to commerce, as well as English and Chinese. No. 7, plan of the Miyagi-ken Medical School. No. 8, plan of the hospital belonging to the above medical school. No. 9, plan of the Miyagi-ken Agricultural Institute.

No. 10, regulations of Tokio Industrial School. No. 11, regulations of Tokio Foreign-Language School. This school has been established by the Department of Education to provide instruction in the German, French, Russian, Chinese, and Korean languages.

No. 12, regulations of the Kobe Medical School in Hiogo-ken. No. 13, regulations of the Kaisai San Agricultural School in Fukushima-ken. No. 14, regulations of the Commercial School in Aichi-ken. No. 15, regulations of the Kobe Pharmaceutical School in Hiogo-ken. No. 16, model of a European sailing ship, and two photographs of its equipment, from Shiru Kogiokusha (a private school) in Tokio-fu. No. 17, practical exercises in book-keeping by the students of the Yokohama private school of commerce in Kanagawa-ken, 6 vols. No. 18, forms of a bill of exchange, of the same school of commerce. No. 19, specimens of insects from the Department of Agriculture of the Kuayogakko, Gifu-ken. These specimens have been collected in order to furnish the students with materials for practical study. No. 20, description of insects from the Department of Agriculture of the Kuayogakko. No. 21, chart of

insects from the above department of agriculture of the Knayogakko. No. 22, herbarium from Tokushima-ken medical school. No. 23, specimen of lung distoma from the Tokushima-ken medical school. No. 24, figure of deformed fetus from the Tokushima-ken medical school. No. 25, photograph of a deformed fetus from the Tokushima-ken medical school. No. 26, picture of a mountain and a stream. This was drawn by Yeisho Kano, teacher of drawing in Shiriu Naniwa Gwa Gakko (Naniwa private school of drawing, Osaka-fu), to show his students. No. 27, picture of peony. This was drawn by Kohei Wyeda, teacher of the above school of drawing for a similar purpose. No. 28, picture of a woman visiting a Buddhist temple. The picture drawn by Kauzan Mori, teacher of the same school of drawing, shows the costume of a woman in very old times, who is going to Miidera (a temple named Miidera) near Lake Biwa in the province of Oomi. No. 29, picture of the scenery of Tsukigase, in the province of Iga, noted for the beautiful blossoms of plum trees, and the picture was drawn for the students by Kinseki Mori, teacher of the same school of drawing. No. 30, picture (oil painting) of a girl carrying a child on her back. The picture was painted for the students of the private school of oil painting called Kitodo, by Tsuiji Matsumoto, the owner of the school. No. 31, Shogaku Sanjitsu Kiokasho (text-book of elementary arithmetic). No. 32, Sanjitsu Kiokasho (text-book of arithmetic). No. 33, Daisu Kiokasho (text-book of algebra). No. 34, Daisu Kiokasho Kaishiaku (key to the text-book of algebra). No. 35, Kika Kiokasho (text-book of geometry). No. 36, Kikusen Taisen Hio (table of logarithms). No. 37, Gatshiukokushi Chokuyaku (translation of the history of the United States of America). No. 38, Chiosen Koku Zu (map of Corea). No. 39, Kotobano Sono. No. 40, Heisan Kaku Kiokasho (text-book of plain trigonometry). No. 41, Kokaiho (nautical almanac). The above-mentioned books were published by Shiriu Kogiokusha (private school named Kogiokusha), for the use of the students. No. 42, compositions by the students, in French, of the Tokio Foreign Language School. No. 43, drawings by the students, in German and French, of the above school. No. 44, compositions by the students, in Russian, of the above school. No. 45, picture of Teika passing the Sano ferry, by a student of the Sumiyoshi private school of drawing in Tokio-fu. This is the picture of Fujiwara-no-Teika composing some famous poetry, when passing Sano in the province of Shimotsuke on a snowy day. No. 46, picture of Yoritomo in exile. This is the picture of Yoritomo, while in the province of Idsu, being persuaded by a priest named Mongaku, who came from Kioto to invade and overthrow the family of Taira. No. 47, picture of Hiromoto at Shijia-Kumon (gate of the imperial palace in Kioto). This is the picture of Minamoto-no-Hiromoto, when playing on the fute (flute) moonlight night, obtaining the musical secret by hearing another also playing on the flute. No. 48, picture of Tsunemasa, playing on the biwa (a kind of lute). This is the picture of Taira-no-Tsunemasa playing on the biwa at the temple of Chikubushima in the province of Oami to the admiration of the god of the temple. No. 49, picture (oil painting) of the sun shining on Yomeimon (the gate of the imperial palace in Kioto), drawn by a student of the Kitodo private school of drawing. No. 50, picture of Kurama-Tengu (imaginary, being supposed to have lived at Kurama, near Kioto) in no (dancing of the old time), by a student of the above school. No. 51, picture of a person playing the koto (a kind of harp), by a student of the above school. No. 52, picture of flowers and fruits, by a student of the above school. No. 53, picture of making tea from powdered leaves, drawn by a student of the above school. No. 54, picture of a maid of honor at the imperial palace, drawn by a student of the above school. No. 55, pictures drawn with the lead pencil. In Japan there are three kinds of drawing, namely, Japanese, European, and Chinese. In Japanese painting there are several schools or styles, such as Kose, Tosa, Sumiyoshi, Kano, Shijo, etc. In European drawing there are water colors, oil paintings, free-hand drawings, etc. In Chinese painting, Nanjin, Hokuin, etc. Among the pictures exhibited here, No. 26, of a mountain and stream, belongs to the Kano style; No. 28, of a woman visiting a Buddhist temple, and No. 29, of Tsukigase, to the Nanjin; No. 45, of Teika passing the Sano ferry, No. 46, of Yoritomo in exile, No. 47, of Hiromoto at Shijaku-mon, and No. 48, Tsunemasa playing the biwa, to the Sumiyoshi style. These may indicate the different styles of drawing. No. 56, gypsum statue of a child, made by a student in the private school of fine arts in Tokio-fu. No. 57, sculpture of three girls playing in the garden, by a student in the above school. No. 58, sculpture of a woman dressing, by a student in the above school. No. 59, clay bust of a woman, by a student in the above school. No. 60, bust of a farmer, by a student in the above school. This school of fine arts was founded by Bunzo Fujita, who has completed the course of fine arts established by the Department of Public Work, and provides instruction in drawing, human anatomy, and sculpture. The statues No. 59 and No. 60 represent the people of rural districts. No. 61, bamboo rules made by the students of a private school of tool making. This was founded by Tsuneoki Fujishima, to instruct students in making tools, instruments, etc. No. 62, map of Japan, drawn by a student of Osaka-fu Nautical School. No. 63, drawings of the steam engine, by a student of the above school.

No. 64, compositions of the students of the Yokohama private school of commerce in Kanagawa-ken. No. 65, exercises in writing by the students of the above school. No. 66, examination papers of students of the Miya-ken Agricultural Institute. No. 67, description of the Tokio Industrial School (English). The organization of the school, etc., are mentioned in this description. No. 68, calendar of the Tokio Foreign Language School. No. 69, order of instruction in the practical subjects given in the Osaka-fu Nautical School. No. 70, historical summary of the Yokohama private school of commerce in Kanagawa-ken.

CLASS DCCCIII.—ORGANIZATION, SYSTEMS OF INSTRUCTION, ETC., FOR HIGHER EDUCATION.

*University.*

No. 1, photographs of the several parts of Tokio University. No. 2, photographs of the several parts of Tokio University. Tokio University is situated in Tokio, and is under the direct control of the Department of Education. It consists of four departments, namely, Law, science, medicine, and literature. The preparatory department belonging to the university provides a course of instruction in those subjects necessary for the preparation of a student entering the university. For detailed information of every department and of the preparatory department, see the respective calendars.

No. 3, calendar of the departments of law, science, and literature of the Tokio University. No. 4, calendar of the departments of law, science, and literature of the Tokio University (English). No. 5, calendar of the department of medicine of the Tokio University. No. 6, calendar of the preparatory department of the Tokio University (English).

No. 7, manikin. This was made at Tokio University by Senji Kitagawa, manufacturer of the university, under the supervision of Assistant Prof. Imada Tsukane, in order to give means of obtaining anatomical knowledge to those living in places where there is a difficulty in obtaining bodies. This manikin has been greatly improved, if compared with the one previously manufactured. The manikin is made up of one hundred pieces of various sizes. The articulation between two pieces is effected by a hole in one piece and an iron rod in the other, or, in accordance with position, hooks are used. Since every piece is marked with numerals, the structure of any part, or its relation to any other part, may be easily understood, if reference is made to the explanatory notes as to its disjunction. The order of disjunction, etc., is mentioned in the explanatory notes. No. 8, model of the gravid womb. This was also made by Kitagawa Senji for use in tocology, to show the development of the embryo.

No. 9, catalogue of the museum. This is the catalogue of the museum belonging to the Tokio University, and all the specimens, apparatus, etc., mentioned in the catalogue, have been provided for the use of the department of science of the university. No. 10, scientific memoirs. The memoirs contain the results of scientific investigations or researches of various kinds made in the department of science of Tokio University, and have been published for distribution among scientific institutions or societies. No. 11, botanical catalogue of the Tokio University. This is the catalogue of plants in the botanical garden belonging to the Tokio University, and these plants are provided for the use of those studying botany in the department of science. No. 12, explanatory notes on the manikin.

CLASS DCCCVIII.—BOOKS AND PUBLICATIONS.

*Periodicals.*

There are several periodicals in Japan, and especially such newspapers as contain the notifications of the Government, editorial leading articles, current news and advertisements, are quite numerous. Besides, there are various kinds of magazines, such as relate respectively to education, politics, morality, religion, commerce, law, local productions, science, industry, literature, etc., of which the most important relating to education and science are here exhibited.

No. 1, Dai Nippon Kiyokukwai Zasshi (Transactions of the Educational Society of Japan). No. 2, Tokio Kiyokui Shisshi (Tokio Educational Magazine). No. 3, Tokio Chigaku Kiokwai Hokoku (Report of Tokio Geographical Society). No. 4, Tokio Sngakakwai Zasshi (Transactions of Tokio Mathematical Society). No. 5, Sunrishoin Geppo (Monthly Mathematical Magazine). No. 6, Shibu Nippon (Literary Magazine).



No. 7, Nippon Suisankwai Hokoku (Japanese Society of Marine Products). No. 8, Tokio Gakugei Zasshi (Tokio Scientific Magazine). No. 9, Horitsu Zasshi (Law Magazine). No. 10, Tokio Kagakukaishi (Proceedings of Tokio Chemical Society). No. 11, Tokio Iji Shinshi (Tokio Medical News). No. 12, Yakugaku Zasshi (Pharmaceutical Magazine). No. 13, Kodokai Soshi (Magazine relating to morality). No. 14, Chingai Kogio Simpo (Engineering Magazine). No. 15, Dai Nippon Nokwai Hokoku (Reports of Japanese Agricultural Society). No. 16, Tokei Shinshi (Statistical Magazine). No. 17, Hogaku Kiokwai Zasshi (Proceedings of the Law Association). No. 18, Kanano Shirabe. No. 19, Dai Nippon Bijitsu Shimpo (Japanese Fine Arts Magazine). No. 20, Tokio Keizai Zasshi (Tokio Economical Magazine).

## CLASS CVIII.—MUSICAL INSTRUMENTS.

Music in Japan is of several kinds, namely, music of the ancient and modern styles, European music, and Chinese music. The instruments here exhibited are those of both the ancient and the modern styles, which have been mostly examined by an office called the Institute of Music, for conducting business concerning inquiries as to singing and the improvement of music. For these purposes a certain number of students was admitted to be instructed in all the subjects of musical science, so as to enable them in future to take up the work of investigating the best means of improving the current music. The same office has been sending, from time to time, teachers of music to the Tokio Normal School and also to the Tokio Female Normal School, to teach songs and music to the students and to instruct them in the use of Japanese musical instruments of the ancient style, to which some modifications have been made, and to teach the use of European musical instruments. Each of these Japanese instruments has been examined as to the harmony of its sounds, etc., and the results of such examinations may be seen in No. 20, Gagaku Zokugakki Cho-on-ho Kaisetsuzn, and the combinations and successions of sounds, etc., may be seen in No. 21, Ongaku Torishirabegakari Seiseki Hokoku Bassui (extracts from the reports on the result of the work done by the Institute of Music).

No. 1, regulations of the Institute of Music. No. 2, regulations as to the instruction of the students in the Institute of Music. No. 3, hoshō, 1. No. 4, hichiriki with gishi, 1. No. 5, rinteki komafute (flute), 1. No. 6, kagurabfute (flute), 1. No. 7, wagoto (harp) with ji, 1. No. 8, koto (harp), 1. No. 9, biwa (lute) with bachi, 1. These are the musical instruments of the ancient style used chiefly on ceremonial occasions, and therefore their sounds are noble and mild. No. 10, koto with ji, 1. No. 11, shamisen with bachi and koma, 1. No. 12, kokin with yumi, 1. No. 13, shakuhachi, 1. These instruments of the modern style were made after the model of the instruments of the ancient style, with some small modifications, and are very commonly played among the people. No. 14, Shogaku Sho-Kashū (songs for the primary schools), 3 vols. No. 15, Shoka-Kakezu, 3 vols. No. 16, Shoka-Kake-zu-dai and Kakewaku, 1 set. These songs have been composed by the Institute of Music. In composing a song we use either the ancient and modern words put together or the ancient words only. No. 17, Ongaku-mondo, 1 vol. No. 18, Ongaku-shinan, 1 vol. No. 19, Gakuten, 1 vol. No. 20, Gakuzoku Gakki Cho-on-Kaisetsu-Zu, with appendix. No. 21, Ongaku Torishirabegakari Seiseki Hokoku-sho Bassui. Extracts from the report on the results of the work done by the Institute of Music, in English, 1 vol. No. 22, Calendar of the Institute of Music, in French, 1 vol.

## LIBRARIES.

There are two libraries which are Government establishments, one being the library of the Department of Education, and the other that of the museum of the Department of the Interior. There are many libraries in fu and ken, of which some are independent public libraries and some are libraries in certain schools, intended for the use of the respective teachers and pupils, although the public are allowed to consult the books in such libraries.

No. 1, photographs of the interior and exterior of the Tokio library. This library is under the control of the Department of Education, having been built during the time of the Tokugawa government and dedicated to Confucius; it is constructed entirely after the Chinese style of building. The library contains books of every kind, both new and old. There are books in Japanese, European, Chinese, Korean, and other languages, and it is always open to the public. Those who are undertaking to write or translate any works which seem beneficial to education, may obtain permis-

sion from the Minister of Education to borrow books from the library. The catalogue of the European books has not yet been completed, and so we are not able to exhibit it on this occasion. No. 2, Catalogue of the Japanese and Chinese books, 1 copy. No. 3, Historical summary of the library, English, 1 vol.

#### EDUCATIONAL MUSEUMS.

There are six educational museums, of which one is a Government establishment belonging to the Department of Education, the other four are established in *fu* and *ken*. Besides, there are some institutions or schools which have for educational purposes collections of physical and chemical apparatus and specimens of natural history, etc., preserved in some part of their buildings, to which visitors are admitted.

No. 1, photographs of the Tokio Educational Museum, 3. This museum is under the control of the Department of Education. In the museum the specimens, models, and all other things necessary for general education have been collected for the use of those who are connected with public instruction, as well as for visitors. Duplicates of zoological, botanical, and mineralogical specimens, and also models of school apparatus and instruments, are always made and collected at the museum, so as to furnish them to schools of every part upon their request. The museum is always ready to give assistance to any school in procuring instruments, apparatus, etc., which have been made under the inspection of the officers of the museum, and so most of the apparatus, instruments, etc., which have been exhibited under the class 801, have been made under the direction of the museum. Sometimes those who are interested in education are invited to meet at the museum and to hear some scientific lectures, illustrated by the specimens or apparatus so as to increase the knowledge of the audience. No. 2, Catalogue of the museum, 2 vols. No. 3, Catalogue of books in the museum, 4 vols. No. 4, Information as to the museum.

#### REFERENCE BOOKS FOR THOSE ENGAGED IN EDUCATION.

Reference books concerning elementary, middle, and higher education, and published by the Government, *fu*, *ken*, and private individuals, are very numerous, but they are all in the Japanese language and consequently not exhibited here. The following are a few of the books published by the Department of Education and the Tokio University, in addition to those which have been exhibited from other quarters:

No. 1, General Outlines of Education in Japan, 1 vol. No. 2, Japanese Education, English, 1 vol. No. 3, Wickersham's School Economy (translated), 9 vols. No. 4, Hart's In the School-Room (translated), 1 vol. No. 5, *Quelques Mots sur l'Instruction publique en France*, par Breal (translated), 1 vol. No. 6, Kehl's *Die Practische in Volksschulen* (translated), 1 vol. No. 7, Spencer's Education (translated), 1 vol. No. 8, Philobileus' History and Progress of Education (translated), 1 vol. No. 9, Northend's Teacher's Assistant (translated), 1 vol. No. 10, Page's Theory and Practice of Teaching (translated), 1 vol. No. 11, Calderwood's On Teaching (translated), 1 vol. No. 12, Holbrook's The Normal, or Methods of Teaching (translated), 1 vol. No. 13, Calkins' Primary Object Lessons (translated), 2 vols. No. 14, Sheldon's Lessons on Objects (translated), 2 vols. No. 15, Japanese Liberal Arts, classified and compiled, 8 vols. No. 16, Haven's Mental Philosophy (translated), 2 vols. No. 17, Thomson's Outlines of the Necessary Laws of Thought (translated), 1 vol. No. 18, Wayland's Elements of Moral Science (translated), 2 vols. No. 19, Moral Lessons, 1 vol. No. 20, Outline History of Japan, 2 vols. No. 21, Dictionary of Japanese Classical Words and Japanese Grammar, 14 vols. No. 22, Botany, 1 vol. No. 23, Treatise on the Polity of the European States, 4 vols. No. 24, Austin's Lectures on Jurisprudence (translated), 2 vols. No. 25, Rogers' Manual of Political Economy (translated), 8 vols. No. 26, *Statistique*, par Jounès (translated), 10 vols. No. 27, Thorpe and Muir's Qualitative Chemical Analysis (translated), 1 vol. No. 28, Thorpe's Quantitative Chemical Analysis (translated), 1 vol. No. 29, Anderson's Strength of Materials and Structures, 1 vol. No. 30, Rankine's Manual of Civil Engineering (translated), 2 vols. No. 31, Lockyer's Elements of Astronomy (translated), 2 vols. No. 32, Complete Map of Japan, 2 sheets. No. 33, Map of Japan, 4 sheets. No. 34, History of Japanese Products in the Provinces of Yamashiro, Musashi, Omi, Mino, and Shinano, 11 vols. No. 35, Crystallography, with the models of crystallism, 1 vol. No. 36, Yaité's Drawing for Schools (translated), 1 vol. No. 37, Valentine's Girls' Own Book, 2 vols. No. 38, European Agriculture, 8 vols. No. 39, *L'Esthétique* par Varon (translated), 1 vol. No. 40, Lupton's Elementary Principles of Scientific Agriculture (translated), 1 vol. No. 41, Jevons' Money and the Mechanism of Exchange (translated), 1 vol. No. 42, Analytical Geometry, 1 vol. No. 43, Smith's Elementary Statics (translated), 1 vol. No. 44, Goodrich's Pictorial Natural

History (translated), 10 vols. No. 45, Lendley's School Botany (translated), 1 vol. No. 46, Brief Account of Botany, 1 vol. No. 47, Gray's Lessons on Botany (translated), 1 vol. No. 48, Parley's Universal History (translated), 1 vol. No. 49, Geography of the World, 7 vols. No. 50, History of Greece (translated), 9 vols. No. 51, Marsh's Book-keeping, 5 vols. No. 52, School Algebra, 12 vols. No. 53, Outline History of France, 10 vols. No. 54, Goodrich's Pictorial History of France (translated), 2 vols. No. 55, History of England (translated), 11 vols. No. 56, Outline History of Germany (translated), 10 vols. No. 57, Markham's History of Germany, 2 vols. No. 58, Goodrich's American Child's History of the United States (translated), 4 vols. The above-mentioned books have been published by the Bureau of Compilation of the Department of Education. "General Outlines of Education in Japan," written in the English language, describes the changes and affairs of education in Japan, and some idea of the state of education in Japan may be got from it. But since that book has been written some changes have occurred in the organization of the Department of Education, and it is advisable to compare it with "Outlines of Japanese Education." Let it also be remarked that the Bureau of Compilation often commands scholars to produce or translate books which serve as text-books of different branches of study, or as reference books for officers directly engaged in educational matters, school officers, etc.; these books are sold cheaply or given to schools, libraries, educational museums, etc., in fu and ken, to promote the cause of education.

No. 59, Tables of the determination of minerals, 1 vol. No. 60, Dictionary of philosophy, 1 vol. No. 61, Table showing the results of the experiments on Japanese timber, 1 vol. No. 62, Analytical report on drinking water in Tokio, 1 vol. No. 63, Short notice on Japanese minerals, 1 vol. No. 64, Handbook of metallurgy, 1 vol. No. 65, explanations of the plants of the Koishikawa Botanical Garden, 1 vol. No. 66, Results of experiments on drinking water in Tokio, 1 vol. The above-mentioned books have been published by the Tokio University as reference books. No. 67, Short sketches of ancient sages in Japan, 20 vols. No. 68, Dictionary of the English and Japanese languages, 1 vol. No. 69, Geography of the world, 6 vols. No. 70, Kanano-shiori, 3 vols. No. 71, Monowarinohashigo, 9 vols. No. 72, Yoyonoto, 6 vols. No. 73, Shiu Shinnowuta, 3 vols. No. 74, Kanabunnokakikata, 5 vols. The above-mentioned books have been published by private individuals.

#### NOTIFICATIONS AND REGULATIONS CONCERNING EDUCATION.

From these notifications and regulations a general idea of educational administration in Japan may be got. The books in the English language are for the convenience of the visitor.

No. 1, Japanese code of education, 1 vol. No. 2, ditto (English), 1 vol. No. 3, Notifications issued by the Department of Education, 4 vols. No. 4, Standard outline of the course of study of elementary schools (English), 1 vol. No. 5, Standard outline of the course of study of normal schools (English), 1 vol. No. 6, General regulations of normal schools of fu and ken (English), 1 vol. No. 7, Standard outline of the course of study of middle schools (English), 1 vol. No. 8, General regulations of middle schools (English), 1 vol. No. 9, Regulations as to the admission to the Tokio Normal School of select students from fu and ken (English), 1 vol. No. 10, The third notification of the seventeenth year of Meiji (1884), issued by the Department of Education (English), 1 vol. No. 11, Regulations for the establishment or abolition of fu or ken schools, kindergärten, libraries, etc. (English), 1 vol. No. 12, Regulations for judging as to the moral conduct of teachers (English), 1 vol. No. 13, Specimen regulations for the establishment or abolition of ward, or village, or private schools, kindergärten, libraries, etc. (English), 1 vol. No. 14, Directions for granting licenses to elementary school teachers (English), 1 vol. No. 15, Specimen regulations for compulsory attendance (English), 1 vol. No. 16, Specimen regulations for the nomination of school committee (English), 1 vol. No. 17, The sixteenth notification of the sixteenth year of Meiji (1883), issued by the Department of Education (English), 1 vol. No. 19, The thirteenth notification of the fifteenth year of Meiji (1872), issued by the Department of Education (English), 1 vol. No. 20, General regulations of medical schools (English), 1 vol. No. 21, Regulations for establishment of medical schools (English), 1 vol. No. 22, General regulations of pharmaceutical schools (English), 1 vol. No. 23, General regulations of agricultural schools (English), 1 vol. No. 24, General regulations of commercial schools (English), 1 vol. No. 25, The tenth notification of the fourteenth year of Meiji (1881), issued by the Department of Education (English), 1 vol. No. 26, Specified articles for those clerks of gun or ku to whom is intrusted the transaction of educational business (English), 1 vol. No. 27, The sixth notification of the thirteenth year of Meiji (1880), issued by the privy council (English), 1 vol. No. 28, The directions prescribing the limits within which elementary schools are to be established, and the number of schools to be therein

established (English), 1 vol. No. 29, The thirteenth notification of the fifteenth year of Meiji (1882), issued by the Department of Education (English), 1 vol. No. 30, The third notification of the seventeenth year of Meiji (1884), issued by the Department of Education (English), 1 vol. No. 31, The quasi-official ranks of the clerks of fu and ken schools (English), 1 vol. No. 32, The one hundred and thirty-first notification of the seventh year of Meiji (1874), issued by the Department of Education (English), 1 vol. No. 33, The directions prescribing the limits within which elementary schools are to be established (English), 1 vol. No. 34, Regulations as to educational rewards, and regulations as to the reward of prizes for the encouragement of education (English), 1 vol. No. 35, Regulations for compulsory attendance of the Aomori-ken elementary schools, 1 vol. No. 36, Regulations for educational meetings of school officers of fu and ken, 1 vol. No. 37, Regulations for educational meeting in Yamagata-ken, 1 vol. No. 38, Regulations of Tokio Academy, 1 vol.

#### REPORTS, CALENDARS, ETC.

We have to mention here the reports, calendars, etc., concerning education, from which one may get some idea of education in Japan. "General Outlines of Education" will specially show the general condition at the present time. This book has been translated into the English language for the convenience of the visitor.

No. 1, General outlines of Japanese education, 1 vol. No. 2, ditto (English), 1 vol. No. 3, Eighth report of the minister of education (English), 1 vol. No. 4, Ninth report of the minister of education, 1 vol. No. 5, comparative table showing per cent. of school population, the number of these receiving or not receiving the prescribed course of instruction for the fifteenth year of Meiji (1882), 1 roll. No. 6, table showing number of universities, colleges, and schools, and instructors, teachers, and students, 1 roll. No. 7, table showing the number of middle schools, and instructors and students, for the fifteenth year of Meiji (1882), 1 roll. No. 8, comparative table showing the income and expenditure of the public schools for the fifteenth year of Meiji (1882), 1 roll. No. 9, table showing the amount of actual educational expenses, paid out of the city, district, ward, or village rates, for the fifteenth year of Meiji (1882), 1 roll. No. 10, table showing the estimated amount of educational expenses (among the local expenses) decided by the fu or ken assemblies, 1 roll. No. 11, comparative table showing the number of public and private elementary schools, and teachers and pupils thereof, and the amount of the public school income and expenditure, property, and contributions, from the sixth to the fifteenth year of Meiji (1873-'82), 1 roll. No. 12, comparative table showing the average number of pupils and students, per cent. of population (English), 1 roll. No. 13, regulations concerning Government students in foreign countries. No. 14, table showing the present number of students sent abroad (English), 1 sheet. No. 15, table showing the number of government students sent abroad, who have returned, up to the month of October of the seventeenth year of Meiji (1884). No. 16, statistical table showing educational affairs in Gumba-ken, 1 roll.

### SUPPLEMENTARY CATALOGUE.

#### GROUP VIII.

##### CLASS DCCCI.

*Plans and photographs of schools.*—1. Photographs of the Yawata Higashi and Yawata Nishi public elementary school, Shiga-ken, 1 copy. 2. Plan of the Kaichi public elementary school, Shiga-ken, 1 roll. 3. Photograph of the Seitats and Siusei public elementary school, Hiroshima-ken, 1 copy. 4. Plan of the same, 1 vol. 5. Plan of the Yoshii public elementary school, Fukuoka-ken, 1 roll. 6. Plan of the Chigio Nishi public elementary school, Fukuoka-ken, 1 roll. 7. Plan of the Kitagawa public elementary school, Fukuoka-ken, 1 roll. 8. Plan of the Fukushima public elementary school, Fukushima-ken, 1 roll. 9. Plan of the Shisa izumi public elementary school, Fukuoka-ken, 1 roll. 10. Plan of the Ukihara public elementary school, Fukuoka-ken, 1 roll. 11. Plan of the Kurokir public elementary school, Fukuoka-ken, 1 roll. 12. Plan of the Ogura public elementary school, Fukuoka-ken, 1 roll. 13. Plan of the Sowe public elementary school, Fukuoka-ken, 1 roll. 14. Plan of the Funakashi public elementary school, Fukuoka-ken, 1 roll. 15. Photograph of the Iwaya and Oyabu public elementary school, Fukuoka-ken, 1 copy.

*School furniture and apparatus.*—16. Hard slate, Hiroshima-ken, 2. 17. Slate-pencil, Hiroshima-ken, 1 case. 18. Water-writing copies, Hiroshima-ken, 5. 19. Ink-stones made of sulphur, 2.

*Work by pupils.*—20. Compositions by pupils of the Kaichi public elementary school, Shiga-ken, 5 sheets. 21. Compositions by pupils of the Jishu Kamono and Koto public elementary schools, Shiga-ken, 1 roll. 22. Compositions by pupils of Kashiwabara public elementary school, Shiga-ken, 1 sheet. 23. Compositions by pupils of the elementary school attached to the Fukuoka ken normal school, 1 roll. 24. Compositions by pupils of Yoshii, Hashiguchi, Katagawauchi, Funaki, Kuroki, and Fuku-shima public elementary schools, Fukuoka-ken, 1 roll. 25. Compositions by pupils of the Aoki and Oyabu public elementary schools, Fukuoka-ken, 1 vol. 26. Compositions and drawings by the pupils of the Ognra Higashi public elementary school, Fukuoka-ken, 1 roll. 27. Compositions and drawings by pupils of the Sone public elementary schools, Fukuoka-ken, 1 roll. 28. Drawings by pupils of the Kaichi public elementary schools, Shiga-ken, 5 sheets. 29. Penmanship by the same, 5 sheets. 30. Needle-work by pupils of the Kaichi public elementary school, Shiga-ken, 1 group. 31. Drawings by pupils of the Koku, Benya, and Uchidehama public elementary schools, Shiga-ken. 32. Drawings by pupils of the elementary school attached to the Fukuoka normal school, Fukuoka-ken, 1 tablet. 33. Drawings by pupils of the Yoshii, Furakawa, Funakoshi, and Oyabu public elementary schools, Fukuoka-ken, 1 roll.

#### SCHOOLS FOR THE DEAF AND DUMB AND BLIND.

*School furniture and apparatus.*—1. Chart illustrating the arrangement of desks and the method of teaching the blind the art of shampooing and the apparatus thereof, Kioto Blind and Mute Institution, 1 sheet. 2. Chart illustrating the arrangement of desks for teaching the mute, 1 sheet. 3. Chart showing the proper slope of the seat desks, 1 sheet. 4. Models of desks used in the Kioto-fu Blind and Mute Institution, 2 kinds.

*School apparatus.*—5. Chart of apparatus for instruction, 2 sheets. 6. Chart of writing on the palm and back of the blind, 1 sheet. 7. Chart of finger arithmetic, 1 sheet. 8. Chart of the blind at play, 2 sheets. 9. Chart of musical instruments for the blind, 1 sheet. 10. Chart of the blind playing music, 1 sheet. 11. Chart of twisted paper-work and weaving by the blind, 1 sheet. 12. Illustrations of different processes of twisted paper-work by the blind, 1 set. 14. Chart of visible speech for the dumb, 1 sheet. 15. Chart of fifty sounds for the blind, 1 sheet. 16. Chart of fifty sounds by fingers for the blind, 1 sheet. 17. Chart of writing on the palm of the blind, 1 sheet. 18. Appendix to writing on the palm of the blind, 1 sheet. 19. Chart of dumb pupils at play, 1 sheet. 20. Chart of tools used by the dumb for working in wood, 1 sheet. 21. Chart of the dumb at wood-work, 1 sheet. 22. Illustrations of the different processes in teaching wood-work to the blind, 26 kinds. 23. Illustrations of the different processes of wood-work by the dumb, with a picture of arrangement of articles, 18 kinds. 24. Chart of tools used by the dumb for carving, 1 sheet. 25. Chart of the dumb, at carving, 1 sheet. 26. Illustrations of different processes in teaching copper engraving to the dumb, 27 kinds. 27. Chart of apparatus for embroidery by the dumb, 1 sheet. 28. Chart of the dumb, at embroidery work, 1 sheet. 29. Illustrations of different processes in teaching embroidery to the dumb, 3.

#### ORGANIZATION AND APPLIANCES OF SECONDARY EDUCATION.

##### (GROUP DCCCLII.)

*Middle schools.*—1. Ground plan of the Iwate middle school, Iwate-ken, 1 roll. 2. Photograph of the Hiroshima middle school and normal school, 1 tablet. 3. Compositions by students of the Iwate middle school, Iwate-ken, 1 vol. 4. Compositions by students of the Kurumé middle school, Fukuoka-ken, 1 vol. 5. Compositions by students of the Fukuoka and Yanagawa middle school, Fukuoka-ken, 1 vol. 6. Drawing by students of the Iwate middle school, Iwate-ken, 1 roll. 7. Drawing by students of the Hiroshima middle school, Hiroshima-ken, 1 roll. 8. Drawing by students of the Fukushima middle school, Fukushima-ken, 1 roll. 9. Drawing by the same, 1 roll. 10. Drawing by the same. 11. Drawing by students of the Yanagawa middle school, Fukuoka-ken, 1 roll. 12. Drawing by students of the Fukuoka middle school, Fukuoka-ken, 3 sheets. 13. Drawing by students of the Amaki middle school, Fukuoka-ken, 1 vol. 14. Drawing by students of the Kurumé middle school, Fukuoka-ken, 2 rolls. 15. Drawing by students of the Kurumé middle school, Fukuoka-ken, 1 roll.

*Normal schools.*—1. Picture of the Fukuoka normal school, 1 roll. 2. Painting by student of the Iwate normal school, Iwate-ken, 1 sheet. 3. Painting by the same, 2 sheets. 4. Drawing by students of the Shiga-ken normal school, 12 sheets. 5. Drawing by students of the Hiroshima normal school, Hiroshima-ken, 1 roll. 6. Compositions by students of the Tokushima-ken normal school, 1 roll. 7. Compositions by students of the Fukuoka normal school, Fukuoka-ken, 1 vol. 8. Drawing by stu-

dents of the Fukuoka normal school, Fukuoka-ken, 1 tablet. 9. Drawing by students of the Fukuoka normal school, Fukuoka-ken, 1 tablet. 10. Drawing by students of the Fukuoka normal school, Fukuoka-ken, 1 tablet. 11. Drawing by students of the Fukuoka normal school, Fukuoka-ken, 1 tablet. 12. Needle-work by students of the sewing department of the Iwate normal school, Iwate-ken, 1 group. 13. Ornamental box by students of the sewing department of the Fukuoka-ken normal school, 4 groups. 14. Needle-work by the same, 1 group.

*Higher female school.*—Specimens of child's cloth by student of the Tokushima-ken female school.

*Professional schools.*—1. Ground plan of the Aichi medical school and the Aichi hospital, 1 roll. 2. Photograph of the same, 1 sheet. 3. Histological specimens, Aichi medical school, 1 case.

*Reference books for schools.*—Japanese and German dictionary, 1 vol.

## FRANCE.

### SECTION I.—EDUCATIONAL SOCIETIES.

*Société des Crèches* (Président, M. Marbeau, 27 Rue de Londres, Paris).—Reduced model of a crèche (one-tenth of its real size). Two plans of crèches. Photograph of the Crèche des Ternes, Paris. Publications relative to crèches by F. Marbeau. Bulletin des Crèches, 1876-1885.

*Société des Écoles Infantines*—Association for the propagation of new methods of teaching in primary and infant schools. Secrétariat, 175 Rue St.-Honoré, Paris.—(1) Plan of a model infant school for 50 children. (2) Plan of a model infant school for 100 children. (3) Model of an infant school. (4) Model of a seat adjustable to the children's size, for kindergarten classes. (5) Specimen of a series of Froebellian games and exercises for maternal schools (kindergärten).

*Société pour l'Instruction Élémentaire*, 14 Rue du Fouarre, Paris.—Synoptic table of the works of the society. Statistical tables. Fifty-seven volumes of the Journal of the society. Work done by students in the normal courses. Specimens of needle-work, etc.

*Society for the Encouragement of Primary Instruction among French Protestants*—Created 1829; the society has founded and maintained 1,300 schools, many of which have been adopted by the municipalities, including normal schools at Courbevoie (Seine) and Boissy-St.-Léger (Seine et Oise). President, M. Charles Robert; office, 4 Rue de l'Oratoire du Louvre, Paris.—(1) Map showing the schools it has created in France. (2) Specimen of work done by students of the normal school at Courbevoie. (3) Specimen of work done by inmates of the Montauban Protestant Orphanage and of the Colonie Pénitentiaire de Ste.-Foy.

*Union Française de la Jeunesse*, 157 Boulevard St.-Germain, Paris.—Album of photographs relative to the teaching of gymnastics in schools. List of free evening classes organized in Paris by this society. Specimens of drawing and other work done by the pupils attending those classes.

*Cercle Parisien de la Ligue Française de l'Enseignement*, 175 Rue St.-Honoré, Paris.—Documents and diagrams. This society, founded in the year 1867, was incorporated in the year 1880. The society distributes books, maps, etc., to various libraries (popular, communal, regimental, school), in France, Algeria, and French colonies, and organizes public lectures illustrated by dissolving views. The total number of adherents to the Ligue de l'Enseignement is 200,000 members, divided among 1,500 branches spread all over France. The secretary of the Ligue is M. Emmanuel Vanchez, 175 Rue St.-Honoré, Paris. The Cercle exhibits, (1) specimens of the sets of books distributed to schools or barracks; (2) specimens of the sets of gymnastic apparatus furnished to many country schools by the society; (3) specimens of the sets of drill-guns (*fusils scolaires*) and carbines furnished to several schools for encouraging the practice of drill and target-shooting in elementary schools; (4) collection of the Bulletin du Cercle Parisien de la Ligue Française de l'Enseignement, 1867-1884.

*Society for Promoting the Professional Education of Women* (Fondation Elisa Lemonnier)—Secretary, Mademoiselle Toussaint, 3 Rue de Douay, Paris. The 4 schools organized in Paris.—Exhibit: pupils' work; written work: bookkeeping, study of modern languages; specimens of china-painting, glass-staining, dressmaking, painting on silk (4 fans), drawing, wood engraving.

*Société Paternelle et Colonie Agricole de Mettray*, near Tours, Indre-et-Loire.—Album of the school, plans, photographs of groups of inmates in the class room, at field-work, in the gymnasium, at drill, etc. (No exhibit of scholars' work—only documents.)

*Société des Fêtes d'Enfants*, 8 Ruelle des Stes.-Marie, Nîmes, Gard.—(1) Statutes of the society. (2) The education of patriotism. (3) Publications by the society, etc. (4) Programmes of Fêtes d'Enfants.

*Société des Musées Cantonaux* (regional museums)—President, Edm. Groult, Lisieux (Calvados).—(1) Six year-books of the society (*Annuaire des Musées Cantonaux*), 1879-1885. (2) Table showing a type catalogue of a regional museum; list of the cantonal and regional museums already existing in France.

## SECTION II.—KINDERGÄRTEN.

## ÉCOLES MATERNELLES.

*Ministry of Public Instruction and Fine Arts, Paris.*—(1) Regulations for the organization of normal courses for the training of governesses in maternal schools. (2) Documents relative to the organization of maternal schools—decree of August 2, 1881, and minute of July 28, 1882. (3) Plans. (4) Statistics showing the number of maternal schools actually existing in France.

*Amiens, maternal schools of the city of* (Somme).—Collective exhibits of children's work.

*Bellier, Mme.*, 16 Rue Cabirol, Bordeaux.—(1) *Le Moniteur du Jeune Âge*, a periodical for kindergartners (numbers for 4 years). (2) Prizes for infants' schools (*bons points du jeune âge*).

*Collin, Mlle. Laure.*—*La Lyre Infantine*, method for teaching vocal music to children of maternal schools.

*Garcel et Nisius*, 76 Rue de Rennes, Paris.—(1) Froebel's counter and other objects for kindergärten. (2) Plan of a village infants' school. (3) Object lessons for infants' schools; a calendar by Inspector-General Cadet, reproduced from the *Dictionnaire de Pédagogie*. (4) Apparatus for hanging maps. (5) Four types of school desks for elementary schools. (6) Simple museum for object lessons for kindergarten pupils.

*Isère, maternal schools of the Department of.*—Collective exhibit of children's work.

*Lidlout, Mme.*, 13 Rue de Poissy, Paris.—(1) Instructive games for children; compendium for maternal schools. (2) Musical diagram, teaching simultaneously reading, writing, and singing. (3) Disk, showing the formation of compound colors. (4) The education of the senses.

*Marne, maternal schools of the Department of the.*—Collective exhibit.

*Monternault, Mme. A.*—French Intuitive Method (Hachette et Cie., Éditeurs). Material for teaching form and color to young children according to the Froebellian method.

*Nord, Département du.*—Specimens of kindergarten work by children of town and country schools. (See also p. 192.)

*Ract et Falquet*, 16 Rue Cassette, Paris.—(1) Map of France for maternal schools, by Mlle. Veyrières. (2) Globe for similar schools. (3) Durand's *Législation des Écoles Maternelles*. (4) *L'École Maternelle*, periodical. (5) Table and bench for infants' schools.

*Seine-Inférieure.*—Maternal schools of the Department of Seine-Inférieure. Collective exhibit of children's work.

## SECTION III.—PRIMARY SCHOOLS.

## PART 1.—ARCHITECTURE, HYGIENE, AND DECORATION.

*Ministry of Public Instruction and Fine Arts.*—Regulations relative to the construction of schools. Various documents bearing on school buildings and school furniture. Collection of documents relating to, (a) hygienic arrangements in schools, (b) medical inspections, (c) physical training of children in and out of school. *Rapport de la Commission d'Hygiène*, 1884. 6 plans prepared by the Comité des Bâtiments Scolaires, showing types of schools recently erected in France with the sanction of the Comité. 2 portfolios containing plans of schools recently built in different parts of France, also plans of class-rooms drawn by pupils. Plans of primary schools in the Departments of Deux-Sèvres, Loir-et-Cher, Lot-et-Garonne, Pas-de-Calais (schools of Marik, Mametz, St. Martin-au-Laert, etc.).

*Fine Arts Section.*—(1) Specimens of casts and prints to form an art museum for elementary schools, prepared according to the regulations of the ministerial commission on school decoration—(a) art museum for boys' schools, (b) for girls' schools. Report of M. P. Mantz, with programme of art museums for primary schools, training colleges, and *lycées*. (2) Types of school prizes (*bons points scolaires*) for elementary schools, sanctioned by the Commission de l'Imagerie Scolaire. Bons points, reward cards, and images, by Ravaisson, Quantin, Hachette, Prunier, Suzanne, Goupil, Lebet, etc. Report by M. Havard, president of the Commission on School Prizes. (3) Collection of casts for teaching drawing in primary training colleges and schools of secondary grade. Programmes of the course of studies. Drawing test in examinations for the higher certificate. Minute of January 23, 1881 (J. Ferry), fixing the programmes of the

teaching of drawing in elementary schools. (4) Examination for the certificate to teach drawing. Two frames showing specimens of time drawings done at the examinations—(a) for the 1st grade, (b) for the higher grade. Two drawings from a relief executed in eight hours; perspective done in the same time. Three drawings from the living model done in eight hours. Drawing of anatomy done without documents.

(1) Law of January 27, 1880, declaring the teaching of gymnastics obligatory in the establishments of public instruction. (2) Specimen of gymnastic apparatus and appliances adopted for training colleges and primary schools by the French Education Department. The appliances are provided by Messrs. Frété and Co., Corderie Centrale, 12 Boulevard Sébastopol, Paris. (3) Photographs of school gymnasia and groups of children learning drill and gymnastics. (4) Handbooks for teaching gymnastics and drill.

*Armengaud, Aîné*, 45 Rue St.-Sébastien, Boulevard Voltaire, Paris.—School decoration—5 panels of pictures for schools, printed on the wall paper system.

*Bordeaux, City of*.—Plans of several elementary schools. Reports on medical inspection in schools.

*Delvaille, Dr. C.*, ancien adjoint au Maire de Bayonne.—Documents on School Hygiene—(1) Règlement et Organisation de la Commission Municipale d'Hygiène et de Statistique de Bayonne. (2) Feuilles Mensuelles Constatant l'État Hygiénique de chaque Classe. (3) Rapport des Travaux de la Commission d'Hygiène pour 1883, par le Dr. Delvaille. (4) L'Inspection Médicale des Écoles, par le Dr. Delvaille.

*Frété et Cie.*, Corderie Centrale, 12 Boulevard Sébastopol, Paris, Fournisseurs du Ministère de l'Instruction Publique.—(1) Specimens of appliances for teaching gymnastics in schools of primary and secondary grades. (2) Games connected with the teaching of gymnastics. (3) Appliances for teaching fencing—masks, gloves, foils, plastrons, etc., as supplied to several national and municipal lycées and collèges.

*Geneste et Herscher*, Engineers, 42 Rue du Chemin-Vert, Paris.—(1) Models and plans. (2) Album of plans and drawings of apparatus and appliances for the warming and ventilating of schools and various public establishments of education. (See also p. 191.)

*Layet, Dr.*, Professeur d'Hygiène à la Faculté de Médecine, 42 Rue du Palais de Justice, Bordeaux.—Report on the medical inspection of communal schools at Bordeaux. Anthropometry in primary schools.

*Narjour, Félix*, Architect, 3 Rue Littré, Paris.—Works on school architecture—(1) Écoles Publiques en France et en Angleterre, 1 vol. 8°. (2) Écoles Publiques en Belgique et en Hollande, 1 vol. 8°. (3) Écoles Publiques en Suisse, 1 vol. 8°. (4) Écoles Normales primaires en Europe, 1 vol. 8°. (5) Écoles Normales et Salles d'Asile, 1 vol. 18°. (6) Construction et Installation des Écoles Primaires, 1 vol. 8°. (7) Règlement pour la Construction et l'ameublement des Maisons d'École, 8°. (8) Écoles Publiques en Europe, 1 vol. 18°. (9) Architecture Scolaire d'Écoles de Hameaux, 1 vol. 4°. (10) Paris, Édifices Consacrés à l'Instruction Publique, 1 vol. fol.

*Perdriel, Charles Le*, 11 Rue Milton, Paris.—Specimen of a school medical chest, containing the drugs and instruments most necessary in case of accidents. Price, 95 francs.

*Ravaisson, F.*, Inspector-General for Higher Education.—Reproductions of master-works of art, for school decoration and school rewards.

*Riber, Émile*, Architect, 54 Rue Vavin, Paris.—Decorative panel—"La Géométrie en Action," gymnastic bars and hoops; also panels showing how school-rooms may be decorated by frescos done by the teacher and pupils.

*Trelat, Émile*, Director of the Special School for Architecture, Boulevard Mont-Parnasse, Paris.—School lighting (*éclairage scolaire*)—two plans, showing how class-rooms ought to be illuminated, heated, ventilated, etc., so as to avoid the injurious effects of direct sunlight and heated air.

## PART 2.—SCHOOL APPLIANCES AND DIDACTIC MATERIAL.

*Ministry of Public Instruction*, Paris.—(1) Samples of the collection of books adopted by the Department for communes for the formation of libraries of general information in the elementary schools. (2) Papers relating to the same. (3) Specimens of school appliances (maps, diagrams, etc.) supplied by the firms of Hachette et Cie., Ch. Delagrave, Gautier, Ikclmer, Bertaux, Lanée, Challamel, Rothschild, Belin, Boyer, Duru, Masson, etc., and furnished gratuitously to the primary schools and training colleges by the Education Department for the teaching of geography and the demonstration of the metrical system, as follows:

(*Hachette et Cie.*, 79 Boulevard Saint-Germain, Paris.)—This firm exhibits the following geographical works—Meissas (A. and G.): A new map of France (78.7 inches by 82.6 inches), giving the watercourses, mountains, administrative divisions, railway lines. Meissas: A new map of Europe (78.7 inches by 82.6 inches), similar in all respects to the above. Meissas: A map of the world (43.3 inches by 67 inches), giving only the principal divisions of the world. Cortambert (E.): A small map of France



(35.4 inches by 47.4 inches). Cortambert (E.): A small map of Europe (same size), both intended for small schools in rural districts. Vivien de Saint-Martin: A terrestrial globe (13 inches in diameter). They also exhibit other globes of various sizes, and the prices vary accordingly. School museum, by Dr. Saffray. School reward cards—(a) botanical, (b) geographical, (c) various trades. Level's Compendium Métrique. Material for infant schools.

(Ch. Delagrave, Rue Soufflot, Paris.)—Maps, drawn by Prof. Levasseur: (1) France Scolaire (scale 1:100,000), (2) Europe (scale 1:200,000), (3) the World (scale 1:1,000,000). All these represent the principal physical features, agricultural products, coal mines, metallurgical centers, chief railways, telegraphic and submarine cables, lines of navigation, and leading political and economical facts. A map of Europe (scale 1:200,000) by Larochette, in chromo-lithography (91 inches by 49.2 inches), remarkable for its clearness of details. A terrestrial globe by the same (1.20 meters, or about 48 inches in circumference), showing at a glance the seas and rivers and mountains, as well as the lines of navigation and telegraphic and submarine cables.

(Maison J. Gautier, 55 Quai des Grands Augustins, Paris.)—Wall maps: map of France, map of Europe, and map of the world, drawn by A. Vuillemin. These maps, while containing all indispensable details, are remarkable for their clearness. The scale which has been adopted has made it possible to give greater importance to the representation of the mountains. A table of weights and measures, by Henry des Vosges, sums in a convenient form the advantages of the metrical system.

(Ikclmer, 47 Rue des Francs Bourgeois, Paris.)—A map of the world in hemispheres, measuring 1.85 meter by 95 centimeters (6.06 feet by 3.11 feet), and giving the results of the most recent discoveries, the great lines of navigation, the chief railways, the submarine cables, the telegraphic lines on land in Asia and Australia, the sea currents, and showing the political divisions and the colonial possessions of the various states. A terrestrial globe, 1 meter (39.37 inches) in circumference, prepared by R. Barbot, giving the results of the recent discoveries of Livingstone, Stanley, Cameron, Dr. Nordenskjoeld, the telegraphic lines and cables, the great lines of navigation, the mountain systems, the sea currents, and showing the French colonial possessions.

(E. Bertaux, 25 Rue Serpente, Paris.)—A terrestrial globe, by E. Dubail. This globe is 14.96 inches in diameter. The author, late professor of geography at the Military College of St. Cyr, has, by a judicious use of various tints, rendered perceptible the difference in level of valleys and table-lands. The globe represents also the sea currents and the great lines of navigation and of communication by land. The details concerning political geography have been reduced to what is strictly necessary, and in no way interfere with a proper understanding of the physical geography.

(Lanée, 8 Rue de la Paix, Paris.)—Three wall-maps (France, Europe, the World), on which all important details are made conspicuous by a judicious use of a few tints; also a table giving the weights and measures of the French metrical system.

(Challamel aîné, Paris.)—(1) A map of the colony of Senegal, or of the French possessions on the West Coast of Africa. This map, drawn by C. Mathien, includes all the country situated between Lake Taouahie and Sierra Leone. It shows the various independent and protected states, the position of French, English, and Portuguese forts, and all administrative divisions. (2) A map of the Province of Oran, by Ad. Langlois (scale 1:100,000), gives all the places, rivers and thalwegs, altitudes, administrative divisions, roads, railways, telegraphic lines, steamboat lines, light-houses, cultivated portions, forests, mines, quarries, mineral springs, a plan of the city of Oran, a small map of the neighborhood of Oran, and is accompanied by interesting statistics.

(1) Synoptic table showing the detailed organization of primary studies, their objects, methods, and programmes. (2) Note pour servir à l'étude des programmes; extracts from the *Instructions et directions pédagogiques*; par M. Gréard, vice-rector of the Académie de Paris. (3) Specimen of diplomas (certificate of primary studies, &c.), and of merit awards and medals granted to teachers. (4) Collection of text books used in the primary schools of the department of the Seine.

Bisson, Vandœuvre, Seine-Inférieure.—School museum—several cards showing a collection of samples of raw materials associated with their products.

Bonnard, P., 49 Rue de Grenoble, Paris.—New system of writing music; (1) the "Last Musical Thought of Weber," written according to this new method; (2) tonality of instruments compared, etc.

Bouuo, l'Abbé, Etrépilly, Seine-et-Marne.—Large relief map of the department of Seine-et-Marne.

Bouthiaux, Sombacour, Doubs.—Museum for a village school—numerous specimens of coins of France and other countries.

Bridoux, Gaillefontaine, Seine-Inférieure.—Geographical maps made by boys of 13 to 15 years of age.

Cocheris, Mme. Pauline, Boulevard St.-Marcel, Paris.—(1) *Pédagogie des Travaux à l'Aiguille* (On Teaching of Sewing), 1 vol. in 12mo. This work is intended for teachers and pupils, and gives demonstrations of all kinds of needle-work, accompanied by

diagrams, which render the explanations more easily understood. Hygienic advice holds an important place in this book.<sup>6</sup> A portion of the work contains a review of the present teaching of sewing, cutting, and seaming, in the various parts of Europe, and especially in England. (2) *Tableau Synoptique des Travaux à l'Aiguille*. This table, intended to be hung up in schools, is the indispensable companion of the above work. It gives all instruments used in sewing, etc., and explains the formation of all kinds of stitches.

*Caille*, Sotteville-les-Bains, Seine-Inférieure.—Material for teaching the elements of natural philosophy and chemistry in elementary schools (160 instruments or objects, allowing of upwards of 400 experiments).

*Cochet*, Ugruy-le-Gay, Seine-Inférieure.—Arboricultural charts. Local flora (colored by hand).

*Coudray*, Courville, Eure-et-Loir.—(1) Relief map of the commune of Courville; (2) relief map, canton of Courville; (3) relief map of the department of Eure-et-Loir.

*Couvey*, I., Condé-sur-Risle, Eure.—Herbarium—5 portfolios in 1 case; special arrangements for protecting the plants from insects.

*David*, M., Grosrouvre par Novant, Meurthe-et-Moselle.—Methods of teaching reading, writing, and especially geography.

*Deyrolle*, *Emile*.—Musée scolaire, for elementary schools—a series of wall pictures for teaching natural science. This series is divided into three parts. The first illustrates the elements of natural science, and is intended for small schools. The second part illustrates metallurgical processes, coal-mining, glass-making, animals useful and injurious to agriculture, mushrooms and fungi, and the most common poisonous plants. The third part, intended for girls' schools, illustrates the history of textile plants, such as flax, hemp, and cotton; the ceramic processes, faience or earthenware, porcelain or china, stoneware, pottery; the cereals, and the oleaginous and aromatic plants; the structure of a hen and changes of an egg during the process of incubation.

*Doqueux*, Maromme, Seine-Inférieure.—(1) Relief map of the canton of Maromme. (2) Album of geometrical drawings.

*Dorangeon*.—Scholastic Museum (Ch. Delagrave, publisher); this is an interesting collection illustrating the processes of 75 trades, and containing more than 1,200 samples and specimens. Movable spheres for the study of cosmography, by A. Letellier; this apparatus, highly recommended by the eminent scientist Abbé F. Moigno, represents the real movement of the earth and of Jupiter around the sun, or else the apparent movement of the sun on the ecliptic and the real movement of the earth around the sun at the same time. (See Delagrave's special exhibit, p. 201.)

*Gaudu*, Goderville, Seine-Inférieure.—Charts of arboriculture for elementary schools. *Gautier*, Rouen, Seine-Inférieure.—(1) Charts for the teaching of the elements of agriculture in primary schools. (2) Charts for the teaching of the elements of horticulture. (3) Tables showing the organization of a school canteen (supply of warm food to children who cannot go home for their lunch). (4) Documents on the relations between the teacher and the children's parents.

*Hément*, *Félix*, Inspector-General of Public Instruction, Nanterre.—(1) A collection of 12 drawings by Cicéri (23.6 inches by 15.7 inches), in chromo-lithography, and illustrating the following geographical terms: archipelago, canal, sluice or lock; cape, cliff, railway, viaduct, tunnel, roads, streams, and rivers; confluence, hills, streams and rivers, glaciers, strait, gulf, volcano; isthmus; lake, glaciers; harbor; valley, torrent. Delagrave edition. (2) Cosmographic diagrams designed by Fouché. (3) Elementary works on the natural and mathematical sciences.

*Jeannot*, *Emile*, Belleherbe, Doubs.—School agricultural museum—10 charts of object lessons, showing the fabrications of cheese, oil, cider, honey, etc.

*Lavallée*, Tourny, Eure.—School museum containing 35 object lessons.

*Leroy*, Cantelen, Seine-Inférieure.—(1) Scholars' work; (2) manual work; (3) school museum.

*Lerasseux*, *E.*, Membre de l'Institut (Ch. Delagrave, éditeur).—Physical maps of France, Europe, French Colonies, etc.

*Meneglier*, *M.*, Navenne, Haute-Saône.—Specimen of herbarium for schools.

*Mouchel*, Criquetot, Seine-Inférieure.—Relief map of the department of Seine-Inférieure.

*Muneret*, Cusance, Doubs.—6 cases containing insects; 1 herbarium; 4 pedagogical works.

*Olivier*, *M.*, Bretteville-sur-Laize, Calvados.—School museum. Scholars' work (manual).

*Petit*, *Pierre*, Photographer, Place Cadet, Paris.—Translucid window blinds for schools; photographic reproductions of masterpieces of art on linen, new process. Photographs of school buildings, class rooms, and pupils' groups.

*Pourchot*, Mandeure, Doubs.—2 very large and complete herbariums.

*Prévost Orphanage*, Cempuis, Oise (Director, M. Robin).—Work by scholars. This orphanage, originally founded in Paris during the war of 1870-'71 by M. F. Buisson, was adopted a short time afterwards by a generous philanthropist, M. J. G. Prévost,

who transferred it to Cempuis, and bequeathed his fortune to the departmental authorities of the Seine for the maintenance of it. Specimens of pupils' work: (1) copy-books; (2) specimens of printing by boys; the Orphanage issues a monthly journal, written and printed by the pupils; (3) specimens of other manual work in wood, iron, modeling, carving; (4) needle-work by the girls.

*Ragemont*, Berchères-sur-Vergris, Eure-et-Loir.—Large map of the arrondissement of Dreux.

*Rainsart*, École Bachelet, Rouen, Seine-Inférieure.—(1) School museum, showing the local industries—cotton manufacture, wool manufacture, and calico printing, 300 bottles; (2) pedagogical works; (3) written and manual work by pupils.

*Regrain*, A., Chamblet, near Montluçon, Allier.—Scholastic museum made by the pupils and master.

*Rousseau* (Ancienne Maison, now termed Société Anonyme), 44 Rue des Écoles, Paris.—Materials for instruction in physics and chemistry (finishing course) in primary, secondary, and training schools.

*Salain*, M., Teacher, Elbeuf, Seine-Inférieure.—(1) School museum. (2) Apparatus for teaching drawing. (3) Manual work by pupils. (4) Written work by pupils.

*Serrurier*, Hâvre, Seine-Inférieure.—Pupils' work, 10 vols. Pedagogical works. Magic lantern constructed with a view to economy for school use; can be used either with blowpipe or with kerosene. Price not over \$20.

*Tremeschini*, Paris.—Globe showing the movements of the earth and moon around the sun. Book with explanations.

*Vast*, H., Professor, 9 Rue de Greffuhle, Paris.—Blank maps on slated cloth: France, Europe, Central Europe.

### PART 3.—SCHOLARS' WORK.

*Algeria, schools of*.—Specimens of children's work, Arab schools of Boufarik; Arab schools of St. Eugène; Arab and French school of M. Delord. École de la Rue du Divan (girls), Algeria; Orphanage at Thaddest-on-Fellah, district of Mustapha; Ecoles indigènes (*Kabyles*) de Tamazert et de Lagouhat.

*Amiens, city of*.—Primary schools—written work, drawings, and maps; 10 large vols. Documents on the school savings banks, and the school system generally. Maps by the students of the normal school.

*Baume-les-Dames, primary schools of*, Doubs.—School work by pupils.

*Bayvel*, Mlle. (private institution), Rouen, Seine-Inférieure.—Maps drawn by the pupils; specimens of writing.

*Berthoz*, Audincourt, Doubs.—Manual work (wood carving on stone and wood).

*Bezançon, primary schools of*, Doubs.—Pupils' work, collective exhibit.

*Buquet*, Oissel, Seine-Inférieure.—Specimens of needle-work by pupils.

*Châlons-sur-Marne, primary school of*, Marne.—Written work by pupils.

*Caulle*, Rouen, Seine-Inférieure.—Original sketches and compositions by a pupil; 7 pedagogical memoirs.

*Clerc*, Pontarlier, Doubs.—4 panels of manual work—wood, stone, net, string, clay work, etc., by pupils.

*Coulet*, T., Villers la Montagne, Meurthe-et-Moselle.—Carnet de Correspondance between schools and families, school drawings, exercises, etc., 1883. School work, drawing.

*Creuse, elementary primary schools of the department of*.—Specimens of work done by pupils. Preliminary training in manual work (toys made by children under 10 years of age).

*Delaruelle*, Elbeuf, Seine-Inférieure.—Manual wood work done by the pupils.

*Delaruelle*, Rouen, Seine-Inférieure.—Manual work done by pupils. Moral and civic tuition.

*Dijon (Côte-d'Or), collective exhibit of primary schools of the city of* (Inspector, M. Deschamps, Dijon).—Collective display of school work, showing the work of children during one month and one year. (1) Work done in a school with a single class-room (École de Bringes). (2) Work done in boys' and girls' schools containing several class-rooms. Manual work (clay modeling) by the boys of the elementary school of Dijon.

*Doubs, collective exhibit of the elementary schools of the department of*.—Maternal schools, elementary primary, and higher primary schools.

*Dupont*, Mme., Maromme, Seine-Inférieure.—Specimens of needle-work by pupils.

*Emonot*, Mme., Nautantcourt, Doubs.—1 doll dressed by pupils.

*Faitre*, Hérimoncourt, Doubs.—Manual work (iron, wood).

*Gautier*, Rouen, Seine-Inférieure.—(1) Album of geographical maps, by pupils. (2) Album of drawings. (3) Manual work by children of the different classes. (4) Plans of the class-room, by pupils.

*Gibert*, Grande Rue Fontainebleau.—Results of a two years' course of drawing on the Cassagne method. Elementary modeling.

*Hanniet*, Neuilly-en-Thelle, Oise.—Drawings by pupils. Written descriptions of prints collected by pupils (chiefly on French history).

*Havre*, elementary schools of the city of, Seine-Inférieure.—Collective exhibit of pupils' work.

*Huad*, Mme., Rouen, Seine-Inférieure.—Needle-work, herbarium, and bookkeeping, by pupils.

*Laloupe*, higher primary school of, Eure-et-Loir.—Written work by pupils, drawings, etc.

*Lamele*, Mme., Barentin, Seine-Inférieure.—Specimens of needle-work by pupils.

*Leclerc*, Esteville, Seine-Inférieure.—Manual work, cider press.

*Lefranc*, Mme., Sœur, Aumale, Seine-Inférieure.—Specimens of needle-work by pupils.

*Lemort*, St. Martin de Boscherville, Seine-Inférieure.—Written work by pupils.

*Lille*, city of.—Collective exhibit of public primary and higher primary schools for boys and girls.

*Loty*, Paul, Dasle (pupil of the primary school of Dasle).—A case containing insects collected and arranged by himself.

*Marans*, school of, Charente-Inférieure.—Fifteen copy-books.

*Mignot*, Mlle, Pontarlier, Doubs.—Needle-work by pupils.

*Miserey*, school of, Doubs.—One album containing very good needle-work by scholars.

*Montbéliard*, primary schools of, Doubs.—Collective exhibit of scholars' work.

*Nord*, Département du, M. Brunel, Inspecteur, Directeur de l'Instruction Primaire du Nord.—(1) Plans of schools. (2) Copy-books (primary schools). (3) Manual work executed in schools: (A) Boys—Ironwork, woodwork, modeling, bookbinding; (B) Girls—Needle-work and embroidery. (4) Similar work from schools of a little higher grade.

Remarks on the exhibit of primary education in the Département du Nord.—The Département du Nord (area, 2,195 square miles; population, 1,603,259 inhabitants) contains 2,185 public or private elementary schools (*écoles primaires*), with a staff of 5,475 masters and mistresses. The public elementary schools number 1,670, and their staff consists of 3,697 masters and mistresses. The objects which are exhibited are classified into 4 groups: (1) Intellectual and manual work of the higher primary schools (boys and girls); (2) intellectual and manual work of the elementary primary schools (boys and girls); (3) plans of schools; (4) detailed syllabi of the subjects taught in the primary schools of the Département du Nord; Bulletin Administratif (a periodical issued by the departmental administration), and Bulletin Pédagogique (a special review for primary schoolmasters).

I. Higher primary schools (boys).—There are 16 schools of this description in the said department. All receive boarders and day scholars. To all of them are attached a number of entrance exhibitions. The syllabus includes, as a rule, the following subjects: ethics, the French language, penmanship, history, geography, modern languages, mathematics, bookkeeping, experimental physics, chemistry, natural history, drawing, singing, gymnastics, and workshop instruction. Each school has its own syllabus, modified so as to meet the local requirements. The pupils receive instruction in adjusting pieces of apparatus in carpentry, in turnery, in modeling, in sculpture, and are taught to work in iron, wood, stone, marble, and plastic materials. The advantage is twofold: the pupils learn the use of tools, and discover their natural bent.

Objects exhibited by 3 of these schools: copy-books containing pupils' exercises, drawings (geometrical and free-hand), and specimens of work done in the workshops; syllabus of subjects taught in each school.

II. Higher primary schools (girls).—Written work and specimens of needle-work.

III. Elementary primary schools (boys and girls).—Written work and manual work.

IV. Plans of schools and documents.—Pedagogical Bulletin, etc.

*Ornans*, primary schools of, Doubs.—Collective exhibit of school work.

*Pardonnnet*, Mlle., Colombier-Fontaine, Doubs.—Needle-work by pupils. Doll dressed in 18 hours by a child of 10 years.

*Pas-de-Calais*, Département du.—(1) Collective exhibit of scholars' work from the primary schools of Contes, Boulogne-sur-Mer, Étaples, Saulty, Anchy-lès-Haudin, Duzi-le-Château, Billy-Berleau, Croisilles, Hermies, Buire-le-Sec, Licques, Samer, Lumbres, Campagne-lès-Hesdin, Montreuil, St.-Pierre-lès-Calais. (2) Plans of the schools of Marck, Mametz, and Martin-au-Lacy.

*Pauthier*, Mme., Ecole de Granvelle, Besançon, Doubs.—Needle-work by pupils.

*Péchin*, Mme., Audincourt, Doubs.—Needle-work by scholars.

*Planty & Girardot*, Doubs.—Specimens of stone carving and clay modeling by pupils of elementary schools.

*Pollet*, Presles-et-Thierry, Aisne.—Maps drawn by the pupils of an elementary school; also written work.

*Pontarlier*, primary schools of, Doubs.—Collective exhibit of school work.

*Rouen*, elementary schools of the city of.—Collective exhibit of pupils' work.

*Roy*, Glamordans, Doubs.—Manual work illustrating the principles of architecture.

*Russey, primary schools of, Doubs.*—Pupils' work, collective exhibit.

*Seine-Inférieure, collective exhibit of the Department of.*—Plans of schools, specimens of manual and written work by pupils of primary, higher primary, and maternal schools, of the cities of Havre, Rouen, Elbeuf, &c., Boscherville, and several rural schools; also school museums and memoirs on pedagogy, by teachers.

*Thierry, Mme., Montbéliard, Doubs.*—Model school attached to the normal school of Montbéliard (Ecole Annexe de l'École Normale); needle-work by scholars.

*Tunis, schools of* (Regency of Tunis schools inspectorate, M. Machuel, inspector).—Work of scholars in the French and Arab schools at Tunis: Christian Brothers' (boys); College St. Charles (boys); College Sadiki (boys); Alliance Israélite (boys); École Centrale de Tunis (girls); Sœurs de St. Joseph de l'Annonciation (girls); École de Bab Carthagène (girls); École de la Goulette (girls).

#### SECTION IV.—HIGHER PRIMARY AND PROFESSIONAL SCHOOLS.

*Bischoffsheim Foundation* (Working school for young Jewesses), 13 Boulevard Bourdon, Paris (M. Maurice Block, director).—Work by the scholars—(1) Work done in the school and workshops attached to it: 1 basket of flowers; 1 baby's gown; 1 chemise; 1 shirt (reduced model); 4 exercise books (bookkeeping); 2 exercise books (music); 3 geographical maps; 1 ditto (larger size); 5 exercise books (English edition); 10 school exercise books (first division); 6 ditto (second division); 6 ditto (third division). (2) Plan of the school. Documents on the school.

*Bordeaux, boys' higher primary school of* (École primaire supérieure de garçons; M. Larjeteau, directeur).—Specimens of work done by pupils.

*Bordeaux, girls' higher primary school of* (École primaire supérieure de filles à Bordeaux).—Specimens of work done by pupils: needle-work; artificial flowers; timetable; written work.

*Boulogne-sur-Mer* (Pas-de-Calais), *boys' higher primary school of.*—Specimens of written work and manual work in wood and iron by pupils.

*Bouvard, J., architect of the city of Paris, 55 Rue de Verneuil, Paris.*—Plans of the national higher primary school of Voiron (Isère): (1) General plan—ground floor—first floor, front; (2) ground floor of the primary and infant schools; (3) first floor of the same; (4) higher primary school, elevations, plan of ground floor; (5) first floor of the same school; (6) outside buildings, kitchens, refectories.

*Cernisson, Léopold Camille, architect, late president of the municipal council of Paris, 23 Rue Michel-Ange, Paris.*—Plan of the higher primary school of Montbard.

*Christoffe, Paris.*—Specimens of drawing by apprentices of the school of M. Christoffe (gold- and silver-smith workshop).

*Deyrolle, Émile.*—School museum for higher primary schools. This collection has been prepared in order to meet the requirements of the higher primary schools. It consists of a wall picture (75 inches by 35 inches), representing the human skeleton; of another picture representing the skeleton of a bat; a collection of 100 useful and noxious insects, all indigenous to France; representatives of the myriapoda, arachnida, crustacea, annelida, vermes (amongst which there is to be found the trichina), mollusca, echinodermata, polyps, and sponges. Geology is illustrated by a collection of rocks, one of fossils, and one of minerals. Botany is illustrated by two herbaria, one of 100 plants, the other of 50 cereals. There are also instruments for collecting and preserving specimens, and a guide-book for carrying on these operations.

*Dijon, city of* (Côte d'Or).—Higher primary school for boys, specimens of written work, drawing, &c., by pupils. Higher primary school for girls, specimens of written work, drawing, &c., by pupils.

*Evreux, technical school of.*—Work of the scholars—(1) Album of graphic work (descriptive geometry and mechanics); (2) mechanical models executed by the pupils in the school workshops: (a) apparatus to show effects of eccentrics, &c.; (b) modèle de petit tour; (c) Oldham joint; (d) model of crane; (e) modèle d'assemblage.

*Hâvre, apprentice school of* (Lefebvre, director).—Pupils' work in wood and iron, drawings, class-work, &c.

*Havre, higher primary school of* (Perier, director).—(1) Pedagogical work by M. Perier; (2) written work by pupils; (3) iron work by pupils; (4) wood work by pupils; (5) albums of drawings; (6) programmes and documents.

*Livet Institute* (M. Livet, director), Nantes.—(1) Plan of the institution; (2) documents relating to the school, its progress, and methods of teaching; (3) work by the pupils, watchmaking. This institution has more than 400 pupils (boarders and day scholars), and occupies at total area of 1½ acres. In the principal building are the dormitories, dining halls, infirmary, &c.; opposite to this is the portion containing the class rooms. These buildings are connected on one side with the workshops, and on the other with the various offices of the administration. The institution, which receives pupils from six years of age, aims at preparing young people for industry, trade, the navy, and various public administrations. There are five workshops: (1) mechanics; (2) joinery and models; (3) laboratory of chemistry; (4) foundry; (5)

clock and watch making and mechanical work of precision. The machinery is set in motion by a steam engine (6-horse). The pupils make their own tools, as well as the school furniture and models for industrial drawing. Chemical analyses are undertaken in the laboratory for private persons and the trade. The state and some of the councils general maintain a number of exhibitors at the institution. By a decision of the President of the Republic, May 16, 1874, the pupils of the institution are admissible to the rank of mechanical engineering students of the navy.

*Melun, girls' professional school of* (Mme. Valet, head mistress), Seine-et-Marne.—(1) linen; (2) robes; (3) hats; (4) artificial flowers; (5) photographs.

*Patronage des Enfants de l'Ébénisterie* (apprentices' school, founded in 1866 by H. Lemoine), Paris.—A carved frame in beech, done by the pupils of the Patronage.

*Poulain, M., École primaire supérieure*, Illiers, Eure-et-Loir.—Diagram of specimens of manual work. Course of design. L'Éducation Physique à l'École Primaire.

*Rouen, city of* (Seine-Inférieure), *École Professionnelle et Ménagère* (Mme. Lassire, head mistress).—Specimens of needle-work and other work by the pupils—cutting out, costumes from historical prints; specimens of bookkeeping and general school work, maps, &c.

*Rouen* (Seine-Inférieure) *Apprentices' school* (Lecaudé, director), 53 Rue du Pré.—This institution is a municipal school for the training of apprentices for the trades of blacksmith, turner in metals, locksmith, fitting engineer, joiner, engine driver, wood turner, &c. The apprentices have the opportunity of completing a general course of studies whilst being trained in manual work. The pupils attend the class work four hours a day and the workshop six hours. They remain in the school precincts from 7 a. m. to 7 p. m., and have to bring their dinner. The tuition is free, but the pupils must be fully twelve years old to be admitted, and show that they have received the elementary primary instruction.

(1) Album containing ornamental and industrial drawings by pupils; (2) albums containing free-hand drawings; (3) forged iron work by pupils; (4) locks made by pupils; (5) wood joining by pupils.

*Rouen, higher primary and professional school of* (M. T. Delarue, director).—Collection of work by pupils of the third, second, and first classes.

Specimens of drawing, class work, notes and sketches of machinery, graduated series of iron and wood work, by the pupils.

*St.-Pierre-dès-Calais* (Pas-de-Calais), *higher primary school for boys*.—Specimens of written and manual work by pupils.

*Vierzon, primary schools of*.—Work of the scholars (art teacher, M. Célerier, sculptor). The entire range of instruction in this school is intended to be introductory to special apprentice schools like the École des Arts et Métiers. Work exhibited: 4 Barbotine frames, 5 plates decorated drawing, &c. Several of these are exhibited by permission of the owners.

*Voiron* (Isère), *higher primary school of* (M. Berthuin, director).—Work from the school workshops: 1 crane, 1 galvanometer, 1 catch, 1 electric bell.

This school was founded in October, 1882, in order to make preparation for the creation of the national school of higher primary education preparatory to apprenticeship, which the town will soon possess. The school, meanwhile, aims at providing the industries and trades of the district with young men possessing the necessary theoretical knowledge, as well as valuable practical knowledge. The course of studies consists of lectures on ethics, reading, penmanship, grammar, composition, literature, history, geography, modern languages, arithmetic, geometry, algebra, trigonometry, descriptive geometry, mechanics, physics, chemistry, natural history, geometrical drawing applied to the industries, artistic drawing, bookkeeping, music, and gymnastics. The workshop instruction includes modeling and moulding (clay, plaster, and cement), stone-cutting, joinery, carpentry, turnery (wood and metal), and blacksmiths' work. It is proposed to introduce weaving as a subject for workshop instruction. Special classes are conducted for candidates preparing for the training colleges of primary instruction, the Écoles des Arts et Métiers, and the veterinary colleges, as well as for those who wish to enter the administration of public ways, such as the post-office and telegraph departments.

## SECTION V.—NORMAL SCHOOLS.

*Ministry of Public Instruction and the Fine Arts*.—(1) Catalogue and specimens of objects relating to scientific instruction furnished to normal schools, as supplied by the following firms: Rousseau (ancienne maison), Trամонд, Deyrolle (musée for higher primary schools and natural history diagrams for normal schools), Auzoux Vve. (clastic anatomy), Lemercier Vve., Lütz (optical instruments for training colleges), and Daguerre. (2) Collection of artificial fruits for instruction in pomology in training colleges, supplied by M. Courtois, 12 Rue Mouton-Duvernet, Paris. (3) Apparatus for instruction by means of luminous projections in normal and second-grade schools. Projection examples drawn by M. Amand Durand, 69 Rue du Cardinal Lemoine. (4) Shed

for meteorological instruments, as supplied to all normal schools by the Education Department, through the Bureau Central Météorologique, 60 Rue de Grenelle, Paris (director, M. Mascart), for the teaching of meteorology in normal schools.

*Normal Schools.*—Collective exhibit of students' work, as follows:

1. Higher normal school for the training of professors of normal schools, newly organized at St. Cloud, M. Taconlet, director.—Plans of the school and geometrical drawings by the students, with a paper on the school by M. Taconlet.

2. Drawings, maps, herbaria, meteorological observations, specimens of manual and written work, by the students of the normal schools of Alençon, Angers, Auteuil (near Paris), Besançon, Blois, Bourges, Caen, Chartres, Chalons-sur-Marne, Limoges, Le Mans, La Grande Sauve (near Bordeaux), Melon, Montbéliard, Nice, Orleans, Rouen, Versailles.

3. Specimens of manual work done by the students of the École Normale Supérieure de Travail Manuel, formerly 10 Rue Thuillier, Paris. This school, organized under the direction of M. de Salicis, was intended to train ordinary schoolmasters in the principles of manual work, so far as it was to be taught in primary schools. The exhibit contains specimens of wood and iron work, turning, fitting, wood carving, stone carving, clay modeling, bookbinding, photography, &c.

N. B.—Lately this school has been transferred to St. Cloud, where it is a part of the higher normal school for the training of professors of normal schools, above mentioned.

*Alvergnot Frères, Paris.*—Instruments for teaching natural philosophy (acoustics, hydrostatics, electricity, &c.), in normal schools.

*Auzoux, Mme. Veuve, & Montaudon* (nephew and successor of Dr. Auzoux), 56 Rue de Vaugirard, Paris.—Dr. Auzoux's *Clastic Anatomy*—collection of anatomical models composed of solid pieces which can be easily adjusted or separated, and removed piece by piece as in actual dissection. (Clastic, from *κλάω*, *I break off*.) Since 1842 till his death (1880) Dr. Auzoux had been steadily working at this collection, which actually contains no less than 150 models of human or comparative anatomy and of botany. These delicate and minutely accurate scientific specimens are fabricated in the village of St. Aubin d'Escroville (Eure). Specimens exhibited: (1) Clastic Man, incomplete, 3 ft. 10 in., for colleges and middle-class public schools. (2) Egg of Hen, 148 times the size of ordinary egg (size of *Epyornis* egg—Is. Geoffroy Saint-Hilaire), on which, by means of four different sections, the structure of birds' eggs can be studied, and the formation of the germ followed to its complete development. This colossal model enables the metamorphoses of the vitellus and vitelline vesicle and the formation of the allantois to be traced. It not only simplifies the study of the embryology of birds, but also facilitates that of mammals. (3) Heart of adult, divided in halves, showing the disposition of the cavities, the muscular fibers, vessels, nerves, valves, and orifices of the vessels. (4) Eye, complete, very large. On this new model are seen, as in the preceding, not only the muscles, vessels, nerves, membranes, vitreous humor, crystalline lens, &c. (each part removable), but also the different microscopic layers of the retina, choroid, and iris, described by modern anatomists. (5) Ear (temporal 2 ft. long), new model, showing the internal, external, and central parts in their minutest details, the enlargement of the auditory nerves, &c. This model reproduces the recent studies of Corti, Rosenthal, Lewenberg, and Reissner, and shows the action of the ossicles, the necessity of the fenestra ovalis, the fenestra rotunda, the membranous canals, the endolymph and perilymph, the double wall of the cochlea, the infundibulum, and the action of the air inclosed in the central ear, thus representing the wonderful mechanism of hearing in a manner that can be understood by all. (6) Larynx, showing the cartilages, muscles, vessels, nerves, tracheal artery, and divisions of the bronchiæ to their minutest ramifications. (7) Foot of Horse with the pastern, showing the hoof, podophyllous tissues, plantar pad, vessels, nerves, &c., all of which parts can be detached separately; the hoof is divided as by Bracy-Clark, and the Charlier shoe is placed on it. (8) Stock (*Cherianthus cheiri*)—stalk, leaves, and flowers at different degrees of development; complete flower and ripe fruit, showing the two valves (siliques), dehiscence commencing: (a) flower only; (b) pod. (9) Grain of Wheat (*Triticum aestivum*, L.), 30 times the diameter, with its envelopes, embryonic layer, farinaceous mass, the embryo and its dependencies, which can be detached and replaced by an embryo in course of development by germination, and on which is seen all that constitutes the plantlet. (10) Spikelet of Wheat (*Triticum aestivum*), very large, showing, 1st, the glumes; 2d, the glumelles; 3d, the ovary and the two styles with their stigmas; 4th, the stamens; 5th, the nectarial glands, before and after fecundation, from the researches of Prof. Bidard. (11) Cherry, ripe, showing the different layers of the pericarp, the ovule and its envelopes. (12) Wood, piece of dicotyledonous woody stem (*Quercus communis*), three years old, greatly enlarged, upon which is shown the central pith, spiral vessels or tracheæ, medullary sheath, medullary rays, composition of woody layers, the annular vessels—rayed and dotted, lacunæ, the duramen and sap wood, cambium separating the woody layer from the cortex; on this last, the

leaflets being separate, can be seen the epidermis, the suberose and herbaceous layers, the laticiferous vessels, and the fibers of the liber.

These specimens are supplied to normal schools by the French Education Department.

*Courtois*, Paris.—Collection of artificial fruits for the teaching of pomology in normal schools.

*Deyrolle, Émile*, 23 Rue de la Monnaie, Paris.—(1) Natural history diagrams. (2) Typical collections of vertebrate and invertebrate animals, with appliances used for teaching natural history in normal schools.

*Lemerrier, Mme. Veuve*, 7 Rue Vavin, Paris.—Illustrations of structural anatomy, by the late Dr. F. G. Lemerrier. Models for normal school collections.

(The numbers are those of the Lemerrier catalogue.) (1) Structural anatomy of Man, by the late Dr. F. G. Lemerrier, who was long assistant of Dr. Anzoux; (2) stomach expanded, 2 parts; (3) structure of the stomach; (4) gastric peptic gland; (5) the same, withered; (6) a cystose gland; (7) gastric mucous gland; (8) glands of Brunner; (9) structure of the small intestines; (10) glands of Lieberkühn; (11) villus of the small intestines; (17) anatomical model—*l'Écorché de Howdon*; (19) maxilla, with its support; (20) big molar tooth; (22) typical foot of the horse; (24) a bean; (25) a germ; (26) a small nut; (27) two grains of pollen.

*Lütz*, optical instrument maker, 82 Boulevard St.-Germain, Paris.—(1) Collection of optical instruments in use in the training colleges. (2) Lamps and lanterns for dissolving views; appliances specially adapted for primary schools.

*MM. Nicolas et Marcotte*, architects, Caen.—Plans of the training college for male teachers (École Normale d'Instituteurs) of Caen (Calvados).

Paris, model school for girls annexed to the Paris Female Normal School.—9 books of children's work; quarterly examination papers; one book of maps from memory.

*Teachers' Institutes*.—A collective exhibit of pedagogical memoirs and didactic works by schoolmasters, including essays on pedagogical questions by M. Serrurier, of Havre, and local monographs on all the villages and hamlets of the arrondissement of St. Omer (Pas-de-Calais) by public school teachers.

*Tramond, M.*, 9 Rue de l'École de Médecine, Paris.—Objects for teaching natural history in normal schools, as supplied to the French Education Department.

## SECTION VI.—SPECIAL EXHIBIT OF THE CITY OF PARIS.

I. SCHOOL ARCHITECTURE.—Plans of schools: (1) Training college for teachers at Auteuil, near Paris; architect, M. Salleron; finished in 1882; outlay, 2,025,000 francs, including the cost of the school furniture, which amounted to 175,000 francs. (2) Higher primary school, Arago, Place de la Nation, Paris; cost, 980,000 francs. This building contains 12 class-rooms, 2 large amphitheatres, 1 examination hall, a library, 3 drawing class-rooms, 1 modeling-room, &c.; architect, M. Deconchy. (3) Boys' primary school, Avenue Duquesne, Paris; M. Leroux, architect. (4) Infant school (*asile*) for 220 children, Rue Jourdain, Paris; architect, M. Salleron. (5) Elementary school for boys and girls, Rue Blanche; architect, M. Salleron. (6) Specimen of temporary schools; architect, M. J. A. Bouvard. In order to insure the immediate execution in the metropolis of the law of March 28, 1882, making attendance at school compulsory, the town of Paris was obliged to construct in great haste several temporary buildings designed to receive the children for whom there was no accommodation in the schools. A system of light construction in wood, with double-existing partitions, was adopted, and enabled the municipality to open, within five months after the promulgation of the new act, 58 new schools, accommodating 15,000 children. (7) School group (containing a school for boys, a school for girls, and an infant school), Rue Ondinot, Paris; architect, M. Deconchy.

(For fuller details, see the Special Catalogue of the City of Paris.)

II. EDUCATION.—(*Direction de l'Enseignement primaire*).—M. Carriot, directeur; M. Duplan, sous-directeur. (1) Documents relative to the organization of the institution of public instruction of Paris (see specially the *Notice sur les établissements d'enseignement public de la Ville de Paris*, 1864). (2) Pedagogical works of the male and female teachers.

*Primary schools*.—Teacher's desk; school table (2 seats), combination table for the writing, drawing, or needle-work class, slated blackboard, metrical compendium, counter, geographical appliances; specimen of a school museum organized by the teachers and pupils; photographs; work done in school, &c. Specimen of school rewards. Honor List prize, reward cards, &c.

*Infant schools*.—School furniture; views of school-rooms and dependencies, photographs, &c.; work done in infant schools.

*Higher primary schools* (boys 12 to 17 years old).—Specimens of work done by pupils; teaching of physical and natural sciences; photographs showing a manipulation room, a school museum, and a school workshop.



*Higher primary schools* (girls 13 to 17 years).—Specimen of school work, time table. Specimens of bookkeeping work; views of class-room, of amphitheater, and a model kitchen.

*Instruction of adults* (night schools for scholars more than 15 years old).—Programmes of commercial teaching for young men and young girls. Specimens of work done in classes.

*Teaching of drawing in elementary, higher primary, and night schools*.—Specimen of the progressive series of models. Drawings by the scholars. Photograph showing a plan of drawing and modeling.

*Teaching of gymnastics and drill in schools*.—Specimens of the apparatus employed for the teaching of gymnastics.—Photograph of scholars during a gymnastic lesson. Model of uniforms of school battalions. Photograph showing boys at drill.

*Handicraft teaching in elementary schools for boys* (6 to 13 years old).—Series of work done by boys. Views of workshops.

*Handicraft teaching in elementary schools for girls* (6 to 13 years).—Teaching of needle-work. Specimens of work; cutting out.

*Professional teaching for young men* (13 to 17 years).—École Municipale Diderot, 60 Boulevard de la Villette, Paris.—Specimens of work done in the school smithy, carpentering, turning, and fitting-up shops; locksmiths' and other work; photographs of school workshops and refectories.

*Professional teaching for young girls* (12 to 17 years).—Specimen of work done in the china painting studio. Corset making, embroidery, artificial flowers, &c. Photographs of the workroom of the Rue Violet School. Specimen of drawing by girls of the schools of Rue Violet, Rue Bossuet, and Rue Ganneron.

*École Municipale de Physique et Chimie Industrielles*, 42 Rue Lhomond.—Work by students, 14 to 19 years.—Photographs of the laboratories.

## SECTION VII.—ART EDUCATION.

*Ministry of Public Instruction and Fine Arts, Fine Arts Section*.—(1) Plans of the National School of Decorative Arts at Limoges (Haute-Vienne); architect, M. Jourdain. This school was established by the municipality for instruction in art bearing on the ceramic manufactures for which Limoges has long been famous, and has been recently placed upon an entirely new footing by the decree dated November 5, 1881. It will henceforth be called l'École Nationale des Arts Décoratifs de Limoges. M. Louvrier de Lajolais, the director of the École Nationale des Arts Décoratifs, is also the director of this school.

(2) Collective exhibit of work done in the principal national and municipal schools of arts in France.

(3) Specimens of drawing done by the candidates for the diploma of drawing master.

(4) Specimens of the drawing done by the candidates for the diploma of primary school teachers (*breret supérieur*).

(5) Regulations concerning the teaching of drawing in primary, higher primary, and normal schools.

(6) Collection of casts, used as drawing models in normal schools and secondary schools (*lycées*).

(7) List of the special inspectors of drawing appointed by the Education Department, and various documents on art education in France.

### ART SCHOOLS.

*Alger, National Art School of*.—Drawings, by students—heads, flowers, architecture, 1 panel and 1 portfolio.

*Bordeaux Municipal School of Drawing, Painting, and Architecture*.—(1) Studies in oil painting; (2) original compositions in oil, decorative panels; (3) flowers and figures from nature; (4) studies of anatomy; (5) drawings of animals from old masters; (6) specimens of steel engraving and etching; (7) original architectural designs, project for an odeon; (8) portfolio of drawings.

*Bourges, National School of Art et.*—(1) Panel of drawings; (2) portfolio.

*Clermont-Ferrand, School of Art et.*—(1) Panel drawings; (2) portfolio.

*Dijon, National School of Fine Arts et.*—(1) Drawing from the living model; (2) water colors (flowers); (3) original design and decorative compositions; (4) original composition in architecture, &c.; (5) portfolio of drawings and original designs.

*Donai, academic schools of art et.*—(1) Panel of drawings; (2) portfolio of drawings.

*Lille, academic schools of art et.*—(1) Studies in oil painting—expressive heads, musical instruments, still life, figure from the living model; (2) portfolio of drawings.

*Limoges National School of Decorative Art*.—(1) Panel of drawings, flowers.

*Lyons National School of Fine Arts*.—(1) Figure painting in oil; (2) flowers in water colors; (3) specimens of steel engraving and etching; (4) original design in decorative art, &c.; (5) portfolio of drawings.

*Marseilles, Municipal School of Fine Arts at.*—(1) Studies in oil painting (head of a woman, figures from living models); (2) panel of drawings from casts and living model; (3) portfolio of graduated series of drawings.

*Nice, National School of Decorative Art at.*—(1) Panel of drawings; (2) architectural drawings; (3) portfolio of drawings.

*Paris National School of Decorative Art, 5 Rue de l'École de Médecine, director, M. Louvrier de Lajolais.*—This school, a continuation of that founded by J. J. Bachelier in 1765, is entirely free. It contains day and evening classes, and holds also public classes on Sunday. Work exhibited: (1) Specimens of original design in decorative art: design for a bath-room, a fountain, a clock, a fan with its box, a casket, candlesticks, &c.; (2) figure drawing from the living model; (3) portfolio containing a graduated series of drawings and designs (figure, decorative art, architecture, anatomy, &c.).

*Paris National Drawing School for Girls, Rue de Seine.*—Specimens of drawing from nature: heads (chalk), flowers, water colors, etchings, engravings, original design (necklace with pearls), &c.

*Poitiers, School of Art of.*—Specimens of students' work: (1) Panel of drawings, etchings, steel engravings, &c.; (2) portfolio of drawings.

*Roubaix, National School of Industrial Art at.*—(1) Panel of drawings; (2) portfolio.

*St. Pierre-lès-Calaix School of Industrial Art.*—Specimens of drawing and designs for lace.

*Toulouse, Municipal School of Fine Arts of.*—(1) Figure studies in oil painting, from the living model; (2) architectural design; (3) studies in ornament; (4) portfolio of drawings.

*Tours, Municipal School of Fine Arts at* (especially intended for the training of architects and artisans in the building trades).—(1) Specimens of architectural design, study of perspective; (2) stereotomy, drawings, and models in plaster, done by students and pupils; (3) *Trait de bois*, wood models, by students; (4) portfolio of drawings.

*Valenciennes, academic schools of art at.*—(1) Studies of decorative painting—flowers, vase, figure, &c.—in oil; (2) panel of drawings; (3) portfolio of drawings.

#### APPLIANCES.

*Avoine, Paris.*—Three casts—the three orders of architecture.

*Cernesson, Leopold Camille, architect, 23 Rue Michel-Ange, Paris.*—Elementary-Grammar of Design (*Grammaire Élémentaire du Dessin*), 2 vols. 4°, Paris (Ducher, publisher); pupils' drawing charts.

*Debrie, G., Paris.*—11 anatomical figures (casts).

*Geneslet de Chairac et Cesty, Bordeaux, Gironde.*—Plaster casts to serve as models for geometrical and industrial drawing.

*Ranvier, Paris.*—Drawings (geometrical), designs in zinc.

*Thomas, Paris.*—Geometrical outlines and developable solids.

### SECTION VIII.—SECONDARY AND HIGHER INSTRUCTION.

#### LYCÉES ET FACULTÉS.

##### MINISTRY OF PUBLIC INSTRUCTION AND FINE ARTS.

*Directors of secondary instruction.*—(1) Map of France, showing the lycées and communal colleges, and higher normal schools for the training of teachers of lycées for boys and girls. (2) Reports and documents on secondary instruction in France. (3) Specimens of work done by pupils of the lycées; essays which have been rewarded in the *concours général*, or competitive examination, held annually in Paris between the best pupils of the Parisian and provincial lycées of France. (4) Specimens of architecture of secondary schools (see below the names of MM. DeBaudot, Lambert, Lecœur, Proust, Vandremér); photographs of lycées; album of photographs taken at the higher normal school at Sèvres for the training of lady professors for the girls' high schools (*lycées de filles*).

*Directors of superior instruction.*—(1) Statistics and reports on higher education in France. (2) Specimens of plans and photographs of buildings for faculties, schools of medicine, law, and theology. (3) Regulations of, and programmes for admission to, the higher professional schools; programmes of the examinations for academic degrees in the faculties of art (*lettres et sciences*), medicine, law, and divinity. (4) Specimens of original work by members of the schools of independent research at Rome and Athens (*Écoles Françaises de Rome et d'Athènes*); work by members of the *École des Hautes Études*, Paris; Bulletin des Sciences Mathématiques.

## ÉCOLE LIBRE DES SCIENCES POLITIQUES.

Paris.—Programme of class-books, 1884-'85:

## SCHOOL ARCHITECTURE.

*Bordeaux, city of.*—Plans of the faculties of theology, science, and letters, M. Durand, architect. Plans of the School of Medicine, M. Pascal, architect. Plan of the High School (Lycée) of Bordeaux.

*Collège Sainte-Barbe*, director, M. Dubief, Place du Panthéon, Paris.—Photographs and plans of the school, class-rooms, gymnasium, &c.

*De Beaudot*, architect, 3 Place de Rennes, Paris.—Plans of the Lycée Lakanal à Sceaux, near Paris (Seine), 7 panels. This lycée (national school for secondary instruction, constructed for 700 boarders, 50 day boarders, and 100 day scholars) is constructed in a space of 22 acres. The buildings are surrounded by a park; the disposition of the buildings is such that the play grounds are sheltered against the west and north winds; they are open to the east, and look on the park. The refectories or dining-halls are near the kitchens, which are isolated from the rest of the buildings. The establishment is warmed by steam. "The system of warming is combined with that of the ventilation necessary in the class-rooms, studies, and dormitories. For this purpose vertical openings are placed in the wall and united with the horizontal shafts placed at the bottom of the rafters, and placed in communication with the ventilating lanterns on the roofs" (note by the Architect). The Sanatorium is turned towards the east in a completely isolated building. A special building for contagious diseases is connected with it by an open gallery. The school gymnasium and covered courts (*préaux*) face the park. Great care has been given to the hygienic arrangement of the lavatories and closets. They are supplied with a great abundance of water, and by means of *réservoirs de chasse* and other dispositions marked on the plans, the diluted matters are speedily carried away through a special drain which reaches the river Bièvre at the point where it meets the main drain (*égout collecteur*) of the left bank of the Seine.

*Ecole Alsacienne* (head-master, M. Rieder, Agrégé de l'Université), 128 Rue d'Assas, Paris.—(1) Plan of the gymnasium; (2) plan of the school; (3) documents relative to the school; (4) album of photographs.

*Ecole Monge* (director, M. Godart), 145 Boulevard Malesherbes, Paris.—Photographs of the school, class-rooms, play-yards, gymnasium, dormitories, refectories, &c. Groups of pupils and documents.

*Lambert, Marcel*, architect, 8 Place du Havre, Paris.—Design for a lycée d'enseignement spécial, 3 panels.

*Lecœur*, architect, 128 Rue de Grenelle, Paris.—(1) Type of a secondary school in a country town. Plans of the lycée of Bayonne. Bird's-eye view of the buildings, courts, and gardens. (2) Types of secondary schools in the most populated part of the metropolis: (A) Plans of the Petit Lycée Condorcet, corner of Rues d'Amsterdam and de Hambourg at Paris. This lycée, an annex to the largest Paris public school (Lycée Condorcet), situated between the Place du Havre and the Rue Caumartin, is specially devoted to junior boys. Number of scholars, 766, of whom 230 are day boarders and 536 day scholars (*externes*). Terms for the year: Grammar division, day boarders, 850 francs; day scholars, 250 francs. Lower division, day boarders, 700 francs; day scholars, 180 francs. Warmed by steam at low pressure (system of Geneste et Herscher). Methodical circulation of steam, heating surfaces direct into the room, the said surfaces placed at the foot of the cold-air chamber, emission of pure air moderately hot, evacuation of foul air by opening into the collecting shafts. Direct ventilation all through the year. (B) Plans of the Petit Lycée Louis-le-Grand, in course of erection opposite to the Jardin du Luxembourg, Paris, inaugurated in October, 1883. (C) Lycée de Montluçon (Allier), area, five acres. The play grounds are open to the south. Underground drains carry all pluvial and other waters to the Cher. Special taps placed in the drains facilitate their frequent cleansing. Warming by ceramic calorifères with heated air, system of Geneste et Herscher. Actual number of pupils, 309; boarders, 98. (D) Design for a normal school with detached boarding houses, tutorial system.

*Proust*, architect, Paris.—Plans of the municipal college at Fontainebleau.

*Vaudremer*, architect, 110 Rue de Grenelle, Paris.—(1) Plans of the Lycée at Ajaccio (Corsica); (2) plans of the Lycée de l'Avenue Duquesne, Paris; (3) plans of the Lycée de Grenoble (Isère).

## SECTION IX.—EDUCATIONAL PUBLICATIONS.

*Ministry of Public Instruction.*—(1) Table giving extracts from the laws rendering elementary education in France free, compulsory, and secular. (2) Documents relative to teaching in France. (3) Reports, papers, &c., relating to technical and profes-

sional education. (4) Catalogue of books published under the sanction of the Department. (5) Specimen of a collection of books supplied by the Education Department to every normal school, to form a special library for the use of professors and assistant masters and mistresses. These libraries receive from the Ministry of Public Instruction, as a nucleus, the works named in the list of the exhibits. There are at present 86 male normal schools and 66 female normal schools in France. All have received these grants of books. There are also in the chief towns or *cantons* libraries provided for the use of teachers. The number of these libraries was, according to the latest statistics, 2,507, possessing together 662,319 volumes. They receive also a nucleus of the works mentioned in the catalogue of exhibits. (6) Documents relative to elementary education: Statistics of the schools, masters, and budget of primary instruction (1884, O. Gréard); Grande Statistique sur l'Enseignement Primaire de la Seine; decrees and minutes by the conseil supérieur; reports of school inspectors; états de situation, 1879-'84; projets de résolutions votés dans les conférences d'instituteurs. (7) Large statistical charts; table showing the number of primary schools in France, number of teachers, number of maternal schools, number of pupils in primary schools (kindergärten), number of normal schools, results of teaching, expenditure for education. (8) Fifteen placards, containing the summary of the latest returns concerning primary instruction, school savings banks, school libraries, teachers' institutes, pensions, &c. (These charts and placards have been prepared especially for the New Orleans Exposition by the ministerial commission of statistics, president, M. E. Levasseur). (9) Collection of the local *bulletins* (periodic publications) on primary education issued in each department.

*Pedagogic Museum*, 10 Rue Louis Thuillier (formerly in Rue Lhomond), Paris (director, M. Berger, inspecteur-général de l'instruction publique).—This museum has been erected in pursuance of a decree of the President of the Republic, on the motion of M. Jules Ferry, minister of public instruction, May 13, 1879. It constitutes a permanent scholastic exhibition, and a center of information on primary instruction in France and foreign countries.

This establishment includes five sections: (1) School furniture (*matériel scolaire*). Plans of schools, types of class-room furniture. (2) Teaching apparatus (*appareils d'enseignement*)—diagrams, models, geographical, scientific, and technological collections; (3) Collections of work done by pupils (boys and girls) in the class-room and workshop. (4) Documents bearing on the history of education in France. (5) Central Library—books for teachers, books for pupils, school libraries, popular libraries. The Museum Library, containing at present about 17,000 works, 6,848 of which are derived from a valuable collection of the best treatises on education in all languages, formed by Inspector-General Rapet, and acquired by the State in virtue of the law of June 5, 1880. In January, 1882, there was established a circulating library intended to supply helps for study to the teaching staff: 230 different sets of works compose the three sections of it—literature, science, pedagogy—and are sent, free of expense, to all parts of France and Algeria. One hundred and twenty-four newspapers (53 published in France, 71 published abroad), mostly relating to education and teaching, are received at the *Pedagogic Museum*, and put at the disposal of the public. A monthly scholastic publication, the *Revue Pédagogique*, has since July, 1882, become the organ of the *Musée Pédagogique*, and is edited under the supervision of an editing committee appointed by the Minister of Public Instruction. The Museum is open daily from 10 a. m. to 4 p. m. to persons provided with students' tickets (*cartes de travail*), and to the public on Sundays and Thursdays. The *cartes de travail* are issued at the *Musée Pédagogique*, and at the Ministry of Public Instruction (direction of primary instruction, fifth bureau).

The *Musée Pédagogique* is exhibiting: (1) A notice explaining the origin of the Museum, its organization, and the services it renders. (2) A specimen of its catalogue. (3) Three boxes, containing specimens of the works sent out by the circulating library. (4) Two photographs, representing traveling caravans (or excursions for special studies by students of training colleges).

*Cercle de la Librairie, de L'Imprimerie, et de la Papeterie*,<sup>1</sup> 117 Boulevard St.-Germain, Paris.—Collective exhibition of educational and scholastic publications, documents, and books on primary, secondary, higher, technical, and artistic education, school administration, and authorized prize-books, school rewards, &c.

Thirty-four publishers have taken part in the collective exhibit, viz:

Aican, Félix (works on science and medicine), Bailière, J. B. & fils (works on science and medicine), Baechet, L. (artistic publications), Belin Veuvo & fils (scholastic publications), Bonasse Label (images and prints), Churcay frères (educational works), Claessen (technical publications), Colin (Armand), & Cie. (scholastic publications), Delahaye et Lecrozier (medical publications), Delaisin frères (scholastic publications), Des Fosseux & Cie. (architectural publications), Ducher & Cie. (architectural publications), Ducrocq (educational publications), D. Dumoulin & Cie., Dupont, Paul (educational publications), Firmin, Didot & Cie. (scholastic and educational publications), Hachette & Cie. (scholastic and educational publications), Hennuyer (educational works), Hetzel & Cie. (educational publications), Jouve & Cie.

<sup>1</sup> A detailed catalogue of the publications exhibited by the Cercle de la Librairie has been issued.

(scholastic publications). A. Mamé & Cie. (music), Masson, Georges (medical and scientific publications), V. Palmé (scholastic works), Em. Pervin (scholastic works), Picard Bernheim, Plon, Nourrit & Cie. (educational publications), Poussielgue frères (educational publications), Quantin (artistic library), Roret (collection of books on technical education), V. Sarlit (scholastic works), Suzanne (geographical material).

**Delagrave, Ch.**, publisher, 15 Rue Soufflot, Paris.—Special exhibit of (1) educational publications and text-books used in primary and higher primary schools, also in *lycées* and *collèges*. (2) Geographical maps and globes. (3) Special works and models for art education, including a collection of ten casts derived from the antique by Professor Sobre; geometrical outlines by M. Thomas; a course of drawing in sixty-four sheets; orders of architecture, by M. Avoine—a collection of casts illustrating the Corinthian, Doric, Ionian, and Tuscan orders of architecture; *Method of Anatomy*, by Paul Colin and Debric—this consists of nine basso-relievos (height 39.37 inches), illustrating osteology, myology, and general anatomy; museum collection, by Léon Chédeville, under the direction of MM. Claude Sauvageot, Auguste Racinet, and Louvrier de Lajolais—this consists of models executed, first, according to geometrical formulæ; second, according to types selected from antiquity, the Middle Ages, the Renaissance, and the 17th and 18th centuries.

**Piche, M.**, 8 Rue Montpensier, Pau.—(1) Documents relative to the educational foundations of the late M. Tourasse. (2) Documents relating to the *Cercle populaire d'éducation* at Lunéville, presented by the sous-préfet at Lunéville, M. E. Lafargue.

**Rothschild, M.**, 13 Rue des Saints Pères, Paris.—Scientific works for school libraries and rewards.

AWARDS BY THE JURY ON EDUCATION,  
WORLD'S INDUSTRIAL AND COTTON CENTENNIAL  
EXPOSITION,

NEW ORLEANS, LA., 1884-'85.

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DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,  
*Washington, D. C., July 31, 1885.*

DEAR SIR: I have the honor to transmit herewith the list of awards made by the jury appointed to examine educational exhibits at the World's Industrial and Cotton Centennial Exposition.

ORGANIZATION.

The jury commenced work on the 13th day of April, and about six weeks were required for the completion of their labors. The chairman was designated by the chairman of the committee on awards, Col. Gus. A. Breaux, and a secretary was elected by the jury. The members of the jury were Hon. J. W. Hoyt, ex-governor of Wyoming; Hon. J. George Hodgins, LL.D., deputy minister of education, Ontario, Canada; Mon. B. Buisson, of France; Mr. Ichizo Hattori, of Japan; Rev. Walter Hillman, LL.D., president of Central Female Institute, Clinton, Miss.; and William O. Rogers, Esq., for many years superintendent of city schools, New Orleans.

CLASSIFICATION OF EXHIBITS.

The first subject considered by the jury was the classification of exhibits. Certain classes of exhibits were assigned to them. These classes contained an enumeration of many articles that would naturally be found in an educational exhibit, but it was difficult to say to which class much of the material belonged. Grouping the exhibits in three classes corresponding with the principal educational divisions adopted by the exposition management seemed more difficult than the preparation of a new classification based on the divisions commonly used in the collection of educational statistics. The following classification proved of service in bringing exhibits to a common plane for comparison:

1. City schools.
2. Kindergärten.
3. Normal schools.
4. Business colleges.
5. Private and public schools for secondary instruction.
6. Institutions for the higher

# Department of the Interior,

BUREAU OF EDUCATION,

Washington, D. C., Nov. 20, 1886.

*The name of Brother Maurelian, President of the Christian Brothers' College, Memphis, Tenn., by mistake was omitted from the list of members of the jury on education, mentioned on page 202 of part I, of the Special Report by the Bureau of Education on "Educational Exhibits and Conventions at the World's Industrial and Cotton Centennial Exposition, New Orleans, 1884-'85."*

*The omission was entirely unintentional, and for the purpose of supplying the proper correction I take pleasure in making this announcement.*

*Very respectfully,*

N. H. R. DAWSON,

Commissioner.

(7890—12 M.)





instruction of women. 7. Colleges and universities. 8. Schools of science. 9. Manual training schools. 10. Schools of medicine and nurse-training schools. 11. Library collections and appliances. 12. Schools of art. 13. Schools for the blind. 14. Schools for the deaf and dumb. 15. Schools for feeble-minded children. 16. Reformatory institutions. 17. Charitable institutions. 18. Subjects for special consideration: (a) Drawing; (b) ornamental pen work; (c) sewing work; (d) instruction in practical mechanics; (e) herbaria; (f) museums. 19. Appliances: (a) Furniture; (b) maps, globes, and casts; (c) drawing models, charts, and copies; (d) pedagogical, literary, and scientific works; (e) object lessons, material, etc.; (f) gymnastic apparatus; (g) special devices.

It is to be hoped that a committee of expert educators will determine upon an American classification of educational exhibits, that it may be used in the arrangement of pedagogical museums, and adopted by such future expositions within our national boundaries as give attention and place to school exhibits.

#### STANDARD OF JUDGMENT.

It was found impossible to adopt absolute standards of comparison. There is no list of points of excellence that should appear in each exhibit of an educational nature, nor any estimate of the relative importance of qualities necessarily possessed by such exhibits. It was voted at one of the first meetings of the jury that, without instituting a formal comparison between one exhibit and another, all should be carefully considered and awarded recognition according to merit. The judgment and experience of the jurors enabled them to set a value upon exhibits according to intrinsic merits, and to see in them either the results of wise instruction, or material for aiding the teacher, or means for developing the pupil. The conclusions reached by the several members of the jury showed that the standards of judgment developed by their educational experience produced similar results when applied to exhibits not possessing marked peculiarities.

#### GRADES OF AWARDS.

The extent and variety of educational exhibits made necessary quite a number of different awards. Collective and individual displays, commercial and instructive exhibits, could not be brought into two or three classes without ignoring many fundamental distinctions. The awards provided for by the committee in charge of jury work were not sufficient, and the jury on education was permitted to make its own classification and nomenclature of awards. Five grades of award were agreed upon as follows: Grand diploma of honor, diploma of honor, diploma, certificate of merit, and honorable mention. Large, complete, and satisfactory collective exhibits received the grand diploma of honor. Exhibits of considerable magnitude or peculiar excellence, whether individual or collective displays, were awarded the diploma of honor, or diploma, according to degree of merit. This arrangement of awards

harmonized with those made under similar circumstances at previous great expositions.

#### JURISDICTION.

The extent of the field of labor assigned to the educational jury caused some discussion, and was the subject of a conference with the chairman of the committee on awards. The opinion prevailing was that all exhibits having educational importance might properly be considered with reference not to their business, but to their educational worth. For example, scientific collections were examined with reference rather to their adaptation for and place in a course of study, than their extent and pecuniary value. As other juries were restricted to the buildings set apart for commercial exhibits, it was desired that the educational jury should include as much material as possible in the building containing State and national exhibits. Personal communication with the Woman's Department and the Department of Colored Exhibits brought to the notice of the jury the educational material exhibited by these departments. In order to be informed of every educational exhibit, the very comprehensive request was inserted several times in the morning papers, that "all persons in charge of educational exhibits, or material of any sort pertaining to or illustrative of education in its varied forms," should give "notice of the location and nature of such exhibits." It is to be presumed that all valuable exhibits were found by this means, and have a recognition in the accompanying list of awards.

#### REPORT.

The list of awards indicates in very brief terms the nature of the exhibits receiving recognition. This is scarcely more than a table of contents, which gives hardly more than a catalogue of articles exhibited, and does not reveal the grounds of award. Quantity is shown by it, but that more important factor, quality, is not made evident. Only by a report from the members of the jury can the merits of the exhibits, the causes producing best effects, and the lessons most emphatically taught, be made useful to those that were without opportunity to examine for themselves. In such a way many services rendered and favors granted can be deservedly recognized.

#### FAVORS RECEIVED.

It may not be improper to mention two instances in which the jury formally expressed a desire to recognize favors done the Department of Education. One was the loan of a Weber piano of fine tone and elegant finish. It was sent promptly at the opening of the Exposition, and was indispensable in connection with the kindergarten and kitchen garden classes. The other constant benefactor was Tulane University. Its officers welcomed all educators and learned societies, and placed its privileges at their disposal. The International Congress of Educators

and other gatherings occupied its hall for their meetings. Strangers were invited to use its library, and were the recipients of kindnesses that would have been thought of only by broad minds and generous hearts.

The value of the accompanying list of awards as educational literature is too apparent to need any comment, and the advantage of placing it in libraries and centers of information for present use and to be referred to in the future is beyond doubt.

Very respectfully, your obedient servant,

LYNDON A. SMITH,

*Secretary Jury on Education,*

*World's Industrial and Cotton Centennial Exposition.*

General JOHN EATON,

*Commissioner of Education.*

## AWARDS.

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### BELGIUM.

#### *Diploma.*

Lebon, Léon, Brussels: Documents and works on public instruction.

#### *Certificate of merit.*

Ahrens, Frère Antoine, Alost: Arithmometer.

Fumière, Théophile, Brussels: Art publications.

Société Anonyme de la Construction Industrielle, Brussels: Adjustable school desks.

### ENGLAND.

#### *Diploma of honor.*

Birmingham School Board: Model of school building, work by pupils, home-made physical apparatus, needlework.

City of Bath: Models of ancient and modern baths.

Nordenfeldt, Th., London: School gymnasium on the Swedish (Ling's) system.

Rigg, James, London: Models for teaching mechanic arts.

Roth, Dr., London: Models of appliances for physical training of children.

Sheffield Board Schools: Manual work, drawings, &c., by pupils.

#### *Diploma.*

Association for the Oral Instruction of the Deaf and Dumb, London: Educational appliances.

British and Foreign Blind Association, London: Books, relief maps, appliances for the blind.

Stayne, Henry, Technical College, London: Models and drawings of wood constructions.

### HONDURAS.

#### *Diploma.*

Spanish Honduras: Educational exhibit.

### JAMAICA.

#### *Diploma of honor.*

Jamaica: Collective educational exhibit.

### JAPAN.

#### *Grand diploma of honor.*

Educational Department of Japan: Collective exhibit, collection of teaching appliances, school results, statistical charts, educational documents, books and journals of learned societies.

*Diploma of honor.*

Agricultural College of Komaba, Tokio : Complete collections of Japanese agricultural seeds, collection of insects and of dye stuffs, analysis of agricultural products, &c.

Engineering College, Tokio : Models of steamships, testing machine, marine boiler, etc., thirteen in number, all made by students; collection of Japanese minerals; eighteen volumes of students' drawings, and a number of the college publications.

Kitagawa, G., of Tokio : Manikin and special anatomical models.

Musical Institution of Tokio : Musical charts, musical instruments, and publications of the institution.

Pedagogical Museum of Tokio : Educational appliances.

School for Deaf, Dumb, and Blind, of Kioto-fu : Large number of charts illustrating methods of teaching; also art and industrial work of pupils.

Tokio Female Normal School : Students' drawing, prose and poetic compositions, sewing, embroideries, paintings, kindergarten work, and simple chemical apparatus and books.

Tokio Normal School : Desks, chairs, blackboard, students' drawings, statistical charts, books, and simple physical apparatus, &c.

University of Tokio : Photographs of museum, botanical garden, and university buildings; thirteen volumes of memoirs containing results of scientific investigations by professors and students, manikin and anatomical models.

Furukawa, E., of the School for Deaf, Dumb, and Blind, of Kioto-fu; Methods of teaching the deaf, dumb, and blind.

*Diploma.*

Educational Appliance Manufacturing Company, Tokio : Chemical and physical apparatus.

Kindergarten attached to Tokio Female Normal School : Teaching appliances, playthings, and children's work.

Kioto-fu Female School : Embroideries, relief work, laces, and water-color paintings, &c.

Naka, T., of Tokio Female School : Apparatus for teaching fractions.

Pedagogical Museum of Tokio : Folding geometrical figures.

School of Gymnastics, Tokio : Gymnastic apparatus and publications.

Tokio Female Normal School : Simple chemical apparatus.

Tokio Normal School : Simple physical apparatus.

Ushigome Fine Art School, Tokio : Work of students.

*Certificate of merit.*

Awonori-ken, Gifu-ken, Gumba-ken, Hakodate-ken, Ishikawa-ken, Kanagawa-ken, Kumamoto-ken, Miye-ken, Miyapi-ken, Nagano-ken, Shiga-ken, Tochigi-ken, Tokio-fu, Hiroshima-ken, Fukuoka-ken, Tokushima-ken, Iwate-ken : School plans and pupils' work.

## MEXICO.

*Grand diploma of honor.*

Geographical and Exploring Commission, Vera Cruz, State of Jalapa : Natural history collections.

*Diploma of honor.*

Academy of Fine Arts : Free-hand and architectural drawing.

Cubas, Antonio Garcia, City of Mexico : Maps showing instruction in agriculture, hydrography, and political divisions.

*Diploma.*

D'Acrosto, Lorenzo, City of Mexico : Natural history collections (animals and reptiles).

Fournier Lyceum, City of Mexico : Specimens of penmanship and drawing.

National Preparatory School of Art, City of Mexico : Drawings from copies.

Nieto, Jose A., Cordova, Mexico : Entomological collections.

Nuntes de Oca, Raphael, City of Mexico : Herbaria, animals, &c.

*Certificate of merit.*

Clemente, Antonio, Neve, Mexico : Pedagogical chart and specimens of penmanship.

Gobierno de: Estado, Vera Cruz, Mexico : Collection of shells.

MEXICAN EXHIBIT IN WOMAN'S DEPARTMENT.

*Diploma of honor.*

City of Mexico : Representation of its national, municipal, and private schools.

*Diploma.*

Cordova Girls' School, State of Vera Cruz : Ornamental needlework.

La Paz College, City of Mexico : Plans and views of college buildings.

Mexico, Girls' Art and Professional School of City of : Art work, laces, embroidery, &c.

Mexico, municipal schools of City of : Industrial and ornamental work.

Mexico, national schools of City of : Views, embroidery, lacework, &c.

Oaxaca, Girls' Academy of City of : Industrial and ornamental needlework.

Zacona, Girls' School of City of : Ornamental needlework.

FRANCE.

*Grand diploma of honor.*

Ministry of Public Instruction and Fine Arts : Collective display illustrating public instruction generally, and especially primary, higher primary, and art education in France.

City of Paris : Collective exhibit illustrating the methods, appliances, and results of primary and higher primary instruction and system of evening classes in Paris.

*Diploma of honor.*

Algeria, schools of : Collective exhibits from the French and Arab schools.

Alvergnyat Frères, Paris : Instruments for teaching natural philosophy (acoustics, hydrostatics, electricity, &c.) in normal schools.

Amiens, Somme : Collective exhibit of primary schools.

Auzoux (Madame Veuve) et Montaudon (nephew and successor of Dr. Auzoux), Paris : Models of elastic anatomy as supplied to all normal schools.

Bordeaux School of Drawing, Painting, and Architecture : Drawings and paintings by students.

Bordeaux, Gironde : Plans of municipal buildings for primary, secondary, and higher instruction.

Bordeaux Girls' Higher Primary and Professional School : Specimens of written work, needlework, embroidery, and artificial flowers by pupils.

Bouvard, J., Paris : Plans of the national higher primary school of Voiron, &c.

Cercle de la Librairie, Paris : (1) Collective exhibit of text books and educational works. (2) Collective exhibit of books on art. (3) Collective exhibit of maps and school appliances.

Cernesson, L. C., Paris: Plans of higher primary school of Montbard, grammar of design and pupils' drawing charts.

De Bandot, architect, Paris: Plans of French high schools (lycées).

Debrie, G., Paris: Anatomical models for art schools, 11 casts.

Delagrave, Ch., Paris: Collective exhibit of books, maps, globes, and drawing models.

Deyrolle, Émile, Paris: Charts for object lessons in primary and higher primary schools; collection of models of natural history of normal schools.

Diderot School, School of Apprentices, Boulevard de la Villette, Paris: Specimens of manual work by the pupils.

Dijon, primary schools of: Collective exhibit of pupils' work.

Doubs, elementary schools of the department of: Collective exhibit.

École Nationale de Dessin pour les Jeunes Filles, Paris: Drawings, water-color sketches, engravings, original designs, &c., by pupils.

École Normale Spéciale de Travail Manuel, formerly at Paris, now at St. Cloud: Specimens of manual work and drawings by students.

Geneste et Herscher, engineers, Paris: Plans illustrating the system of ventilation and heating in schools.

Havre Apprentices' School (M. Lefebvre, director): Wood and iron work and mechanical drawings by the pupils.

Havre elementary schools: Collective exhibit of pupils' work.

Havre Higher Primary School (M. Périer, director): Specimens of industrial and other work by pupils.

Institution Livet, Nantes: Specimens of industrial work, including watchmaking by pupils.

Levasseur, E., Paris: Physical and political maps of Europe, France, French colonies, &c.

Ligue Française de l'Enseignement, Paris branch: Specimens of books, gymnastic appliances, drill guns, &c., distributed to schools by this society.

Lille, academic schools of art of: Drawings and paintings by students.

Lille, city of: Collective exhibit from public, primary, and higher primary schools for boys and girls.

Limoges Normal School: Students' work.

Limoges National School of Decorative Art: Drawings, water-color sketches, and engravings by pupils.

Lyons National School of Fine Arts: Drawings, paintings, and engravings by students.

Marseilles, École Municipale des Beaux Arts: Drawings, paintings, &c., by students.

Ministry of Public Instruction and Fine Arts, Paris: (1) Collective exhibit of drawings and other work, from students in the normal schools of St. Cloud, Paris, Rouen, Montbéliard, Besançon, La Grande Sauve (Bordeaux), &c.

Ministry of Public Instruction and Fine Arts: (2) Selections of plans of several primary, higher primary, and normal schools, plans of lycées, colleges, and faculties (universities).

Ministry of Public Instruction and Fine Arts: (3) Specimens of the didactic material, books, maps, globes, scientific apparatus, &c., distributed to primary and normal schools.

Ministry of Public Instruction and Fine Arts: (4) Statistics and documents bearing on primary, secondary, and higher education in France.

Ministry of Public Instruction and Fine Arts: (5) Types of art museums and reward cards for elementary schools, collection of casts for teaching drawing, drawings by candidates for the certificates of drawing master, collective exhibit of drawings and paintings by students of several schools of art.

Musée Pédagogique, Paris: Documents illustrating its origin and collections, specimens of circulating library, and monthly periodical (*Revue Pédagogique*) issued by the authorities of the museum.

Nice, École Nationale des Arts Decoratifs: Drawings and original designs by students.

Nord, department of: Collective exhibit of primary and higher primary schools.

Paris, city of: (1) Specimens of manual and other work done by pupils in elementary schools.

Paris, city of: (2) School work and drawings by pupils in higher primary schools for boys.

Paris, city of: (3) School work, drawings, specimens of needlework, embroidery, artificial flowers, painting on silk and china, by pupils in higher primary and professional schools for girls.

Paris, city of: (4) Specimens of drawings, modeling, and other work done by pupils of the free evening classes and commercial courses (cours d'adultes).

Paris, École Nationale des Arts Décoratifs: Drawings and original designs by students.

Ravaisson, F., Paris: Series of reproductions of master works of art.

Roubaix, École Nationale des Arts Industriels: Pupils' work, drawings, and original designs for laces, &c.

Rouen, École Manuelle d'Apprentissage (M. Lecaude, director): Wood and iron-work, and drawing by the pupils.

Rouen, elementary schools: Collective exhibit of pupils' work.

Rouen, Higher Primary and Professional School for Boys (M. Delarne, director): Specimens of industrial and other work by pupils.

Rouen, higher primary schools for girls: Specimens of needlework, dressmaking, millinery, &c., by pupils.

Seine-Inférieure, department of the: Collective exhibit of primary schools—plans, scholars' work, documents, &c.

Société des Crèches, Paris: Model of a crèche, plans, photographs, and documents relating to the French crèches.

Société des Ecoles Infantines, Paris: Model and plans of infant schools, appliances, and methods.

Société pour l'Encouragement de l'Instruction Primaire parmi les Protestants de France, Paris: Documents, specimens of drawing, and other work by students of the Protestant Normal School at Courbevoie.

Société pour l'Enseignement Professionnel des Femmes, Fondation Elisa Lemonnier, Paris: Collective exhibit of art work by pupils.

Société pour l'Instruction Élémentaire, Paris: Specimens of work done by students in the normal courses organized by the society.

Toulon, École Municipale des Beaux Arts: Drawings and original designs by students.

Tours, École Régionale des Beaux Arts: Drawings and architectural models in wood and plaster by students.

Trélat, Émile, director of the Special School for Architecture, Paris: Plans illustrating the lighting and ventilation of school-rooms.

Tunis, Schools of: Collective exhibit from French and Arab schools.

Union Française de la Jeunesse, Paris: Documents, specimens of work, and drawings by students.

Vaudremer, architect, Paris: Plans of French high schools (lycées).

#### *Diploma.*

Algiers, École Nationale des Beaux Arts: Students' work, drawings, &c.

Amiens, city of: Documents and statistics showing the system of school savings banks.

Armengaud Aîné, Paris: Panels for the decoration of class-rooms.



- Autueil, Normal School of, near Paris: Linear drawing by students.
- Beaunçon, primary schools of: Collective exhibit.
- Bontheaux, Sombacour, Doubs: School museum.
- Bonlogne-sur-Mer, higher Primary Boys' School of: Specimens of manual and other work.
- Bourges, École Nationale des Beaux Arts: Drawings by students.
- Bridoux, Gaille-Fontaine, Seine-Inférieure: Geographical maps by pupils.
- Christofle, silversmith, Paris: Drawings by apprentices of the school attached to his workshop.
- Clermont-Ferrand, École Régionale des Beaux Arts: Drawings by students.
- Creuse, primary schools of the department of: Specimens of pupils' work and preliminary training in manual work.
- Dijon, École Nationale des Beaux Arts: Original designs and paintings by students.
- Dijon, elementary schools of: Manual work and clay modeling by boys.
- Dijon, higher primary schools of: Drawings and manual work.
- Dorangeon, Musée Industriel, Paris: Charts for teaching object lessons in elementary schools.
- Donai, academic schools of arts of: Drawings by students.
- Doubs, maternal schools of: Collective exhibit.
- Doubs, girls' primary schools of: Collective exhibit of needlework—(1) School at Miserey; (2) school at Naujancourt (Mme. Emonot); (3) school at Pontarlier (Mme. Mignot); (4) Colombier-Fontaine (Mme. Pardonnet); (5) Granville School, at Beaunçon (Mme. Peanthier); (6) school at Audincourt (Mme. Péchin); (7) school of Mesdames Planty and Girardot.
- École de Travail, Bischoffsheim Foundation (working school for young Jewesses), Paris: Scholars' needlework and artificial flowers.
- Frété & Cie, purveyors to the ministry of public instruction, Paris: Specimens of gymnastic apparatus for primary and normal schools.
- Garçot et Nisius, Paris: School desks and material for object lessons in infant schools.
- Hément, Félix, et Cicéri, Paris: Collection of twelve drawings illustrating the principal terms of geography.
- Ikclmer, Paris: Terrestrial globe for schools.
- Isère, maternal schools of the department of: Collective exhibit.
- Jeannot, Émile, Belleherbe, Doubs: School museum (agricultural).
- Lecœur, architect, Paris: Plans of high schools for boys (lycées).
- Lecoq, Paris: Model of an adjustable drawing table and seat, and apparatus for displaying maps.
- Lemeroier, Mme. Veuve: Illustrations of structural anatomy; models supplied to normal schools.
- Lütz, Paris: Instruments of optics as supplied to normal schools.
- Marne, maternal schools of the department of: Collective exhibit.
- Melun, Girls' Higher Primary and Professional School of (Seine-et-Marne): Specimens of needlework and millinery by pupils.
- Menneglier, Navenne, Haute-Saône: Herbarium.
- Montauban Protestant Orphanage: Specimens of industrial work (printing) by the orphans.
- Montbéliard, Doubs: Collective exhibit of the Montbéliard primary schools.
- Narjoux, Félix, architect, Paris: Works on school architecture.
- Nicolas et Marcotte, architects, Caen, Calvados: Plans of the Normal School at Caen.
- Nord, department of: Specimens of the work done in the infant schools.
- Nord, higher primary schools of the department of (Fournes and Hautbourdin): Specimens of manual work by pupils.
- Paris, Model School of the Female Normal School: Pupils' work.

Patronage des Enfants de l'Ébénisterie, Paris: Ornamental wood carving by apprentices.

Petit, Pierre, Paris: Photographs of school buildings, class rooms, &c., and translucent photographs on canvas for window blinds in schools.

Poitiers, Ecole Régionale des Beaux Arts: Drawings and engravings by students.

Pontarlier, Doubs: Collective exhibit of school work.

Poulain, M., Higher Primary School at Illiers, Eure-et-Loir: Specimen of manual work by pupils.

Prévost Orphanage, Cempuis, Oise: Specimens of school work and industrial work by orphans of both sexes.

Rainsart, Rouen, École Bachelet: School museum showing the local industries.

Ranvier, Paris: Geometrical drawing models in zinc.

Reiber, Émile, architect, Paris: Panels of school decorations and drawing method.

Rousseau (Ancienne Maison, now termed Société Anonyme de Produits Chimiques), Paris: Apparatus for teaching physics and chemistry in primary and normal schools.

St. Omer, Pas-de-Calais: Local histories by elementary school teachers.

St. Pierre-lès-Calais, École Municipale d'Art Décoratif: Drawings by students.

Ste. Foy, Colonie Protestante de: Specimens of written and industrial work by inmates of the reformatory.

Seine-Inférieure, elementary schools of: Collective exhibit of needlework: Mme. Busquet, Oisnel; Mme. Dupont, Maromme; Mme. Huard, Rouen; Mme. Lamele, Barreule; Mme. Sœur Lefranc, Aumale.

Seine-Inférieure, maternal schools of the department of: Collective exhibit.

Serrurier, Havre: Pupils' work, pedagogical works, scientific material, &c.; specimens of magic lanterns for use in schools.

Technical School, Evreux: Work in wood and iron, and drawings by pupils.

Thomas, Paris: Geometrical outlines and models showing the development of solids.

Tramond, Paris: Models for teaching natural history in normal schools.

Valenciennes, academic schools of art of: Drawings and paintings in oil by students.

Vierzon Higher Primary School: Specimen of drawing and china painting by pupils.

#### *Certificate of merit.*

Amiens, maternal schools: Collective exhibit of children's work.

Avoine, Paris: Casts of the three orders of architecture.

Baume-lès-Dames, Doubs, primary schools of: Collective exhibit of scholars' work.

Bayvel, Mlle., Montivilliers, Seine-Inférieure: Large maps and specimens of penmanship by girls.

Bellier, Mme., Bordeaux: Periodical for kindergartners, specimens of reward cards for children, and specimens of work done in the infant schools of Gironde.

Berthoz, Audincourt, Doubs: Wood carving and sculpturing in stone by pupils.

Bisson, Vandœuvre, Calvados: School museum.

Bonno, Abbé, Etrépilly, Seine-et-Marne: Large relief map of the department of Seine-et-Marne.

Caille, Sotteville-lès-Bains, Seine-Inférieure: Simple material for teaching the elements of natural philosophy, chemistry, &c., in primary schools.

Caille, Rouen: Original sketches, compositions, &c., by pupils.

Clerc, Pontarlier, Doubs: Manual work in wood, stone, clay, &c.

Cocheris, Mme. Pauline, Paris: Method and charts for teaching needlework in schools.

Cochet, Ugruy-le-Gay, Aisne: Charts for teaching agriculture, local flora.

Collin, Mme. Laura, Paris: Method of teaching music in infant schools.

Coulet, Villers la Montagne, Meurthe-et-Moselle: School work, drawing, &c.

- Courtois, Paris: Models for teaching pomology.  
 Couvey, J., Condé-sur-Risle, Eure: Herbarium.  
 David, Grosrouvre, Meurthe-et-Moselle: Method of teaching geography.  
 Delarnelle, Elbeuf: Manual wood work done by the pupils.  
 Delaruelle, Rouen, Seine-Inférieure: Manual work by pupils.  
 Docquoy, Maromme, Seine-Inférieure: Relief maps of the canton of Maromme; album of geometrical drawings.  
 Faivre, Hérimoncourt, Doubs: Work in iron and wood by the pupils.  
 Gaudu, Goderville, Seine-Inférieure: Charts on arboriculture.  
 Gautier, Rouen: Album of maps, manual work by pupils, pedagogical documents, charts for teaching agriculture and horticulture.  
 Genestet de Chairac et Cesty, Bordeaux: Plaster casts, models of geometrical and industrial drawing.  
 Grout, Edmond, Lisiex, Calvados: Documents on the organization of district museums (musées cantonaux).  
 Hanniet, Neuilly-en-Thelle, Oise: Descriptions of historical prints by pupils.  
 La Loupe (Eure-et-Loir), Higher Primary School of: School work and drawings by pupils.  
 Lavallée, Tourny, Eure: School museum.  
 Leclerc, Estéville, Seine-Inférieure: Manual work by pupils.  
 Le Perdriel, Paris: Medicine chest for schools.  
 Leroy, Cantelen, Seine-Inférieure: Scholars' work, manual work, and school museum.  
 Liétout, Mme., Paris: Instructive games for children, &c.  
 Marans, Communal School of, Charente-Inférieure: Pupils' work.  
 Marne, primary schools of the department of: Work done by scholars.  
 Monternault, Mme. A., Amiens: Material for teaching form and color to young children.  
 Muneret, A., Cusance, Doubs: Collection of insects, herbarium, &c.  
 Ornans, Doubs, primary schools of: Collective exhibits of scholars' work.  
 Pas-de-Calais, primary schools of the department of: Collective exhibits of scholars' work.  
 Pollet, Presles-et-Thierry, Aisne: Map drawing by pupils.  
 Pourchot, Mandeure, Doubs: Herbarium.  
 Ract et Falquet, Paris: Material for kindergärten and periodical for kindergartners.  
 Ragemont, Berchères-sur-Vergris, Eure-et-Loir: Wall map of the arrondissement of Dreux.  
 Regrain, Chamblet, Allier: School museum.  
 Roy, Glamondans, Doubs: Model of architecture by pupils.  
 Russey, Doubs, primary schools of: Collective exhibit of scholars' work.  
 St. Pierre-lès-Calais, Higher Primary School of: Industrial and other work by pupils.  
 Salein, Elbeuf: School museum, manual work by pupils, etc.  
 Thierry, Mme., Montbéliard, Doubs, model school attached to normal school of Montbéliard: Needlework by scholars.  
 Tremeschini, Paris: Globe showing the movement of the earth.  
 Vast, H., Paris: Blank maps on slated cloth.  
 Voiron, Isère, Higher Primary School of, M. Berthuin, director: Specimens of industrial work by pupils.

*Honorable mention.*

- Bonnard, P., Paris: New system of musical notation.  
 Condray, Courville, Eure-et-Loir: Relief maps for teaching local geography.  
 Gibert, Fontainebleau: Specimens of modeling in elementary schools.  
 Lemort, St. Martin de Boscherville, Seine-Inférieure: School work by pupils.

Lovy, Paul, pupil of the elementary school of Dasle, Doubs: Collection of insects.  
 Monchel, Criquetot, Seine-Inférieure: Relief maps of the department of Seine-Inférieure.

Olivier, Bretteville-sur-Laize, Calvados: Manual work by pupils and school museum.  
 Société des Fêtes d'Enfants, M. Sabatier Plantier, president, Nîmes, Gard: Documents.

#### UNITED STATES BUREAU OF EDUCATION.

##### *Grand diploma of honor.*

Bureau of Education: Logical exhibits of education in the United States.

John Eaton, Commissioner of Education: Reports and documents on education, embodying the important results of sixteen years of public service.

##### *Diploma of honor.*

Barnard, Henry: Pedagogical literature.

Bureau of Education: (1) Statistical charts; (2) collective exhibit of educational works, contributed by the following publishers: John Allyn, Appleton & Co., A. L. Baucroft & Co., A. S. Barnes & Co., E. H. Butler & Co., J. H. Butler, Cassell & Co., Giun, Heath & Co., Ivison, Blakeman, Taylor & Co., J. B. Lippincott Co., Macmillan & Co., Thomas Nelson & Sons, Porter & Coates, Potter, Ainsworth & Co., George Sherwood & Co., Van Antwerp, Bragg & Co.

Chautauqua Literary and Scientific Circle: Efforts and methods of assisting popular education through systematic reading.

Exposition Kindergarten, conducted by Mrs. Anna B. Ogden and Miss May Crosby: Exhibition of a kindergarten in operation.

Fitch Crèche, Buffalo, N. Y.: Photographs of building and rooms, and appliances and material used in care of children.

Illinois Institution for Educating the Deaf and Dumb, Jacksonville: Work done in literary, art, and industrial departments.

Institution for the Instruction of the Deaf and Dumb, New York City: Work done in art and industrial departments.

Kentucky Institution for the Education and Training of Feeble-Minded Children, Frankfort, Ky.: Industrial work of pupils—clothing, shoes, tables, brooms, hammocks, &c.

"Kitchen Garden," conducted by Miss Olivia Tracy: Exhibition of a kitchen garden in operation.

Maryland State Normal School, Baltimore: Pupils' work, photographs, plans for schoolhouses, &c.

Normal School, Washington, D. C.: Object lessons, material, botanical work, drawings, &c.

Philadelphia School of Design for Women: Drawings, designs, art work.

##### *Diploma.*

Bureau of Education: (1) models and plans of school building; (2) encouraging the formation of pedagogical museums.

Cherokee Orphan Asylum, Salina, Ind. T.: Kindergarten work.

Mississippi Institution for the Deaf and Dumb, Jackson: Industrial and art work.

Mississippi Institution for the Education of the Blind, Jackson: Bead work, crocheting, &c.

New York Institution for the Blind, New York City: Books and appliances for the blind, girls' handiwork, &c.

Nurse Training School, Charity Hospital, New York City: Photographs.

Nurse Training School, Woman's Hospital, Philadelphia, Pa. : Photographs.

Ohio Institution for the Education of the Blind, Columbus: Bead-work, machine sewing, kindergarten work, geometrical blocks.

Pennsylvania Museum and School of Industrial Art, Philadelphia, Pa. : Drawings, designs, and casts.

Pennsylvania Training School for Feeble-Minded Children, Elwyn, Pa. : Album of photographs illustrating the work of the school.

Schroeder, T., Darmstadt, Germany: Models of descriptive geometry, architecture, &c.

Sheldon Jackson Institute, Sitka, Alaska: Plans of building, photographs, industrial work.

Spring, E. A., Perth Amboy, N. J. : Clay modeling.

University of Pennsylvania, Philadelphia: Engineering structures in miniature.

Washington (D. C.) High School: Photographs, students' work, text books.

Washington (D. C.) public schools: Complete exhibit of pupils' work, text books, photographs of buildings.

Wisconsin Industrial School for Girls, Milwaukee: Photographs, kindergarten, and industrial work.

*Certificate of merit.*

Colorado State Industrial School, Golden, Colo. : Photographs, shoes, brooms, clothing.

Institution for the Improved Instruction of Deaf-Mutes, New York City: Drawing and painting.

Maryland State Normal School, Baltimore: Sewing.

Minnesota Reform School, Saint Paul: Wood work.

National Kindergarten and Primary School, Washington, D. C.: Kindergarten work.

Newark City Home, Verona, N. J. : Clothing, toys, brushes.

Peirce College of Business, Philadelphia, Pa. : Students' work for full course.

State Reform School, Meriden, Conn. : Photographs illustrating family system.

Tresch, J. F. J., New York City: Paintings.

Tschudi, Henry, Corinth, Miss. : Musical compositions.

Washington (D. C.) Public Schools: Relief maps in putty made by pupils.

BUREAU OF INDIAN AFFAIRS.

*Diploma of honor.*

Carlisle Indian School, Carlisle, Pa. : Drawings, compositions, industrial work, harness, tinware, shoes, clothing, &c.

Fletcher, Miss Alice C., Washington, D. C. : Illustrations of Indian progress, addresses, &c.

WOMAN'S DEPARTMENT.

*Diploma of honor.*

LITERARY DIVISION.

Miss Maude Howe, Boston, Superintendent: Collective exhibit, embracing nearly 1,400 volumes of published works, in the English language, by women.

## SCIENTIFIC DIVISION.

Mrs. Evelyn M. Walton Ordway, New Orleans, Superintendent: Collective exhibit, including illustrated examples of the scientific work done by women in astronomy, botany, chemistry, mineralogy, zoology, entomology, architecture, and ethnology, as detailed below:

*Botany.*

- Mrs. L. V. Morgan, Cincinnati, Ohio: Paintings of fungi, with notes.  
 Miss M. T. Saunders, Salem, Mass.: Collection of North American ferns.  
 Mrs. A. L. Davis, Gloucester, Mass.: Collection of marine algæ.  
 Miss A. L. Page, Danvers, Mass.: Ferns from vicinity of Boston.  
 Miss Walker, Spencer, Mass.: Collection of flowering plants.  
 Miss Rosa Bullis Watson (deceased), Cambridge, Mass.: Collection of grasses.  
 "Botany Group" of New England, Women's Club, Boston, Mass.: Collection of mosses from vicinity of Boston.  
 Miss A. Symms, Winchester, Mass.: Paintings of fungi.  
 Miss M. E. Jack, Chateaugay Basin, Canada: Seeds of forest trees, with paintings of the flowers.  
 Miss S. Carter, Wilmington, Mass.: One hundred and forty varieties of seeds for microscopic study.  
 Miss A. L. Page, Danvers, Mass.: Book, Flower Object Lessons; translation from the French of M. Emm. C. Mount.

*Chemistry.*

- Miss L. Peabody and Miss Minns, Massachusetts Institute of Technology: Samples of articles of food examined for adulteration.  
 Miss M. O. Glover, Brooklyn, N. Y.: Samples of laudanum tested for strength (amount of morphia).  
 Miss J. Baldwin, Boston, Mass., Massachusetts Institute of Technology: Chemical preparations.  
 Miss H. Howes, Boston, Mass., Massachusetts Institute of Technology: Chemical preparations.  
 Miss A. Palmer, Boston, Mass., Massachusetts Institute of Technology: Preparation of aniline from crude benzol.  
 Miss L. Linton and Miss A. Stantial, Massachusetts Institute of Technology: Samples of silk, tested for foreign fibers and weighting.  
 Mrs. Ellen H. Richards, Boston, Mass.: The chemistry of cooking and cleaning.  
 Miss A. Palmer and E. H. Richards, Boston, Mass.: Notes on antimony tannate, two papers.  
 Margaret S. Cheney and E. H. Richards, Boston, Mass.: A new and ready method for the estimation of nickel in pyrrhotites and mattes.  
 Ellen H. Richards, Boston, Mass.: Notes on the composition of some of the mineral species accompanying the lead ore of Newburyport, Mass.  
 E. H. Richards, Boston, Mass.: Analysis of samarskite from a new locality.  
 Evelyn M. Walton Ordway, Boston, Mass.: Liquefaction and cold produced by the mutual reaction of solid substances.

*Architecture.*

- Mrs. R. Bethune, Buffalo, N. Y.: Two designs.

*Astronomy.*

- Maria Twitchell, Vassar College, Poughkeepsie, N. Y.: Notes on the satellites of Jupiter and Saturn.

*Entomology.*

- Miss C. H. Clarke, Boston, Mass. : Collection of galls.  
 Mrs. A. B. Comstock, Ithaca, N. Y. : Drawings of insects from life (much magnified).  
 Miss C. H. Clarke, Boston, Mass. : Collection of caddis, cases, flies, and larvae, with a published account.  
 Miss E. D. Boardman, Boston, Mass. : Study of echinidæ.  
 Mrs. Agassiz, Boston, Mass. : A first lesson in natural history.  
 Miss M. A. Booth, Longmeadow, Mass. : Prepared slides for the microscope.  
 Miss S. Minns, Boston, Mass. : Prepared slides for the microscope.

*Geology.*

- Miss S. Burnham, Boston, Mass. : Book—Limestone and Marble.  
 Miss S. Burnham, Boston, Mass. : Collection of rare marble.

*Mineralogy.*

- Mrs. N. H. Perry, South Paris, Me. : Collections of minerals from Maine.  
 Miss E. H. Richards, Boston, Mass. : First Lesson in Minerals.

*Miscellaneous.*

- Grace Anna Lewis, Clifton Springs, N. Y. : (1) Charts of the vegetable and animal kingdoms; (2) drawings from microscope and drawing of "Water Veil."  
 Associated Artists, 115 East Twenty-third street, New York City : Case of embroidery.  
 Louisville School of Pharmacy for Women, Louisville, Ky. : Numerous pharmaceutical preparations by students.  
 Vassar College (astronomical department, Miss Maria Mitchell, professor) : Photographs of heavenly bodies, done by the lady pupils.  
 Woman's Institute for Technical Designs, 112 Fifth avenue, New York City : Designs for wall paper; samples of repoussé work, in silver and bronze.

## STATES OF THE UNION.

## ALABAMA.

*Diploma of honor.*

- Judson Female Institute, Marion : Bound volumes, examination papers, drawings, paintings, and decorative work.

## CALIFORNIA.

*Diploma of honor.*

- Mr. and Mrs. J. G. Lemmon, Oakland : Herbaria and paintings illustrating the flora of California.

*Diploma.*

- California Kindergarten Training School, San Francisco : Kindergarten work, paper cutting, paper folding, weaving, drawing, sewing, pricking, slat-work, and paper twining.  
 Pacific Kindergarten Normal School, San Francisco : Illustrations of system of teaching.  
 Stanford Memorial Kindergarten, San Francisco : Photographs.

## COLORADO.

*Diploma of honor.*

- State Agricultural College, Fort Collins : Work in mechanic arts; 298 varieties of grain.

*Certificate of merit.*

Institution for the Education of the Mute and the Blind, Colorado Springs: Industrial work.

FLORIDA.

*Diploma.*

State of Florida: Collective educational exhibits, mostly pupils' work.

*Certificate of merit.*

East Florida Seminary, Gainesville: Collection of pupils' work.

Jacksonville public schools: Pupils' work.

Orange County public schools: Pupils' work.

Saint John's County public schools: Pupils' work.

Saint Joseph's Academy, Saint Augustine: Compositions, map drawing, &c.

Summerville public schools: Pupils' work.

West Florida Seminary, Tallahassee: Pupils' work, largely in mathematics.

*Honorable mention.*

Duval High School, Jacksonville: Examination papers and compositions.

Leon County public schools: Pupils' work.

Marion County public schools: Pupils' work.

GEORGIA.

*Certificate of merit.*

Atlanta public schools: Examination papers.

ILLINOIS.

*Diploma of honor.*

Illinois Industrial University, Urbana: Work from schools of engineering, architecture, botany and horticulture, agriculture, and chemistry.

*Diploma.*

Aurora public schools: Pupils' work.

Chicago public schools: Home work and drawings through school course.

Peoria public schools: Drawing and class work.

Voice and Hearing School, Chicago: Kindergarten work, drawing, &c.

INDIANA.

*Diploma of honor.*

State of Indiana: Collective exhibit, especially of rural school work.

La Porte public schools: Pupils' work and kindergarten exhibit.

*Diploma.*

Indiana Asylum for Feeble-minded Children, Knightstown: Industrial work.

Indiana Reformatory School for Women and Girls, Indianapolis: Industrial work.

La Fayette public schools: Drawing, designing, graded, and high school work.



Muncie public schools : Pupils' work.

Richmond public schools : Pupils' work.

Southern Indiana Normal Institute, Mitchell : Business forms and literary work.

Terre Haute public schools : Pupils' work, drawing.

Warsaw public schools : Botanical, ornithological, and general school work.

*Certificate of merit.*

Anderson public schools : Pupils' work.

Columbus public schools : Pupils' work.

Crawfordville public schools : Selected examination papers.

Delphi public schools : Pupils' work.

Kennedy, A. M., Rockport : Geometrical blocks.

Princeton public schools : Pupils' work.

St. Joseph County schools : Memory maps and drawings of schoolhouses.

Tell City public schools : Pupils' work, especially in grammar.

Thornton public schools : Pupils' work.

Van Wie, D. D., Indianapolis : Anatomical charts.

Vevay public schools : Pupils' work.

IOWA.

*Diploma of honor.*

State of Iowa : Collective educational exhibits.

Iowa State University, Iowa City : Theses, laboratory, note-books, drawings, cabinet of paleontology.

*Diploma.*

Bond, Frank, Iowa City : Thesis on blue jay.

Burlington public schools : Class work from graded and high schools.

Charles City public schools : School work, &c.

Clinton public schools : Pupils' work, kindergarten charts, &c.

Davenport public schools : Manuscript work, teaching charts, drawing.

Des Moines public high schools : Manuscript work, clay and worsted maps, herbaria.

Eldora public schools : Drawings and class work.

Hardin County public schools : Pupils' work, map drawing, &c.

Iowa College for the Blind, Vinton : Papers in geometry, bead work, brooms, &c.

Iowa Institution for the Deaf and Dumb, Council Bluffs : Shoes, desk, art work, &c.

Iowa State Normal School, Cedar Falls : Theses, examination papers, note-books, herbaria, charts, &c.

Ottumwa public school : Pupils' work.

*Certificate of merit.*

Ackley public schools : Language, drawings, and maps.

Atlantic public schools : Pupils' work.

Bell Plaine public schools : Maps, drawings, and language.

Blackburn, Miss S., Vinton : Teachers' examination questions, reviews.

Cedar Rapids public schools : Pupils' work.

Cochrane, Hattie, Iowa City : Thesis on leaves, illustrated.

Columbus Junction schools : Pupils' work.

Creston public schools : Manuscript work and charts.

Grand Junction public schools : Pupils' work.

Green County public schools : Pupils' work.

Iowa Agricultural College, Ames : Herbaria.

Iowa Falls High School : Geometry and physiology.

Jefferson public schools: Pupils' work.  
 Le Mars public schools: Pupils' work.  
 Marble Rock public schools: Maps and class work.  
 Marengo public schools: Class work.  
 Monroe public schools: Pupils' work.  
 Polk County public schools: Pupils' work.  
 Rockford public schools: Class work.  
 Shenandoah public schools: Pupils' work.  
 Sidney public schools: Class work.  
 Shimek, Bohumel, Iowa City: Thesis on fresh-water mollusks.  
 Sioux City public schools: Maps, drawings, and class work.  
 Tama County public schools: School work.  
 Water County public schools: Pupils' work.

*Honorable mention.*

Albia public schools: Manuscript pupils' work.  
 Cass County public schools: Class work.  
 Marble Rock public schools: Pupils' work.  
 Marshall County public schools: Class work.  
 Marshalltown public schools: Manuscript work in language.  
 McGregor public schools: Class work.  
 Nora Springs public schools: Pupils' work.  
 Norris, W. H.: Herbaria of Iowa flora.  
 Pocahontas public schools: Class work, maps, &c.  
 Scranton public schools: Manuscript, class work, all grades.  
 Searsborough public schools: Pupils' work.  
 Sheldon public schools: Class work in arithmetic, geography, &c.  
 Steamboat Rock public schools: Kindergarten, maps, &c.  
 Union public schools: Class work.  
 West Liberty public schools: Pupils' work.

KANSAS.

*Certificate of merit.*

Kansas State Agricultural College, Manhattan: Printing by students.  
 Leavenworth public schools: Bound volumes of examination papers.

KENTUCKY.

*Diploma of honor.*

Louisville public schools: School work and appliances.  
 Smith's Business College, Lexington: System of bookkeeping.

LOUISIANA.

*Diploma of honor.*

State of Louisiana: Collective educational exhibit.  
 New Orleans public schools: Collection of views and plans of buildings; school work.  
 Tulane University, New Orleans: Industrial class work at Exposition.

*Diploma.*

Boys' High School, New Orleans: Class work, charts, and drawings.  
 Chestnut Street Special Primary School, New Orleans: Kindergarten work, maps, &c.

Girls' High School, New Orleans: Drawings, botany, &c.  
 Leland University (colored), New Orleans: Class and industrial work.  
 Louisiana State Agricultural and Mechanical College, Baton Rouge: Industrial work and drawings.  
 Mansfield Female College, De Soto Parish: Pupils' work.  
 Saint Alphonsus Boys' Day School, New Orleans: Drawings, writing, &c.  
 Soulé's College, New Orleans: Appliances.  
 Southern University (colored), New Orleans: Pupils' work.

*Certificate of merit.*

Clinton Academy, East Feliciana Parish: Pupils' work, clay models, &c.  
 Hill, S. L., New Orleans: Charts of history.

*Honorable mention.*

Alexandria public schools: Pupils' work.  
 Monroe public schools: Pupils' work.  
 New Iberia public schools: Pupils' work.  
 New Orleans public schools: Industrial work, sewing.  
 Shreveport public schools: Pupils' work.

MAINE.

*Diploma.*

Portland public schools: School work well written, drawing.

*Certificate of merit.*

Lewiston public schools: Pupils' work.  
 Maine State College of Agriculture and Mechanic Arts, Orono: Industrial and engineering drawings.

MARYLAND.

*Diploma.*

Baltimore public schools: Drawing.  
 Manual Training School, Baltimore: Drawings and manual work, illustrating course in manual training.

MASSACHUSETTS.

*Diploma of honor.*

State of Massachusetts: Collective educational exhibit, statistics, reports, &c.  
 Boston Free Evening Drawing School: Free-hand and industrial drawings.  
 Boston public schools: Pupils' work of all grades.  
 Massachusetts Institute of Technology, Boston: Mechanical and architectural drawings, original designs, wood and iron work.  
 Massachusetts School for Idiotic and Feeble-minded Youth, South Boston: Kindergarten work, drawing, industrial work.  
 Massachusetts State Normal Art School, Boston: Drawings, paintings, and casts, from classes A, B, C, and D.  
 Perkins Institute and Massachusetts School for the Blind, Boston: Books, maps, industrial work.

*Diploma.*

Boston public schools: Sewing.

*Certificate of merit.*

Girls' Latin School, Boston: Photographs for classical instruction.  
 North Adams public schools: Album of school work.

## MICHIGAN.

*Diploma of honor.*

State of Michigan: Collective exhibit illustrating State educational system.  
 Grand Rapids Public School: Extensive exhibit of school work of all grades.

*Diploma.*

Michigan State Agricultural College, Lansing: Forestry and grasses.  
 State Public School, Coldwater: System of caring for destitute children.

## MINNESOTA.

*Grand diploma of honor.*

State of Minnesota: Comprehensive and quite complete exhibit, illustrating the general system and present status of education in Minnesota.

*Diploma of honor.*

Carleton College, Northfield: Photographs, class work, field work in surveying, astronomical and physiological charts, biological note books, electric clock and other instruments used at the institution in regulating the railway time service of the State.

Minnesota School for the Feeble-minded, Faribault: Industrial work.

State Normal School, Saint Cloud: Maps, charts of pedagogy, miscellaneous charts, students' work, &c.

State Normal School, Winona: Industrial drawing, charts by pupils, botanical specimens, examination papers.

University of Minnesota, Minneapolis: Drawings, wood and iron work, tools, charts, examination papers.

*Diploma.*

Minneapolis public schools: Pencil and crayon drawings, examination papers.

Minnesota Institution for Education of the Deaf and Dumb and the Blind, Faribault: Drawing and industrial work by deaf-mutes, needle work and tidies by the blind.

Olmstead County, county schools: Collective exhibit of pupils' work.

Saint Paul public schools: Penmanship, modeling, and drawing, from graded and high schools.

State Normal School, Mankato: Drawings, original designs, examination papers.

Stillwater public schools: Home-made physical apparatus.

Winona public schools: Pupils' written work by grades, children's work in designs, construction, &c., writing, and drawing.

*Certificate of merit.*

Hastings High School: Work in surveying and botany.

Kindergarten (Miss Alice Boyden's), Saint Paul: Six charts, children's work.

State Normal School, Winona: Kindergarten display.

*Honorable mention.*

Hamline University, Saint Paul: Photographs.

Moorhead public schools: Slate work, maps, &c.

Rochester public schools: Relief maps, drawings, &c.

## MISSISSIPPI.

*Diploma.*

Agricultural and Mechanical College of the State of Mississippi, Starkville: Illustrations of agricultural instruction and products, charts of study.

Spillman, Dr. William, Columbus: Geological collection, Mississippi fossils.

Vicksburg public schools: Examination papers, &c.

*Certificate of merit.*

Whitworth Female College, Brookhaven: Art.

## MISSOURI.

*Diploma of honor.*

School of Fine Arts, Washington University, Saint Louis: Work from nature.

## NEBRASKA.

*Diploma of honor.*

State of Nebraska: Collective educational exhibit.

*Diploma.*

Beatrice public schools: Examination papers, all grades.

Nebraska Institute for the Deaf and Dumb, Omaha: Sewing, embroidery, carpentry, &c.

Nebraska School for the Blind, Nebraska City: Brooms, fancy work, &c.

Nebraska State Normal School, Peru: Zoological and botanical specimens, map drawing, examination papers, &c.

*Certificate of merit.*

Falls City public schools: Examination papers.

Grand Island public schools: Examination papers, slate work.

Nebraska City public schools: Examination papers, map and mechanical drawing.

Omaha public schools: Written music.

St. Catherine's Academy, Omaha: Drawing and painting.

St. Clair Hall School, Lincoln: Pupils' work.

Tenth Street Industrial School, Omaha: Industrial work.

Worden, W. S., Holdrege: Penmanship device for drawing.

*Honorable mention.*

Academy of the Sacred Heart, Omaha: Presentation of course of study.

Columbus public schools: Examination papers.

Crete public schools: History of Schools.

Fairbury public schools: Map drawing and manuscript work.

St. Claire Convent, Omaha: Pupils' work.

West Point public schools: Examination papers from grammar and high schools.

## NEW HAMPSHIRE.

*Diploma.*

Concord public schools: Examination papers, drawings, kindergarten work, photographs.

*Certificate of merit.*

Manchester public schools : Drawings, plans of buildings, &c.

*Honorable mention.*

Franklin public schools : Pupils' work and photographs.

Nashua public schools : Chemical preparations by high school scholars.

NEW JERSEY.

*Diploma of honor.*

State of New Jersey : Collective exhibit of work from 3,450 public schools.

Jersey City public schools : Pupils' work.

Newark public schools : Pupils' work, scrap-books and drawing from high schools.

New Jersey State Normal School, Trenton : Pupils' work, herbaria, cases of minerals, chemicals, insects, &c.

Paterson public schools : Pupils' work, kindergarten work, ornaments, and geometrical solids in wood.

*Diploma.*

Camden public schools : Pupils' work.

Davey's (Vernon L.) School, District 86, Essex County : Home-made philosophical apparatus.

Elizabeth public schools : Pupils' work.

Green, J. M., Long Branch : Pupils' work and photographs.

Grossy, C. A., Landisville : Herbarium.

Hasbrouck Institute, Jersey City : Students' work, framed drawings from casts.

Hoboken public schools : Pupils' work.

Morse, S. R., Atlantic County : Herbarium of marine algæ.

Orange public schools : Pupils' work.

Trenton public schools : Pupils' work.

*Certificate of merit.*

Bridgeton public schools : Pupils' work.

Millville public schools : Pupils' work.

New Brunswick public schools : Pupils' work.

Plainfield public schools : Pupils' work.

Rahway public schools : Pupils' work.

Salem public schools : Pupils' work.

NEW YORK.

*Diploma of honor.*

Rensselaer Polytechnic Institute, Troy : Industrial drawing, &c.

*Diploma.*

Albany public schools : Pupils' work.

New York, State of : Statistics.

Workingman's School and Free Kindergarten, New York City : Photographs, scroll-sawing, pasteboard work, casts, &c.

*Certificate of merit.*

House of Refuge, Randall's Island, New York City : Industrial work.

New York Trade Schools : Plumbing, model-making, stone-cutting.

## NORTH CAROLINA.

*Diploma.*

Tileston Normal School, Wilmington: Kindergarten work, examination papers, photographs, maps, &c.

## OHIO.

*Diploma of honor.*

State of Ohio: (1) Collective educational exhibit; (2) collective college exhibit, arranged by Prof. A. H. Tuttle.

Cincinnati public schools: Pupils' work, drawing, slate work, &c.

Columbus public schools: Drawing, examination papers, essays and orations, photographs.

*Diploma.*

Dayton evening schools: Drawing.

Ohio State University, Agricultural Department, Columbus: Mining and engineering drawings, iron and wood work.

Springfield public schools: Pupils' work, penmanship, drawings, designs, scroll sawing.

Toledo public schools: Drawing, designing, and pupils' work.

*Certificate of merit.*

Chillicothe public schools: Examination papers, penmanship, and memory maps.

Hamilton public schools: Pupils' work from graded and high schools.

Oberlin public schools: Pupils' work from graded and high schools.

Portsmouth public schools: Pupils' work from graded and high schools, views of buildings.

Xenia public schools: Pupils' work.

*Honorable mention.*

Circleville public schools: Examination papers, photographs.

Gallipolis public schools: Examination papers, map drawing.

Oxford public schools: Examination papers, penmanship.

## OREGON.

*Diploma.*

Portland public schools: Drawings, maps.

*Certificate of merit.*

Indian School, Forest Grove: Industrial work.

## PENNSYLVANIA.

*Diploma of honor.*

Girard College, Philadelphia: Industrial work, chiefly in iron.

Philadelphia Normal School for Girls: Needle work, drawing, and designing.

Spring Garden Institute, Philadelphia: Wood, iron, and machine work, drawing.

Wilkes Barre public schools: General exhibit of school work.

*Diploma.*

Northern Home for Friendless Children, Philadelphia : Drawing, wood and metal work, artificial flowers, and class work.

Pennsylvania Institution for the Deaf and Dumb, Philadelphia : Paintings.

*Certificate of merit.*

Soldiers' Orphans' Institute, Philadelphia : Industrial and school work.

RHODE ISLAND.

*Diploma of honor.*

State of Rhode Island : Collective educational exhibit.

Providence public schools : Examination papers, letter writing, natural history, specimens, &c.

*Diploma.*

Kindergarten, Mrs. Alden, Providence : Children's work, including wood carving and brass hammering.

School of Design, Providence : Free-hand and mechanical drawing, water-color time sketches.

SOUTH CAROLINA.

*Certificate of merit.*

Anderson Female Institute, Anderson : Paintings.

TENNESSEE.

*Diploma.*

Columbia Athenæum, Columbia : Paintings, crayon drawing, India ink sketches, decorative work.

Jackson public schools : Examination papers.

Montgomery Bell Academy, Nashville : Maps of United States at different periods, anatomical charts.

Nashville College for Young Ladies : Examination papers, charts, maps of ancient Rome and Italy.

Vanderbilt University (school of engineering), Nashville : Mechanical drawing, &c.

*Certificate of merit.*

Howell's Graded Academy, Clarksville : Examination papers.

Knoxville schools : Examination papers.

Peabody High School, Trenton : Pupils' work.

St. Cecilia's Academy, Nashville : Examination papers, drawing, bookkeeping, and fancy work.

Tennessee Female College, Franklin : Painting, drawing, exercise books, herbarium, examination papers.

Ward's Seminary for Young Ladies, Nashville : Art work, charts of instruction.

*Honorable mention.*

Beech Grove School for Girls, Spring Hill : Examination papers.

Howard Female College, Gallatin : Examination papers.



## TEXAS.

*Diploma.*

State of Texas : Collective educational exhibit.  
 Austin public schools : Pupils' work.  
 Bryan public schools : Pupils' work.  
 Sam Houston Normal Institute, Huntsville : Examination papers.  
 Trinity University, Tehuacana : Charts illustrating instruction.

*Certificate of merit.*

Calvert public schools : Pupils' work.  
 Galveston public schools : Pupils' work.  
 Huntsville public schools : Pupils' work.

## VERMONT.

*Diploma.*

Vermont Academy, Saxton's River : Full representation of academic work.

*Certificate of merit.*

St. Johnsbury Academy, St. Johnsbury : Drawing, photographs, &c.  
 State Normal School, Castleton : Cabinet of minerals, examination questions.

## VIRGINIA.

*Diploma.*

State of Virginia : Collective educational exhibit.

*Certificate of merit.*

Miller Manual Labor School, Crozet : Mechanical drawings, &c.

*Honorable mention.*

Richmond public schools : Pupils' work, maps.  
 Rockingham County public schools : Pupils' work.

## WEST VIRGINIA.

*Diploma.*

Wheeling public schools : Pupils' work.

## WISCONSIN.

*Diploma of honor.*

State of Wisconsin : Collective educational exhibit.  
 Milwaukee public schools : Views of buildings, pupils' work.

*Diploma.*

La Crosse public schools : Pupils' work.  
 Milwaukee public schools : Kindergarten work.  
 Oshkosh State Normal School : Examination papers.  
 Platteville State Normal School : Examination papers, &c.  
 Whitewater State Normal School : Examination papers, &c.  
 Wisconsin State Institution for the Education of the Deaf and Dumb, Delavan : Pupils' work.

*Certificate of merit.*

Janesville public schools: Pupils' work.

Madison public schools: Pupils' work.

AMERICAN MISSIONARY ASSOCIATION.

*Diploma of honor.*

American Missionary Association: Collective educational exhibit.

*Diploma.*

Atlanta University, Atlanta, Ga.: Class and industrial work.

Fisk University, Nashville, Tenn.: Class work, herbarium, and chemicals.

Hampton Normal and Agricultural Institute, Hampton, Va.: Industrial work.

Santee (Indian) Training School, Santee Agency, Nebr.: Class and industrial work.

Straight University, New Orleans, La.: Pupils' work.

Tougaloo University, Tougaloo, Ala.: Class and industrial work.

*Certificate of merit.*

Gregory Institute, Wilmington, N. C.: Examination papers and needle work.

Talladega College, Talladega, Miss.: Class and industrial work, drawings, and kindergarten.

*Honorable mention.*

Avery Normal Institute, Charleston, S. C.: Class and industrial work.

Beach Institute, Savannah, Ga.: Pupils' work.

Le Moyne Institute, Memphis, Tenn.: Class and needle work.

Lewis Normal School, Wilmington, N. C.: Class and needle work.

Storrs School, Atlanta, Ga.: Class work and kindergarten.

Tillotson Collegiate and Normal Institute, Austin, Tex.: Class and needle work.

Warner Institute, Jonesborough, Tenn.: Class and industrial work.

BROTHERS OF THE CHRISTIAN SCHOOLS.

*Grand diploma of honor.*

Brothers of the Christian schools: For collective educational exhibit.

*Diploma of honor.*

Alexis, Brother: For geographical display.

Christian Brothers' College, Memphis, Tenn.: Students' work, crayon drawings, anatomical models, &c.

Christian Brothers (Brothers of the Christian Schools): Plaster casts, charts, and series of copy-books for teaching drawing.

De la Salle College, Philadelphia, Pa.: Students' work, and linear and architectural drawings.

De la Salle Institute, New York City: Students' work, historical maps, &c.

Manhattan College, New York City: Students' work in languages, mathematics, and natural sciences.

Normal Institute, Ammendale, Md.: Literary works, astronomical charts, linear drawings, studies, &c.

New York Catholic Protectory (male department), Westchester, N. Y.: Students work and industrial work—printing, shoemaking, chair-caning, electrotyping, tailoring, silk weaving, maps, drawings, &c.

New York Catholic Protectory (female department), in charge of Sisters of Charity, Westchester, N. Y. : Pupils' industrial work in plain and fancy needle work, embroidery, and kid-glove making.

Rock Hill College, Ellicott City, Md. : Students' work, linear and architectural drawings.

St. Joseph's Normal College, Amawalk, N. Y. : Normal manuals, appliances, drawings (free-hand, linear, and architectural), maps, and studies from nature.

St. Joseph's College, Clapham, London, England : Students' work, higher mathematics, physics, &c.

St. Mary's and Sacred Heart College, San Francisco, Cal. : Students' work, drawings.

#### *Diploma.*

Brother professor of botany at St. Joseph's Normal College, Amawalk, N. Y. : Collections of plants and woods formed by him and his students for the museum.

Brother professor of mathematics at De la Salle Institute, New York City : Album of development of solids.

Brothers curator and librarian of Christian Brothers' College, Memphis, Tenn. : Complete museum of cotton and cotton-seed industry.

Cathedral School, New York City : Students' work, albums of historical maps, drawings, &c.

Cathedral School, Philadelphia, Pa. : Students' work.

Christian Brothers' College, Saint Louis, Mo. : Students' work and drawings.

Christian Brothers' schools, Saint Paul, Minn. : Pupils' work.

Immaculate Conception School, New York City : Pupils' work.

La Salle Academy, Providence, R. I. : Students' work and phonography.

Roman Catholic Male Orphan Asylum, Troy, N. Y. : Pupils' work, maps, and museum.

Sacred Heart Academy, Westchester, N. Y. : Pupils' work, maps, drawings, and museum for object lessons.

St. James's School, Brooklyn, N. Y. : Students' work, phonography, and calligraphy, or type-writing.

St. Joseph's Academy, Baltimore, Md. : Students' work and phonography.

St. Mary's Academy, Troy, N. Y. : Students' work and phonography.

St. Peter's School, Baltimore, Md. : Pupils' work, and linear and free-hand drawing.

St. Peter's School, Philadelphia, Pa. : Pupils' work, and maps and drawing.

St. Peter's School, New York City : Pupils' work.

Schools of the Christian Brothers, New York City : Collective exhibit of linear drawing of De la Salle Institute, Sacred Heart Academy, and Annunciation, Immaculate Conception, St. Bridget's, St. James's, St. Nicholas's, St. Peter's, St. Patrick's, and St. Teresa's schools.

#### *Certificate of merit.*

Roman Catholic Orphan Asylum, Peekskill, N. Y. : Pupils' work.

St. James's School, New York City : Pupils' work.

St. John's School, Syracuse, N. Y. : Pupils' work, maps, and museum.

St. Joseph's School, Buffalo, N. Y. : Excellent museum.

St. Mary's College, New Orleans, La. : Students' work and phonography.

St. Mary's Training School, Feehanville, Ill. : Industrial work, shoemaking, and tailoring.

St. Patrick's School, Hartford, Conn. : Pupils' work.

#### *Honorable mention.*

Assumption Academy, Utica, N. Y. : Pupils' work.

Christian Brothers' Academy, Albany, N. Y. : Pupils' work.

Immaculate Conception School, Baltimore, Md. : Pupils' work.  
 Manhattan Academy, New York City : Pupils' work.  
 Sacramento Institute, Sacramento, Cal. : Pupils' work.  
 St. Alphonsus's School, Baltimore, Md. : Pupils' work.  
 St. Ann's School, Philadelphia, Pa. : Pupils' work.  
 St. Bridget's School, New York City : Pupils' work.  
 St. Gabriel's School, New York City : Pupils' work.  
 St. John's Collegiate Institute, Washington, D. C. : Pupils' work and drawings.  
 St. John's School, Baltimore, Md. : Pupils' work.  
 St. John's School, Chicago, Ill. : Pupils' work.  
 St. Joseph's College, Buffalo, N. Y. : Students' work in languages.  
 St. Joseph's School, Chicopee, Mass. : Pupils' work and museum.  
 St. Joseph's School, Detroit, Mich. : Pupils' work.  
 St. Joseph's School, New York City : Pupils' work.  
 St. Michael's College, Santa Fé, N. Mex. : Photographs and photography used in teaching.  
 St. Michael's School, West Hoboken, N. J. : Pupils' work.  
 St. Mary's School, Melrose, N. Y. : Pupils' work.  
 St. Mary's School, New York City : Pupils' work.  
 St. Mary's School, Yonkers, N. Y. : Pupils' work and museums.  
 St. Mary's School, Jersey City, N. J. : Pupils' work.  
 St. Nicholas's School, New York City : Pupils' work.  
 St. Patrick's Commercial Academy, Chicago, Ill. : Pupils' work.  
 St. Patrick's School, New York City : Pupils' work.  
 St. Patrick's School, Newark, N. J. : Pupils' work.  
 St. Paul's School, Philadelphia, Pa. : Pupils' work.  
 St. Teresa's School, New York City : Pupils' work.  
 St. Vincent's School, Baltimore, Md. : Pupils' work.

#### DEPARTMENT OF COLORED EXHIBITS.

##### *Diploma.*

Colored School of Washington, D. C. : Pupils' work, drawings, &c.  
 Lowery's Industrial Academy, Huntsville, Ala. : Silk culture.  
 State University of Kentucky, Louisville, Ky. : Class and industrial work.  
 Tuskegee Normal School, Tuskegee, Ala. : Students' class and industrial work.

##### *Certificate of merit.*

Colored schools of Little Rock, Ark. : Pupils' work.  
 Colored schools of Wilmington, Del. : Pupils' work.  
 Colored schools of New York City : Pupils' work.  
 Roger Williams University, Nashville, Tenn. : Pupils' work.

##### *Honorable mention.*

Colored schools of Evansville, Ind. : Class work.  
 Colored schools of Indianapolis, Ind. : Pupils' work.  
 Colored schools of Brooklyn, N. Y. : Drawings.  
 Colored schools of Charleston, S. C. : Maps, drawings, &c.  
 Colored schools of Knoxville, Tenn. : Pupils' work.  
 Mt. Vernon School, Camden, N. J. : Class work.  
 Stark, Turner, Mobile, Ala. : Mechanical contrivance.  
 Wilberforce University, Wilberforce, Ohio : Students' work and herbaria.

## FREEDMAN'S AID SOCIETY.

*Diploma of honor.*

Freedman's Aid Society of the M. E. Church : Collective educational exhibit.  
Central Tennessee College, Nashville, Tenn. : Class and industrial work.

*Diploma.*

Clafin University and South Carolina Agricultural College and Mechanical Institute, Orangeburg, S. C. : Class and industrial work.  
Clark University, Atlanta, Ga. : Class and industrial work.

*Certificate of merit.*

Baldwin Seminary, Baldwin, La. : Class work, maps, &c.  
Burrell Seminary, Selma, Ala. : Pupils' work.  
Houston Seminary, Houston, Tex. : Class work.  
Little Rock University, Little Rock, Ark. : Class work, maps, &c.  
Rust University, Holly Springs, Miss. : Students' work.

*Honorable mention.*

Bennett Seminary, Greensborough, N. C. : Class work.  
Centenary Biblical Institute, Baltimore, Md. : Students' work.  
Cookman Institute, Jacksonville, Fla. : Pupils' work.  
East Tennessee Wesleyan Seminary, Athens, Tenn. : Class work.  
Holston Seminary, New Market, Tenn. : Students' work.  
La Grange Seminary, La Grange, Ga. : Pupils' work.  
Mount Zion Seminary, Carroll County, Ga. : Pupils' work.  
New Orleans University, New Orleans, La. : Class work.  
Philander Smith College, Little Rock, Ark. : Students' class work.  
Wiley University, Marshall, Tex. : Class work.

## COMMERCIAL DEPARTMENT.

*Grand diploma of honor.*

H. A. Ward, Rochester, N. Y. : Collective museum of zoology, paleontology, and mineralogy.

*Diploma of honor.*

Bausch & Lomb, Rochester, N. Y. : Optical instruments.  
Foote, A. E., Philadelphia, Pa. : Museum and collections in mineralogy.  
Mackintosh, Dr., Chicago, Ill. : Solar microscope, optical instruments, &c.  
Mason, L. W., Boston, Mass. : Music charts.  
New England Publishing Company, Boston, Mass. : Pedagogical works and periodicals.  
Queen, James W., & Co., Philadelphia, Pa. : Physical apparatus.  
Sargent, D. A., Cambridge, Mass. : Gynnaestic apparatus.  
Scribner's, Charles, Sons, New York, N. Y. : Astronomical charts (Trouvelot).  
Shilling, George, Washington, D. C. : Theodolites, surveying instruments.  
Union School Furniture Company, Battle Creek, Mich. : Collective exhibit of school furniture.

*Diploma.*

American Globe and School Supply Company, Seneca, N. Y. : Globes.  
 Appleton, D., & Co., New York, N. Y. : School charts.  
 Bancroft, A. L., & Co., San Francisco, Cal. : Charts and maps.  
 Bardeen, C. W., Syracuse, N. Y. : Educational publications.  
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**SPECIAL REPORT**

**BY THE**

**BUREAU OF EDUCATION.**

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**EDUCATIONAL EXHIBITS AND CONVENTIONS**

**AT THE**

**WORLD'S INDUSTRIAL AND COTTON  
CENTENNIAL EXPOSITION,**

**NEW ORLEANS, 1884-'85.**

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**PART II.**

**PROCEEDINGS OF THE INTERNATIONAL  
CONGRESS OF EDUCATORS.**

**WASHINGTON:  
GOVERNMENT PRINTING OFFICE.**

**1886,**





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## LETTER.

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DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,  
*Washington, D. C., November 25, 1885.*

SIR: The accompanying papers,<sup>1</sup> which are hereby transmitted for publication, give the best view, doubtless, that it is possible to preserve, of education at the World's Industrial and Cotton Centennial Exposition. It was early manifest that the exhibition would present a rare opportunity for the promotion of the advancement of education. The desire on the part of the Management to improve this opportunity to the utmost was expressed in the most explicit and emphatic terms by the Director-General, Hon. E. A. Burke, when he declared that they sought not only that the exhibition should be thoroughly national and international and in all its aspects educational, but that education itself, its systems, institutions, principles, methods, and results should be shown as far as possible by its literature and appliances, by models, by graphics, by actual class work, and by papers and discussions from the ablest educators. The following papers will make known how far the purposes of the Management have been realized, and their publication will preserve and extend the usefulness of whatever was accomplished in this behalf. The fullness of the papers and of the report of Lyndon A. Smith, Esq., my representative and chief assistant in immediate charge of the Department of Education at the exhibition, renders it unnecessary that I should here enter into details which would otherwise require more specific reference.

I desire to tender most hearty thanks to all those who have in any way aided in the work here reported, but it would require a catalogue larger than Homer's to specify each one by name.

I have the honor to be, very respectfully, your obedient servant,  
JOHN EATON,  
*Commissioner.*

The Hon. SECRETARY OF THE INTERIOR.

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<sup>1</sup> The catalogue of exhibits and list of awards may be found in Part I of this Report; the proceedings of the Department of Superintendence and addresses on Education Days in Part III.



PROGRAMME  
OF THE  
INTERNATIONAL CONGRESS OF EDUCATORS

AT THE  
NEW ORLEANS EXPOSITION,

FEBRUARY 23-28, 1885.

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**HONORARY PRESIDENT.**

HIS EXCELLENCY CHESTER A. ARTHUR,  
*President of the United States.*

**PRESIDENT.**

HON. JOHN EATON,  
*United States Commissioner of Education.*

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HON. LE ROY D. BROWN, *State School Commissioner, Ohio.*

Prof. W. H. PAYNE, *University of Michigan, Ann Arbor, Mich.*





# PROCEEDINGS.

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## RECEPTION AT WERLEIN HALL.

The International Congress of Educators met at Werlein Hall, Monday, February 23, 1885, at 1 P.M.

Among the educators present were Hon. John Eaton, of Washington, D. C., Rev. B. M. Palmer, D. D., Hon. Chas E. Fenner, Col. Wm. Preston Johnston, Hon. T. W. Bicknell, Hon. W. E. Sheldon, Rev. A. D. Mayo, Hon. J. W. Dickinson, Hon. E. E. White, Hon. John Hancock, Hon. F. L. Soldan, Hon. B. M. Tillotson, L. A. Smith, Esq., Mons. B. Buisson, of France, I. Hattori, Esq., Commissioner from Japan, Prof. J. L. Hughes, of Canada, Hon. N. C. Dougherty, Col. Geo. Hicks, of Jamaica, Hon. J. G. Parham, W. O. Rogers, Dr. T. G. Richardson, Hon. Warren Easton, and others.

The meeting was opened with prayer by the Rev. B. M. Palmer, D. D. Hon. LOUIS BUSH, President of the Louisiana Educational Society, in the chair, then said :

*Ladies and Gentlemen of the International Congress*—We had hoped that it would be our pleasure to have our address of welcome delivered by the Governor of our State, but circumstances have interposed to prevent his attendance, and in consequence we have called upon the Hon. Charles E. Fenner, one of the judges of the supreme court of Louisiana, to address you in our behalf and to extend to you the welcome we wish.

Judge FENNER then addressed the Congress as follows :

*Ladies and Gentlemen*—I am here to occupy, and not to fill, the place assigned to our distinguished chief magistrate. To him it would have been a pleasure to perform the grateful task of welcoming you here in the State in which he presides. It would hardly be expected that under these circumstances I should say anything of the great general subject which calls you here to-day which would be of sufficient interest or weight to command the attention of the cultivated and skilled minds which compose this audience. I shall therefore confine myself to the more easy and natural task of extending a most hearty welcome to our State and to our city.

By a highly fortunate coincidence, we have in our midst to-day a most remarkable congress of the arts, industries, institutions, and natural resources of nearly all the peoples and all the countries of the earth,

and that, perhaps, has been one of the causes which has influenced your meeting here to-day. It is an amazing spectacle, even to a man of this generation, with all its unparalleled facilities for keeping abreast of the development of ideas and the march of events and the cause of discovery, through the medium of the daily newspapers and magazines and of books. When he goes there, he stands wonder-stricken at the tremendous achievements of man's intellect and energy, which that great Exposition exhibits to his view. Let us suppose that the most advanced scientist of a period not further back than fifty years could be resurrected from the dust, and could be placed in the midst of the wonders and marvels of this Exposition. No doubt the imagination of such a man would have already attempted to forecast the history, the development, and progress of knowledge and invention, science and art; no doubt he would have thought himself prepared to anticipate with some degree of accuracy and correctness the great results which a half century of the progress of the spirit of invention would bring forth; but he would have stood amazed and paralyzed in the midst of the wonders and marvels which he would see around him there to-day.

I have made this little episode because it seems to point a moral which is appropriate to this occasion. Whence come all the achievements of which we see such wonderful evidence here? From education! That is the source and author of them all. Education pointed and directed the way to the aspiring thought. Education lent the sweep of telescopic vision to the human eye. It seems a fitting occasion to add warmth and heartiness to the welcome which we extend to you, when we find you here engaged in the work of forwarding and developing and systematizing and methodizing the great purposes and aims of the noble cause of education in which you are engaged. It chanced that only yesterday there appeared in the columns of one of our newspapers a noble oration which was delivered forty years ago in this State, upon the occasion of the meeting of the New England Historical Society, by a son of New England, but who had become a Southerner, and who in the wonderful adaptability of his nature became perhaps the most typical Southerner of Southerners, the gifted Sargent S. Prentiss, perhaps the noblest and the most eloquent orator, I may say almost without exaggeration, that ever lived in our time. As we recall the familiar words of that grand piece of eloquence and read them again, it seems to me that the orator was inspired with the spirit of prophecy; it seems to me that he already realized what was the true source and foundation of the development of this great country, that he was already able to see what would be the results of that development; and it seems to me that if he were here to-day, even his able mind could hardly have originated any words in which he could have addressed you, which would have been more appropriate to this occasion. You will pardon me, then, if for a few moments I substitute his words for my own. After a most

picturesque and poetical description of a New England village school, he said:

"Behold yon small building near the crossing of the village street. It is small and of rude construction, but stands in a pleasant and quiet spot. A magnificent old elm spreads its broad arms above it. A brook runs through the meadow near by, and there is an orchard, but the trees have suffered much and bear no fruit. From within its walls comes a busy hum, such as you may hear in a disturbed bee-hive. It is the public school, the free, the common school, provided by law, open to all, claimed from the community as a right, not accepted as a bounty. Here the children of the rich and poor, high and low, meet upon perfect equality and commence under the same auspices the race of life. The sustenance of the mind is served up to all alike, as the Spartans served their food upon the public table. Here young Ambition climbs his little ladder, and boyish Genius plumes his half-fledged wing. From among these laughing children will go forth the men who are to control the destinies of their age and country; the statesman whose wisdom is to guide the Senate; the poet who will take captive the hearts of the people and bind them together with immortal song; the philosopher who, boldly seizing upon the elements themselves, will compel them to his wishes, and, through new combinations of primal laws, by some great discovery revolutionize both art and science. The common village school is New England's fairest boast, the brightest jewel that adorns her brow. The principle that society is bound to provide for its members education as well as protection, so that none need be ignorant except from choice, is a most important one. It is essential to a republican government. Education is not only the best and surest, but the only wise foundation for our free institutions. True liberty is the child of knowledge; she pines away and dies in the arms of ignorance."

Look around you, gentlemen, not only over the wonders of this Exposition, but over all this broad land, with its unnumbered and inestimable blessings, with its free speech, with its free thought, with its free institutions, with its happy homes, its boundless areas of cultivated lands, all the powers of nature rendered subservient to the uses and comforts and necessities of man—a country blessed with everything in greater measure than any other country ever was blessed with before. And to what do we owe it all? Subject to the bounty of the Giver of all good gifts, we owe it to education; it was in the common schools of New England that was nourished and preserved and perpetuated the sacred fire at which education kindled the torch that from that day to this has been fed with increasing flame, has been borne higher and higher, until at last it has driven away the night of ignorance from every portion of the domain of science, and still is marching on, going higher and burning brighter, and the future of which in another century will be more astonishing to those of that age than would be the spectacle it exhibits to-day to the inhabitants of this earth one hundred years ago.

You, gentlemen, are engaged in the noblest work of all, the work of education. This great Exposition teaches a double lesson: First, the tremendous use and value of knowledge; second, how much there is to learn. Education is becoming a great and progressive science; the field is opening broader and broader before us; old methods have be-

come inefficient and must pass away; old habits and associations and ideas, with regard to the kinds of knowledge that are required, must submit to modification; and you, gentlemen, as I understand, are engaged in that great work of studying the philosophy of education, of improving its methods, of increasing its divisions, and of preparing it for the great work which yet lies before it in the future. Under these circumstances, we of Louisiana, humbly confessing our sore need of its benefits, take pleasure in extending to you a hearty welcoming hand, and of wishing you "God speed" in your noble work.

The PRESIDENT: Gentlemen, allow me to introduce to you Col. William Preston Johnston, of Tulane University, who will now address you.

Colonel JOHNSTON said:

*Ladies and Gentlemen*—I had intended to prepare what is called an "extemporaneous" speech, but the cares of earth have pressed so heavily upon me that I have not been able to do so, and I have therefore been obliged to jot down very hastily the words of welcome which I wish to extend to you gentlemen, and which I thought deserved to be more duly and fully considered. I should hate, after the able and eloquent address of the gentleman who has just spoken authoritatively for the Commonwealth and for the larger interests of education, to venture upon the field of extemporaneous speech. It does not look well for a man who merely lectures to speak after an orator. Though speaking for but one of the great interests to which Judge Fenner has alluded, the educational one, our guests cannot regard this as less important to themselves, since it includes so much of their life work. In the spirit of the gentleman who preceded me, I offer you our simple hospitality, academic and otherwise, freely and without reserve, and I trust that the gentlemen here present, and other educators now visiting us, will accept them literally, and consider Tulane Hall as their headquarters during their stay in this city. Let it be your educational exchange. Our library, lecture, and reading rooms are open to you, and you must demand without hesitation the services of our faculty and of myself.

I know that you are not here for amusement only; the spirit of observation is wide awake in you. You will therefore pardon me for pointing out to you that you will find in our university a curious analogy to, or rather a great reproduction of, the present conditions of the Southern country. You have heard of the Old South and the New South, and these are pictured, according to the fancy of the painter, with all the shades that pessimism or optimism might suggest. But believe me, we are the same people we always were, though with a harder and wider experience and under changed conditions. You need not believe the sneaks who will tell you we are sorry for what we have done. It is not true. You will also be unwise in believing those panderers to power who will tell you that from the first, since the close of the war, we have not honestly accepted our duties and responsibilities as American citizens. One of these duties is to manage our own affairs in our own way.

This we have proposed to do. We have understood the actualities of our situation better than any stranger can teach them to us, for they are matters of life and death to us, and merely political experiments to them. We have been obliged to govern ourselves by the hard and practical rules of common sense, which do not alway conform to the theories of social reformers. One of these rules with us has been that the intelligence of the community, as at present embodied in the white race, must in some form or other govern in these Southern States. We have been working out this problem under various difficulties, but with the help of Providence we hope we will succeed.

But we have to adjust our social and educational relations according to our own standards, our own prejudices, if you will. These standards look to and include the welfare, progress, and development of every race and color on our soil, and if they seem to you in some respects to smack of conservatism, nevertheless I trust you will believe us to be sincere in our wish to give the light of knowledge to every color and condition in the land, and to promote the intelligence and virtue and happiness of every individual upon our soil. We desire to educate all. We wish the broad foundations of our common schools to be full of vitality and energy. We want higher institutions also, and we believe in the beneficent influence of great universities, broad, solid, and rearing high their pinnacles into the pure air of liberal thought and culture.

I alluded to the analogy between our university and the South. We are both building on the old lines, instead of casting down the altars and temples of our fathers; but we—the whole South and our young university here—are seeking thoughtfully and earnestly for the best things applicable to our condition, wherever they can be found. We are not ashamed to acknowledge our shortcomings, for we mean to remedy them. We know we are not all alike, and that we can learn from each other, and I confess with all humility that I think we can learn more from Massachusetts than she can learn from us, and she thinks so too. But knowledge, which is more precious than rubies, is a sort of wealth which its holder is always willing to share. Our World's Exposition is now keeping school for the nations, and Louisiana will, I trust, be one of its aptest pupils. Your presence here to-day we accept as an augury of good. We hope to pump you dry before you leave. We shall spoil the Egyptians of their fine gold of knowledge and their rubies of wisdom, and we expect to be rich enough to go into the jewelry business.

I have said that we blended the old and the new. Tulane University includes a medical college which for more than half a century has been famous in the land; it has a law school which has long taught the civil law with the same ability which has made Cambridge famous as a seat of common law instruction; its academic department is more recent, and your sessions here are coincident with the addition of industrial and manual training as a feature of our work. This we expect to be-

come an important factor in a thorough system of education of the whole man for himself and for society. Our very buildings illustrate the old and the new in the way of architectural design, from the Greek temple to the "New Orleans" style, which combines the classic and Creole. Our most beautiful buildings, however, are planned with matchless skill and furnished with faultless taste. Therein are grouped all things that utility can suggest, science demand, or wealth bestow. These stately structures are in the Spanish style of architecture; indeed, they are "castles in Spain." All that they need to take form and substance is for our wealthy citizens to emulate the generous heart and open hand of the great benefactor of education in Louisiana, Paul Tulane. His princely hand has bestowed the money and means to achieve the desired end, and the sage counsel and potent voice of this Nestor, who has survived three generations of men and women, summon and cheer the youth of his beloved State and city in the path he has opened for them. I beg to repeat and enforce the hearty welcome which is felt by all for the teachers, whose feet are beautiful upon the mountains and shod with the golden sandals of truth. You are the captains and generals who are to discipline that army which twenty years hence will be fighting in the mighty Armageddon, the strife between good and evil. Welcome! soldiers in a good cause, for you bring to us the prescience of a better time coming. May your stay with us be as agreeable to you, gentlemen, as it is to us, and may you take away a pleasant memory of our fair and sunny Southern land.

The president then introduced Hon. JOHN EATON, United States Commissioner of Education, who delivered the following address.

## ADDRESS OF HON. JOHN EATON.

*Ladies and Gentlemen*—A formal response to these words of welcome more especially committed to others, excuses me from a duty which would otherwise be delightful, and I shall, therefore, only express my own sentiments of gratitude and pleasure. The time has come when the educator is not limited to his school, to his district, or to his nation. There are to him to-day no distant places in foreign lands, and those of us who come from cold and perhaps ice-bound regions, receive with gratitude this welcome to your delightful climate, and we rejoice that here we can assemble in the neighborhood of such a great school as this great Exposition, now erected in your midst for the benefit of the world. I now ask your particular attention to "Education as a Factor in Modern Civilization."

One thing is clear, that the interpretation of education in the minds of the present directors of its great forces is not limited to its operations in any department of man's nature.

It is indeed education, but not all of it, to cultivate human powers physically and to develop them in beauty and strength, as did the Greek. It is indeed education, but not all of it, to cultivate the moral and religious nature of man, as did the ancient Hebrew. It is indeed education, but not all of it, that informs and strengthens and develops man's mental faculties. It is indeed education, but not all of it, that directs and shapes and molds the natural forces of any one of the peoples or races in any one of the ancient or modern nations, and develops those tendencies, unfolds pre-eminently those powers, and establishes those characteristics which we describe as Chinese, or Indian, or Russian, or German, or English, or French, or American. All these notions must be taken into account if we are to comprehend the full force of education as a factor in modern civilization. Much harm often results in writing and speaking of education by using the term in a too limited sense. Entering a gymnasium and practicing with its various appliances for the full development of the different parts of the body may be physical culture, but how incorrect and injurious if the atmosphere in which these exercises are performed is poisonous, or if the character of the nourishment is disregarded! It is equally misleading to speak of intellectual culture in a school of philosophy or mathematics, if the necessary conditions for the healthful development of the other portions of man's nature are disregarded.

Many questions are debated: "Can education do this?" "Does education prevent crime?" when the proper definition of the term includes the result debated. The complete definition of education must be kept in mind in considering it as a factor in modern civilization. Its operations cannot be limited to any particular period of life, although it may and does go on, of course, more rapidly in youth. Its influences pervade all the changes in man's nature that can be produced by training or instruction, from the cradle to the grave. Nay, the pre-natal respon-

sibilities of the parent may be more essential to the character of the individual than any schooling in after years.

The common sense of mankind, which makes it murder to take the life of the individual before birth, with the same exactness and strength will hold the line to the parental influences exerted after that date. Moreover, we must divest our minds of the idea that education is the same for every individual, for the very opposite is true; its methods should not be alike in any two instances, but as diverse as are the characteristics of one person from those of every other. Under this larger idea of education the sciences and classics would not be set in battle array against each other, for it would be seen that the highest science under these conditions has need of the classics, and that instruction in the classics would be indefinitely improved by the scientific method. Archimedes would move the earth if he could find a fulcrum; the poet would leave all other literature to chance if he could be allowed to furnish the ballads for a people; but in modern civilization the educator has at his command the fulcrum and controls the ballads. Shape the educational forces so that they shall include the home of the child and the material and spiritual conditions in which it moves, the influences that operate upon it through parent and teacher and associate, and whatever man may do for his fellow will be accomplished. This view of education leaves to man's nature and heredity all the powers that can be claimed for them, but it should be remembered that one of the essentials of his nature and heredity is the possibility of modification, and that this modification is the work of education.

The child may have more or less capacity of body or mind; its chest or lungs or eyes, or its perception or memory or moral sense, may be defective. Education cannot be expected to supply wholly what nature has not given, but our doctrine is that it modifies. The bodily, mental, or moral weakness may be strengthened, the disease that preys upon body or soul may be prevented or cured. In this view the organs of the body by which we walk, handle, hear, see, and speak, and those faculties of the mind by which we perceive, remember, reason, and will, may be improved by training. This training is secured by proper and fit action or exercise, which is most effective in youth, when habits which are well called our "second nature" may be most readily acquired.

The progress of life does indeed afford opportunity for education, even when unshaped by the professional teacher, as is illustrated by our so-called "self-made" men. Nor should it be forgotten that the child who lives, whether he will or not, grows in stature and mental strength per force of nature. Moreover, he has a certain power of choosing out of his surroundings results for himself. His first teacher is his parent, from whom he advances through the circle of his natural and spiritual environment. But the professional teacher introduces skill, and adds vastly to the results of childhood in forming the child and shaping healthfully his body and mind; and the teacher, too, may greatly multiply these results by establishing a school in which the unconscious



and conscious influences of the scholars upon one another, which the teacher may in a measure shape, may become the most potent forces at his command. A child is pre-eminently social, and thus is specially influenced by what reaches him through his companions, a truth so frequently enforced by the phrase, "A man is known by the company he keeps." The comprehensive and just interpretation of the term "education" conveys to the teachers of to-day a more correct idea of the extent of the power they wield for the weal or woe of the child, and therefore for the good or ill of the family, the Church, society, the State, and the general welfare of mankind. They do not propose to themselves the impossible, they do not expect that man can accomplish what alone belongs to God; but when they accept the responsibility of the trust of the teacher it is well that they should know the full meaning of their responsibility. They do not reject the past, save only as it is outgrown by the present. They acknowledge, according to the statute we so frequently hear, that they do indeed stand *in loco parentis*. But when fully alive to their responsibilities, teachers are conscious that they also stand in the place of the State, and in the place of all the influences that pass through their hands upon the child in forming his habits of bodily or mental action, in giving skill to his hand or his perception, in increasing the retentive or recollective power of his memory, the scope and precision and justness of his reason, the flights and coloring of his imagination, the tendencies and affections of his sensibilities, the uprightness of his conscience, the force and endurance of his will. Thus, out of this larger and clearer idea of what education is, teachers find an overwhelming motive for their adequate preparation, and we reach one of the distinctive characteristics of education as a factor in modern civilization.

There is an increasing repugnance to the laying of unqualified hands upon the destiny of a human being. Teachers may be the servants of all in the Christian spirit, in the sense that they do good to all, but they should be the menials of none. Their work is not inferior to the highest required of human hands. There is no superior to Him who was called "the Teacher of men."

Here, too, we should not be led astray, as too many have been in the past, by the idea that the knowing faculty is the same as the teaching faculty. Even now how many teachers are selected for their positions mainly, if not wholly, because they are understood to know the subjects they are to teach! How many children have been sacrificed by this fallacy! It is not enough to set knowledge before the mind; there must be in the facts and methods adaptation to aptitudes; the attention, the interest, the choice, of the learner must be secured. Herein there is room for the profoundest science and the most marvelous art. In the discovery and growing realization of the necessity of the science and art of teaching, we find so many cautions thrown around the selection of teachers, and the devotion of money and time and effort to the informing and training and inspiring of teachers in normal institutes,

normal schools, and chairs of pedagogics, wherever education is making most marked progress. This tendency should go on until the teacher of every child has adequate opportunity and qualification.

Still another characteristic of education as a factor in modern civilization is seen when we consider the knowledge available for the right direction of the child. How much more definitely the child himself can be known in his points of strength or weakness! How vast the knowledge required to comprehend even the well approved devices and remedies available to aid the teacher to overcome the child's weaknesses or deficiencies! How are instruments of precision brought into use to aid all the observations of the parent, and teacher, and friend, in accurately measuring these defects of organs of the body or mind, the far or near sightedness or color-blindness of the eye, the power of the ear to discriminate the remoteness or nearness, or pitch, or volume, or other characteristics of sound, and the healthfulness of the respiration, or circulation, or temperature! How accurately may we know what should be the moisture, the temperature of the air, the quality of the food and clothing, the amount and direction of the sunlight, the size and distance of the type, the angle at which it should be read, the distance and size of illustrations on the wall, for healthful school conditions! How much health may be saved, nay, how often may pestilence be arrested, by a knowledge of contagious diseases and an administration of the means of prevention in connection with the school and family! Alas! this knowledge is now possessed by too few. Indeed, were it properly used by every parent, and teacher, and officer of education, we should be employing none too wisely the means placed in our hands to protect us against the new diseases, and the old diseases in new forms, advancing in terrible array against the bodies and minds of the peoples of modern civilization. Do we anywhere sufficiently count the Rachels mourning their first-born who might have been saved? And how many of those who survive, draw out a lingering death that might have been prevented by proper treatment in childhood! Very often we are told that the insanity of two-thirds of those confined in our asylums could have been prevented

Again, how much of the knowledge already well authenticated by experts, in regard to the prevention of pauperism or prevention of crime, has no weight with our teachers and administrators of education! How often the educator in the school or college stands aloof from these evils of society, and sees no connection between them and his responsibility! It is as if he cast out of thought as useless waste in social débris the boy or girl that was too defective physically or mentally, too deaf or blind or feeble-minded, too dull for his highest marks or his promotion, too wayward or too much weighed down by poverty, too ill fed or clothed to come within the enrollment of his instruction. Whereas, everything that concerns humanity concerns education, and should interest every educator.

The vastness of education as a factor in modern civilization is still further apprehended when we consider the progress of the arts and sciences, and the consequent advance of invention and discovery. What was the knowledge of the earth's surface, its land and water, its rivers and lakes and seas and oceans, its continents, mountains, and valleys, its forests, its climate, or the rocks under the earth, or of the stars and heavens above it, or of the races, peoples, nations, their locations, conditions, and occupations, to the Egyptian, the Hebrew, Greek, or Roman, compared with the knowledge of these things within the reach of the teacher of to-day? What is left to be distant or foreign? Science and art put their hands on the iron and the wood for the material of machinery, and furnish the car and the track or the vessel, and adjust the relation of coal and water, and we travel in comfort around the world before the season has changed. Geography may now be taught as a science, no longer a mere collection of names without meaning, but complete and comprehensive, showing with absorbing interest the relation of the earth's surface to man's conditions and occupations. The child, moreover, by no greater activities than those required in savagery, may by his own eye, with the aid of one character of lens, penetrate the secrets of the heavens, and by the aid of another class of lenses revel in the secrets of the microscopic world beyond man's unaided natural perception. He may put his ear to the telephone and hear the voice of the distant stranger, or touch the key of the telegraph and speak to the peoples of the world.

Can it be possible for the teacher to-day to teach by the methods that prevailed before gunpowder, or the mariner's compass, or printing, were known, by the methods that prevailed before Bacon philosophized, or Newton wrote his "*Principia*," or Rousseau his "*Émile*," or Comenius his "*Didactica Magna*"? before Pestalozzi brought teaching into harmony with the child, or Froebel established the kindergarten?

A still further marked characteristic of education as a factor of modern times is the tendency to regard every child as of value, and his education as of importance to himself and to the family, to the Church and to the State. We read of a period when the so-called "civilized" society cast out the idiotic, the deaf, the dumb, the blind, and left them to perish. But according to the doctrine of modern civilization, all these can be taught and should be. It is pronounced inhuman to neglect them. The idea of the value of every soul is so extended that no father, no potentate or human power, is permitted arbitrarily to destroy the child, however imperfect, or whatever may be his color or his race. The Christian doctrine of man's obligation to his fellow may not be admitted, but the brotherhood of mankind is enforced. Out of the more intelligent apprehension of the relation of man to man has come a clearer idea of the relation of nation to nation; and among those nations where education has done its work best, international law prevails over seas and continents with greater force than in earlier times over small areas of the same country between tribe and tribe. Formerly nations took

account of their population mainly to ascertain their strength in war, now to ascertain their progress in the arts of peace; and philanthropists are encouraged in the hope that by mutual agreement between the nations, great bodies of evil common in the past will be unknown in the future. War may not be at once annihilated, but over against its evils will be set limitations and humane reliefs. Education becomes the true initiative of internationalism. It so advances intelligence, increases the power of reason and conscience over the passions and appetites of man, that it makes it possible for a larger number of people to live together under the same laws.

In the midst of these great changes another marked characteristic of education as a factor of modern civilization is disclosed. I have elsewhere said that the teacher now stands, not alone in the place of the parent, but in the place of the State and of all other influences that affect the child; and here it is proper to say that education as a greater factor in this respect in modern civilization does not make the office of the family less, but more; it does not make the influence of the teacher less, but more, nor the influence of the Church less, but more; but it does organize the administration of education differently.

The ancient Greek philosophers were disposed to find a solution of the problem presented—the organization of education by the State—in separating the child from the parent or home; but this separation, in the growth of modern thought, has been found not only unnecessary, but undesirable, so that law not only has been made to enforce the rights and obligations of the parent and the rights and obligations of the child, and to cherish and protect the Church and its hallowed influences over human affairs, but where the wholesome influence of the parent is absent by reason of death or unnaturalness, the State enters and by its provisions endeavors to make good the home and parental influence for the child. To kill him is murder, to deprive him of food or clothing or education is a crime, while the effort is made to secure to the child his freedom in receiving and cherishing the influences of religion. Not only does the family fail in its duty, and thus the action of the State become necessary, but the Church, as the great teacher of religion, is not agreed with reference to the doctrines of piety and personal conduct. It is divided into factions and sects, and between them, if the direction of the child was left to the Church, it would utterly fail with reference to large multitudes, and thereby the great doctrine of modern times, of the value of each individual and of the consequences of the action of each individual in society, would be in abeyance with respect to those untutored by the Church or any of its branches, and so far not only would those individuals be exposed to all the evils incident to the neglect of childhood, but the whole welfare of society would be imperiled in all its interests. Modern civilization may be said to have asked itself, "How shall this situation be met?" and the answer appears to have come, if we read the times aright, "These evils must be prevented or overcome by that agency in which the whole body of a given number

of individuals, inhabiting a given territory, unite their action, namely, the State.”

In the future it may be a great surprise to the student of human history that this undertaking of the administration of the care of the child by the State has been so long delayed, and that so often it has not been attempted until the overthrow of the State has been threatened by the evils arising from neglected childhood. Possibly sometimes in undertaking the organization and administration of education, government action may not have sufficiently regarded what had been well done before; may not have sufficiently cherished, taken up, and nurtured what there was of the past; but it is not difficult to see that the advancement of the State in the assumption of this responsibility is in a certain sense preliminary and similar to its organization and assumption of authority outside of the family and the Church in the enforcement of justice between man and man. Accepting the theory that justice is of Divine origin, and that it must be enforced by the teacher of righteousness, and that he who propitiates Divine favor at the altar, by sacrifice, must be its chief source and administrator among men, we see, as we observe the line of historic development, how civil law grew up separate from canonical law, and how the State came to be designated as the agency for the enforcement of justice between man and man, while the doctrines of that justice were taken from the hand of the Almighty by the teacher of religion, and delivered to the people and enforced upon their consciences. And may it not now be clear to all men that this separation of the Church from the administration of civil affairs has relieved it from great exposure to corruption, and vastly increased its influence over the spiritual and moral condition of mankind? But the doctrine that I would here state, and can only take time to state, of the organization of education by civil authority, certainly would not derogate from the holy influences of religious instruction and training, but would assure their freedom, expect of them purer, larger, and more perfect results in the conduct of mankind. It would charter and protect religious seats of learning, while by its own action it would provide for the education of all sufficient for the perpetuity and right administration of the affairs of the State. This theory of education, towards which the times are apparently more and more rapidly tending, involves many details not yet accurately adjusted, and with reference to which there will remain many differences, but in my judgment we should with proper sentiments of reverence hold fast to all that is good in the past.

Wherever the large definition of education recognized in these remarks is accepted, while the necessity and advantage of order, classification, and system are kept in mind, their adaptation to the individual and to local sentiment and condition is enforced. All of the institutions of the past—the school, or the family, or the corporate body, the academy, the seminary, the college, the university, the faculties of law, of medicine, theology, of engineering, of political economy, of tech-

nology, are retained in all their varied aims and characteristics. In some portions of the world, where this doctrine of education by the State in its essentials is adopted, there still remains the question of the rate bill or the tuition bill. But in America the principle is well settled that the common school shall be *free*, while this common school is widely accredited among the best authorities and already made by the decisions of several of the State supreme courts to include both elementary and secondary instruction, or through what is known among us as the high-school course, or all that is preparatory to an American college; and in a majority of the States—some of the older and all of the newer—the State directly and formally undertakes to establish by its authority, and make substantially *free* as respects tuition, the course in the college or university, and also the course provided in institutions for instruction in agriculture and the mechanic arts.

As I am expressing here opinions for which no one can be held responsible but myself, I may be further indulged in the remark that too much of the force of educators is spent in differences over the lines of educational movement which are substantially settled, while there remain great masses of individuals borne down by the weight and burdens of illiteracy, exposing thereby not only themselves, but the family, the Church, and the State, and their industries and prosperity, and all those who uphold these great institutions as the foundations of human welfare, to the myriad perils that are hatched and nurtured in ignorance.

While so many in the world are without the benefit of the book, or the printed page, or the teacher, or the school in any form, without the blessings of enlightened law or intelligent industry, why would not each educator better build over against himself, enlarging and improving his own work rather than tearing down his neighbor's! No school, no textbook, no teacher, no system of education is too good to be improved. The steady extending of the field of accurate observation and record and statistics, and the varied interchange of personal observations, nay, every accurate inspection of the world's industries and of the conditions and appliances of education, furnish new, broader, and safer means of comparison and suggestion. The teacher, of all others, should not be the one with the beam in his own eye hunting for the mote in his neighbor's eye.

Nor should I dismiss this point of education by the State without frankly stating that in my judgment there comes naturally along with the administration of education by the State, the extent to which it shall be supported by taxation on the property of the people of the State and offered free to its recipients. For my own part, I do not see how this discretion can reside elsewhere than with the State. The State naturally, in guaranteeing education sufficient for its existence, as in the guarantee of justice, must make this guarantee adequate. It provides not only law for the protection of personal life and property, but the officers of the law to enforce justice; and in guaranteeing education we must remember that not only is it necessary for the State

that the citizen should have the proper intelligence to guide him aright and increase his ability in regarding the laws of property and life, but there must be the guarantee of sufficient intelligence in the community for the administration of the several civil offices; there must be the higher instruction necessary for the training of the judge, the councilor, the mayor, the governor, the congressman, the senator, the president. The State taxes all property and persons to pay the salaries of its officers, not for the personal benefit of those persons wholly, but for the good of the whole people and the benefit of all the property in the good order that is secured and the prosperity promoted. Thus in the organization and administration of education may not the State similarly tax the whole property of all the people for the guarantee of the intelligence necessary for the citizen and necessary for the civil officer or administrator, who may be any one that the majority of the people may choose?

And if it instructs those who seek a higher grade of information without cost to these individuals, it should be remembered that this gratuity is not bestowed upon them by the State specially or solely for their benefit, but for the benefit of all the people and all the property of the State. If any one objects that this view of education, which would authorize the State to erect the ladder of learning with the lowest round in the gutter and the highest at the end of the university course and make the whole free, would be so attractive as to leave no work for religious institutions and no work for those who instruct in them, my earnest urgency would be that the Church, with its consecrated life and its consecrated property, with its holy aims in all its branches, should found corresponding institutions, with equal or, if possible, greater merit in respect of methods and appliances, graded from the gutter to the highest step in the university course, and the whole made free by the benefactions of its wealthy members. This is done in a great measure already for the men who have in view the ministry; but if the ends of the Church are what they are claimed to be and what they are widely admitted among men to be, if its holy influences are needed in every department of life, why should not these provisions be made for all children, for all men and all women who desire them, whatever their pursuits or vocations are to be, and thus alike all the benefits of education by the State, and all the benefits of education by the Church, and all their united agencies, be secured and assured to modern civilization?

Another view in which the power of education as a factor in modern civilization is seen, and one specially connected with the organization and administration of it by the State, is the tendency to make education universal, to allow no child, male or female, of any race, to escape without fit opportunity for improvement. From whatever standpoint man is contemplated, whether from that of the Church, which should comprehend all that is good for him in time or eternity, or that of the State, which should comprehend all that there is good for him in time and should not disagree with the previous view essentially; or whether

from the stand-point of patriotism, which contemplates his greatest use and benefit as an element in the nation ; or whether from that material stand-point which considers only the capacity of the individual to diminish or increase the product of wealth ; or whether looked at by the ruler as a means to promote the aggrandizement of his own reign in peace or in war ; nay, in whatever view man is contemplated, it is seen that by his best education his greatest possibilities are secured. His weaknesses of body and mind may be overcome, his strength, physical and spiritual, may be increased, and he will become more effective for the purpose of his life, whether it be rude manual labor on the soil or the sea, or in the shop, or intellectual toil in the study or studio, the chair of the teacher or the editor, the forum or the pulpit, or the varied spheres of statesmanship.

Already, under the power of a comprehensive education, the death-rate here and there has been diminishing and the average expectation of life largely increased. One of the most effective agencies for this purpose is the enforcement of the obligation of education by the State. The State acts, not for the good of one, or a minority, or a majority, but for the good of all. It taxes the property of its citizens, it administers its functions for all. Just so far, therefore, as one, or two, or three, or thousands of its children escape or reach a maturity of powers without education, or circumscribed and bound down by the chains of ignorance, just so far the work of the State in this behalf is incomplete.

The parent, or the Church, or other voluntary agency may educate the child, but the State fails in the guarantee of the best conditions for itself, and therefore of its citizens, if it permits a single child to be neglected. The most indifferent child of either sex of any race may hold the seed of dire pestilence and communicate it, the cholera, the yellow fever, or other disease, and similarly and equally become the source of the dissemination of moral pestilence.

The contagion of moral pestilence has less regard for the demarcation of streets and possessions and walls, or families, or class, or name, or dress, or the assumption of rank, than the diseases to which the body is subject. There should be no room in any society for any child, of either sex or any race, to grow up neglected in body or mind or morals. This is clearly the acknowledged purpose of education by the State. It does not hinder the Church in any of its work, but helps it ; and I must add, with all due reverence, that if the Christian Church was wholly pervaded by the spirit of its great founder, it would feed all the lambs, it would teach every one, and suffer none to grow up in spiritual neglect. Indeed, where obligatory education is not enforced by the State, much of what is most beautiful in charity has been disclosed in the action of the so-called "organizations of charity," in finding and feeding and clothing and bringing within the school established by the State the child of poverty, neglected or abused by loss or neglect or other misconduct of the parent.



Another marked characteristic of education as a factor in modern civilization is seen in the larger place given women.

In parts of the world woman is rapidly advancing toward just consideration as a participant in education. Her capacity for culture is more fairly considered. The treatment she received as a menial, or as purely ornamental, has given place to a just consideration of her fitness to share with man in all the privileges and responsibilities of life. The laws accord her more rights of person and property, and the progress of society has accorded her a larger and better opportunity for self-support.

But in education especially has her sphere been acknowledged. Already in quarters she may have as good culture as man, and the same opportunities and responsibilities as teacher or administrator of education, and the same compensation for the same services. Her power in shaping the earliest years of childhood, always acknowledged, has never been so widely illustrated, so that some eminent educators have already pointed out systems in which the lower grades of instruction are in danger of losing some of their efficiency by the too thorough exclusion of the presence and activity of men. For experience has clearly shown that it is the just harmony and balance and co-operation of man and woman in the endeavors for the education of mankind that they are alike most effective. Mistakes may be made in this great forward movement, but large and complete ideas of education will soon apply the corrective.

But we see still another characteristic of education as a factor in modern civilization when we notice the extent to which it is now generally believed that education may come to aid the efficiency of all the vocations of life upon which man enters for his support and for his advancement. This inference might be supposed to follow naturally from our interpretation of the definition of education, and the general character of this discussion.

But beyond this natural inference we are made to feel in various ways how vigorously the several trades are demanding the modification of instruction and training in their behalf. As the progress of civilization is marked by those great steps by which man's individuality is unfolded and enlarged, and yet limited and protected by law, so the advancement of trades is indicated by the subdivision into specialties and the consequent increase of skill. This process of division has for a considerable period been distinct and marked with reference to the learned professions. History tells us of the period when the priesthood was the embodiment of learning, and at the same time comprehended the functions now administered by the priest or clergyman, the doctor, and the lawyer. For a long period the young gained a knowledge of the learned professions, as they acquired skill in handicraft, by the association and training of the Father and Master in a sort of apprenticeship. Later, when new economies prevailed, and the books and appliances and facilities for learning were duly supplied, the schools of theology and of law and of medicine were organized. The further progress of civilization

has been marked by a similar change with respect to the trades, or handicrafts. Theology, law, and medicine can no longer be said to comprise the learned professions. Teaching and engineering are no less possessed of culture, and are already demanding a recognition of their great subdivisions, and we have a variety of schools of science and technology, and, in connection with the trades, schools of agriculture, of navigation, of commerce, of iron-workers, of wood-workers, schools of pottery, of weaving, of watchmakers, of cookery, of sewing, of domestic economy. In all of these subdivisions of instruction and training there is for modern civilization a great safeguard in the doctrine of Socrates: "First, manhood, then a specialty; first, a man, and then a doctor or artist or artisan." The better the general culture, the safer any special training. True, we are beset with questions of time and means, and a thousand conditions. The spirit of the age is one of haste. Motives and standards are often perverted. There is a spirit abroad which would jump the child from the cradle apparently over the whole formative period of youth, into the responsibilities of manhood and womanhood.

Any such perversion of the order of nature is utterly destructive of all the advantages gained by education in modern civilization. If there is anything in the advantages of education to-day over those known in ancient Egypt, Assyria, Judea, Greece, or Rome, it is to be found in the greater fitness and completeness with which education to-day treats the whole child, and every part and faculty and function in its appropriate relation. If our present education perverts and misplaces God's order and method in the preparation of the human faculties for their holy functions in an ever-progressive higher life, at once better for the individual, better for society, then we lose what we claim to gain, and we have need to dismiss our boasting, revise our bearings, and come back for a new start to those first principles that have been tried and not found wanting. In the view here held it hardly need be said that the more important any faculty or function, the more highly and carefully it must be regarded, nourished, instructed, trained, in whatever period or form of education the child is occupied. Time forbids particularization, but it allows me to say that while the promoters of this education, as a factor in modern civilization, would neither neglect the body nor the intellect, nor any of their faculties, they would, with pre-eminent skill and assiduity, over all else seek to be all things to all children, that they might train the moral powers, the sensibilities, and will, to their highest and healthiest action in accordance with a pure conscience.

If these general views of education as a factor in modern civilization are correct, we see how far short the boasted civilization of our day comes of its opportunities. What race or people or nation or community has realized the possibilities herein foreshadowed? How should the promoters of culture in every sphere and under every condition be up and doing! There should be no dark continent or island or corner; there should be no hiding place for ignorance and its myriads of vassals where the light does not enter. Clearly, would you make the best of

an individual or a people or a race or a nation, you must go to education for the secrets of your success. Theories may be proclaimed in the valleys and from the mountain tops; the armies of the world may be marshaled upon its plains; the navies of the world may plough its seas; wealth may be accumulated until gold gilds the palaces of the rich; commerce may encircle the world, traversing the seas with its vessels, penetrating the mountains and spanning the rivers and valleys with its rails; emperors and kings and presidents and governors may proclaim their decrees and laws, and all, all will be in vain, if the schoolmaster, fully panoplied and fitly furnished for the right education of every child, is not abroad. But more than this, this discussion implies that if the teacher is fully qualified, knows thoroughly and practices skillfully the methods and principles of his duty, and trains to his best every child under his instruction, all the other influences in modern civilization, those great informing agencies, the press, the pulpit, the forum, and all the vocations learned or manual, will come to his aid more in accordance with the principles essential to the right preservation and care of childhood.

Education becomes a central controlling activity or agency, and lays all other human conditions under tribute to this great end for the elevation of mankind. We could, therefore, expect a change of attitude in all of the considerations which affect, and the questions which puzzle and embarrass, instruction,—the improvement of books, buildings, and other appliances of teaching, the supply of means, the preparation and qualification of teachers, the organization of systems and their adjustment to individual peculiarities, the conformation of the work of the home and the Church in their relation to the action of the State, the proper relation and sympathy and co-operation of each department of education with every other, the establishment and conduct in the most approved form of the specialties best adapted to do the most for those either physically or mentally or morally defective, so as not to increase but diminish defective tendencies, and to encourage and confirm the normal in the individual and in society.

But although these possibilities of education are clearly disclosed in what has already been accomplished, modern civilization has before it enormous struggles before they can be completely realized. How many cherish the idea that education is only necessary for them, or their class, or their church, or for those who can pay for it! How many that are called to high responsibilities by the public, tell us there is no improvement in education in the last century or the last fifty years, that the log school-house, that Murray's Grammar and Webster's Spelling-Book, and that the flogging and hazing and the A B C methods of other days are the best, that the three R's are enough for the mass of mankind, that the teacher is best who will work for the least, that teaching is the proper vocation of those that fail in everything else, in a word, that education is the least and last thing to be thought of for people generally! And looking beyond the pale of civilization, how

large a share of mankind are left in the total eclipse of ages and ages of untutored ignorance! Too often, far too often the work of the apostle of education is like the voice of one crying in the wilderness.

But modern civilization, holding before itself the inspiring possibilities of a future when every child shall be most wisely and adequately educated, will neither slumber nor sleep until the glory of that better day beams on every mountain and hilltop and in every valley, and the nations of the earth shall clap their hands for joy.

The PRESIDENT: Allow me now to introduce to you the Hon. John Hancock, ex-Superintendent of the National Board of Education of the State of Ohio, and Commissioner of that State to the Exposition.

Dr. HANCOCK then addressed the assembly as follows:

*Ladies and Gentlemen*—I had hoped until within a very short period of time that the distinguished educator who presides over the school work of Ohio, and who is President of the Superintendents' Association, would be here himself to undertake the very pleasant duty which has been imposed upon me, of responding in behalf of the organization to the welcome that has been extended to us here to-day. I shall not attempt to fill his place. If I were to speak in length proportionate to the importance of the duties that are to be discharged by the class of educators that I am in some sense representing to-day, I should make an address entirely too long.

The superintendents of our city and State systems of education have practical duties that lie before them that are of difficult performance. They are expected to select from theories of school organization and methods of instruction, differing widely, those that are best adapted to the schools they severally represent. It is their duty also to so combine all the elements of the several grades of teachers that they shall tend in one constant direction.

I need scarcely say that the superintendents who come down from the North to visit this sunny South (it has not been quite so sunny as we expected) have not come down in any spirit of carping criticism to spy out the nakedness of the land, but that they have come down here with their larger experience, with the most profound sympathy for the superintendents and other educators in the South, hoping that their experience may lend something to the building up of your great systems of public schools. We sympathize with the efforts you are making to have a system of schools that shall educate every child. I think we cannot express fully all the sympathy that we feel in the result. I am quite sure, too, that we shall join earnestly with you in any effort that you may make. This national bill to aid the South to educate every child in the land has had our warmest support from the beginning. It has not been our fault, I am quite sure, that it is not now a law. We shall join with you to keep up the fight until the bill shall become the law of the land. We shall also join with you in every effort that will tend to ring out the old ignorance and its attendant misery and crime, and ring in that new era of liberty in which virtue and intelligence shall

become the common property of every child and every man and woman in this our common country, and ring in that age of liberty and equality which shall give every child a fair chance in life. These things we hope to do.

The PRESIDENT: Ladies and gentlemen, we will now call upon an old acquaintance of ours, whom we have had the pleasure of hearing and seeing before, the Rev. Dr. A. D. Mayo.

Dr. MAYO said:

It is said, ladies and gentlemen, you know, that the postscript of a letter is often its most important part, especially when it is the last, for it then may contain the answers to important questions. I come to you as the postscript of a long, instructive, and important session of this Congress of Educators. When I saw my name at the foot of the illustrious company of gentlemen who are announced to speak on this occasion, I could not but ask myself why I should be there, for I noticed that every name on that bill of fare was the name of a man illustrious, not only in himself, but illustrious in some great position which he holds in the State or in the nation, all of them connected with the work of education. "Why, then," I said, "should the postscript come in? Why should a man be brought before you who never had a title, except the ordinary title of clergyman, who never taught a school since he was twenty-one years old, who never had anything of that kind to boast of, and who comes before you simply as a modest educational man-of-all-work, engaged in serving in what it is perhaps proper to call the ministry of education?" Then, moreover, it occurred to me that our friends who made out this programme may have had this in mind: "While it is eminently proper in a congress of educators that the educator should have the principal talk of the occasion, yet perhaps some slight consideration might be afforded to the 49,700,000 people whom the three or four hundred thousand educators of the country expect to take in hand."

I stand before you, then, as the modest representative of 49,700,000 people whom you three or four hundred thousand eminent educators are proposing to train into line and to prepare for the great work of building up this nation. In that illustrious brotherhood and sisterhood are represented ten millions, including children or youth who ought to be in school, but who, I am sorry to say, are not. In this body are also included twenty or thirty thousand fathers and mothers of those children, who, it may be supposed, would have some slight interest in what is given those children in the way of education. In this body also I number those admirable bachelor uncles, that noble host whose pockets are supposed to be always filled with goodies for the little ones, and also that glorious company of maiden aunts, without whose services we should be completely lost. Now, dear friends, it is this body that I come here to represent to-day, come without title, without any handle or abbreviation to my name, but simply trying to tell you in a moment, for I shall try to be short, what that body of people is thinking of, for you must understand that it takes two people to keep school.

It is very important to have the fine teacher, the great educator, with all the appliances, means, and methods; but, as an old adage says, "You can lead a horse to water, but no one can make him drink unless he is dry." Everything that all the congresses of educators on the earth can do cannot persuade the humblest negro child on a plantation in Louisiana to drink unless he is willing. This is what the people of the United States desire of you educators, what they have in view as the result of your teaching.

Within the past five years of my humble ministry of education I have traversed thirty-six States of our Union, and I can tell you that our people have made up their minds to two things very strongly. The first thing that the people of the United States have made up their minds to is that they are now going to live together and be one people. We tried to live apart for four years and we did not succeed. Now we are coming back together, and we intend to be the greatest, the grandest, the most successful nation, as the *London Times* says we are the wealthiest nation, on the face of the earth. This is the first thing. We most heartily and gratefully reciprocate the feeling that has taken form in the expression of the illustrious president of Tulane University, when he tells us that the people of this portion of the country are just as earnest and just as determined in this matter of love of country as we are. We believe what he says, and we do not care a fig whether he is sorry for anything that is past or not. What we ask is the present. We want to be one people to-day.

The next thing that the people of the United States have made up their mind to is that, being one people and this great nation, we must be a peculiar people, we must give a new presentation of the great idea of nationality to the world. I do not believe that we should try to copy Great Britain, or to create a British aristocracy, or do anything like that, for we could not if we tried a thousand years; or to maintain a military government like the Government of Germany. But we can do a new thing, and that is, have a nationality which shall express the feeling and convey the thought of the whole people, a nationality in which citizenship shall be the synonym for intelligence, for industry, for manhood. We propose that the people of the United States shall not only form one nation, but that every citizen of that nation shall be a true man or woman, and as a basis of this we must have intelligence, and therefore the people of the United States are saying to you gentlemen of the Congress of Educators: "We want you to hurry up your movements in this matter of education, and give to us that intelligence without which, as we have been told by all the fathers from Washington down, our republican institutions will be a failure. Of course we want first the common school everywhere, and then every other kind of school that the wit of man can devise. Now we look to you educators to help us in this matter." I come to bring to you this wail, this great wail of desire for the education of our people. It is a rising tide everywhere in the country. Especially in your Southern land we find new

evidences of it every day. I find that there has been an awakening there. I find a revival among the people, and that there is a desire for new schools and new methods, and I find this also, teachers, which may be of interest to you, that the people of the United States are fast making up their minds that school-keeping shall be carried on in the same way as every other good thing of this kind. The people of the country have given up riding in coaches, they ride in Pullman cars; they have given up carrying their money in saddle-bags, and they use drafts and checks; they have the telegraph and telephone, and they expect that school-keeping will take the same rank as skilled labor in everything else. The people are making up their minds to put a good teacher in the place of every poor one, though she may be the wife, daughter, or sister of the most illustrious man in the country. We must have the best that can be obtained. The people of this country have determined to place a good school in the place of every poor one. I rejoiced, in coming through Washington, that gradually some idea of the rights of the people in this respect is getting possession of that illustrious body, the House of Representatives. I find that men who two years ago would not listen to what I had to say in regard to national aid to education, are very glad to listen to me now. It is said that the Senate of the United States is the most remarkable legislative body in the world. After one of the most admirable, profound, and far-reaching discussions that has ever been held in the United States Senate, it passed the Blair Bill for national aid to education by an overwhelming majority. Not more than three or four Senators of any national reputation had the courage to stand up and oppose that bill. I wish that the House of Representatives was as open to receive the message of the people as the Senate, but unfortunately they have not been, and I fear that the present session of Congress will pass away before that bill goes through the House of Representatives. The House of Representatives perhaps more directly represents the popular notions and ideas than the Senate, but it seems to me it is of the greatest importance that these gentlemen should be informed what the 49,700,000 people of the United States are demanding; that the Government, which has for the last hundred years been looking after every other interest under heaven, should now take some cognizance of the people's need. I find in Congress two sets of men, politicians and statesmen. Now I take it that in the House of Representatives statesmanship has its place, but I am sorry to say that owing to the preponderance of the other element we will not get our bill through this year, but I can say to you, gentlemen, that I believe a majority of the House of Representatives is to-day ready to pass that bill. I believe that twenty men of that lower House are preventing its passage. I do not know who they are, but I tell you, my friends, that the politician or statesman of to-day who proposes in any way to turn his back upon the demands of this people of the United States for uni-

versal education commits a folly which he cannot afford, because he will be gathered to his fathers in the great cemetery of the departed politicians whom the people of the country have no further use for. I trust that the time is coming when we shall have done with them.

Let me say, in conclusion, that every other good thing depends upon education. But we must have a higher average, and it is education alone which can give to us this average, and so I welcome you again, gentlemen of the Congress of Educators, to-day.

You have come as representatives, not of the sundown of American interests, but you have come as representatives of the sunrise. The warrior has had his day, the priest has had his day, the politician has had his day, and finally in the fullness of time has come the Children's Day, and you are now standing at the rising of the sun on that children's day. I see the flush of that rising sun, I see the lighting up of the firmament above. May God speed the coming of that children's day.

Colonel JOHNSTON: I can now answer Dr. Mayo's question as to why he was selected. He was chosen as an apostle to the Gentiles.

The PRESIDENT: Allow me to introduce to you Prof. F. Louis Soldan, President of the National Educational Association, who will deliver the closing address of this evening.

Prof. SOLDAN said:

*Mr. President and Ladies and Gentlemen*—I was informed an hour or an hour and a half ago that I was expected to make a speech. I must say that the invitation, kindly as it was meant, was more abrupt than acceptable. I hesitated, because I thought not only of myself and of the pleasure I would take in speaking to my fellow-teachers and in speaking to this audience, but I also thought in a sympathetic way of the audience themselves.

Mr. President, allow me to say here, in order to secure the most favorable reception of my poor words, that I shall be very brief. Among the recollections of my earliest boyhood I remember a clock in our room which had for an ornament a head, modeled and shaped in a peculiar way. It had two faces—one beautiful, thoughtful, hopeful, looking forward and upward, and another a face representing advanced manhood or old age, looking backward and downward; and I learned later that it was an emblem found in that Roman temple which was always open during time of war but closed during the time of peace. If I were to find a face emblematic of our day and of the advantages of education, it would be the face of that youth looking forward and upward, and I would cast into the past that face of woe that looks backward and downward. We are come here to-day to discuss educational questions, and many of us have come with a double purpose in view—first, to listen and to learn from the lips of those older and wiser than we are about those problems in education which beset every teacher. We have also come to witness this great Exposition in which all nations have rivaled to show their best, in which the treasures of the world are exhibited to



the admiring gaze. In olden times they spoke of the treasures of the Indies. To-day one of the tasks each nation has is to develop its resources, to build roads and bring the treasures of one clime and one country to another, to open new avenues of trade, to send into the deepest mines and bring their treasures to light; but notwithstanding all these mines of untold wealth, there is one mine deeper than all, one mine containing more treasures than all, and that is the mind of the American people, and to get the treasures from that mine is the work of education.

Education will develop new resources, will develop a new future, will develop more wealth than any of those famous mines of the past. It develops not only the wealth that gifts the hand with skill, that training and education which makes material which is almost worthless into material which is worth more than its weight in gold, but also that instruction which surpasses the education and training of the hands. Education is a force which not only educates the child, the one who receives it, but which also educates the one who imparts the instruction, because it aims to break up that savage, uncivilized life of each man for himself. It means the giving up of self, it means the diversion of our efforts to the welfare of another. Education itself is an emblem of unselfishness, it is the emblem of brotherly love. I cannot point to a better emblem of this than the arms of your noble old State: "Kindness, self-sacrifice, and love for the young." As the old stories tell us that the pelican fed its young with the blood of its heart, so the nation to-day holds out a helping hand to the young. And so, all I can say is that I thank you for the words of welcome extended to us to-day.

### FIRST SESSION.

The First Session of the International Congress of Educators was held in Tulane Hall, Tuesday, February 24th, at 7.30 P.M., Col. William Preston Johnston occupying the chair as president, and William E. Sheldon, of Boston, acting as secretary.

The first thing in order was the reading by Col. GEORGE HICKS, Inspector of Schools of Jamaica, of a paper on "Educational Progress in Jamaica." (See p. 59.)

The CHAIRMAN: You will all agree with me that we are gratified and instructed by the account that Mr. Hicks has given us of the formation of clubs in Jamaica. The next paper will be on "The Ontario School System," prepared by the Hon. J. GEORGE HODGINS, M. A., LL. D., Vice-Minister of Education of Ontario, and to be read by Mr. Sheldon.

Here ensued the reading of Dr. Hodgins's paper. (See p. 77.)

The CHAIRMAN: The next subject for discussion is a paper by Brother JUSTIN, of the Christian Brothers, on "Respect for Authority Developed in the School-room." It will be read by Brother Noah.

Here followed the reading of Brother Justin's paper (see p. 447), at the conclusion of which the session adjourned.

## SECOND SESSION.

The Second Session of the Congress was held in Tulane Hall, Wednesday, February 25th, at 2 P.M.

The Chairman, Dr. JOHN HANCOCK, said:

I have been designated to preside over the Elementary Section, and it has been suggested that I should make a few remarks, either from a paper or from notes. I took it literally when it was said a *few* remarks, and I am now going to make a *few* remarks. What I shall say may not be an example of concentration, but it will be an example of brevity.

In proposing the establishment of a new association the essential question is, What right has it to exist? If it is to serve no purposes beyond those met by associations already in being, then there is no reason for the proposed organization.

Is there, then, any ground not now occupied, requiring an additional association for its cultivation? Strictly speaking, perhaps not. But old organizations are constantly in danger of falling into lifeless formalisms. Besides, most thoughtful educators will agree that enough surface ploughing has already been done in their field of labor. The same questions are discussed in our meetings that were discussed by Horace Mann and Samuel Lewis nearly fifty years ago, and discussed in pretty nearly the same language, except that earnestness and enthusiasm were on the side of those eminent educators by a large balance. As new generations of teachers come up to be instructed, doubtless the discussion of the old themes, and the enunciation of the old truisms, will be helpful to them as they have been to us.

But shall this end all? Are there no new and more thorough investigations to be entered upon? No deeper or broader views to be obtained? It has been believed that an affirmative answer could be made to these questions, and for this reason: Some five years ago was formed that inner circle of the National Educational Association, now well and favorably known as the National Council of Education. The purpose of this body of selected educators is to leave to the parent association the popular treatment of educational questions, whilst it reserves to itself the discussion of questions which lie deeper, and in such detail as would be impracticable in the larger body. That there was room for such an organization has been amply proved by its popularity among our leading men, and by the value of the work it has done.

If I am correct in my views, the International Congress of Educators will be but an extension of the work of the National Council. If we shall not be disappointed in our hopes of the establishment of the new association, and shall succeed in drawing into it any considerable number of foreign educators, we shall unquestionably have as a result discussions and investigations of still greater worth than those of the National Council. Broad as our country is, our fellow educators may be

pardoned if, after a few years of the enjoyment of the society of their own intimates, they should long a little to know what educators outside the limits of their own boundaries are thinking and doing, and this through personal contact in the freedom of informal question and answer, rather than from the unsympathizing printed page.

What, then, shall be the special line of work for this international congress, if established? The best organization of a public-school system, the best methods of teaching the several branches and of arousing the mental and moral forces of the child, have been constant topics for discussion in the old organizations, and progress may be reported in them all; but, strange as it may seem, no serious effort has been made until quite recently to know the child for whose benefit all these things are intended. By this I do not mean that efforts have not been made in a desultory way to find out something about this heir of all the ages, but no minute study, conducted on scientific principles, has been made of him. Too much credit cannot be given to the few workers who have entered upon this study. But it is not a work to be done by a few. It is so extensive that it must be parceled out to obtain valuable ends. In all psychological experiments the results are so affected by the personal equation of the experimenter that a given line of experiments ought to be carried through by one individual, for if several are employed, their lines of personal equation will so cross each other as to render any conclusions reached uncertain and confusing.

It is evident that until this child nature is understood, our methods of school organization and teaching, and of proper stimulation, must rest upon an unstable foundation. Even the few experiments already made go far to overturn some principles in education long considered axiomatic; and we know not what may follow as the work of experimenting goes on.

This process of child study is especially the work of the Elementary Section of the International Congress of Educators. It is a trite thing to say, but it is to be held in constant memory, that upon the teaching of the little child rests all the higher education; and upon the successful solution of the problem committed to us depends the success of those working in higher fields—higher in the branches taught, but not in importance.

In what has been said have been held in mind the work of our own section mainly, and the point at which the rebuilding of our educational theories must begin. It may be that the investigation I have designated as necessarily the chief should not be the only one pursued by this body; for, if we could come to know the child completely, there would yet arise many grave questions as to the methods by which this child may be made to grow into the highest manhood, questions which will perplex many generations, and must depend themselves for their correct solution very largely upon experiment.

We may calculate, therefore, with a perfect assurance that we shall not, under the most fortunate circumstances, run short of work during our generation, for we shall in no way arrive at a true philosophy of education except by the long and dispassionate efforts of a union of earnest minds working to a common end.

Prof. J. L. HUGHES, of Ontario: After hearing these remarks, is it proposed that we move that an international educational society be formed here?

The CHAIRMAN: I do not know what Dr. Newell designs in regard to that matter, whether he designs to have the question acted upon or not.

Dr. NEWELL: This is merely a section, and that matter should be acted upon in a session of the International Congress.

Mr. ADAMS moved that the subject be laid upon the table, to be taken up at the pleasure of the meeting to-morrow; which motion was agreed to.

The CHAIRMAN: The session of the Elementary Section is now open, and I have the honor to introduce to you the President of the Kindergarten Union, Prof. W. N. Hailmann, who will now address you.

Professor HAILMANN then delivered an address on "The Application of Kindergarten Principles in Primary Education." (See p. 92.)

Mrs. ANNA B. OGDEN then addressed the Section on "The Application of Kindergarten Principles to the Child's Earliest Development." (See p. 94.)

The CHAIRMAN: I now have the great pleasure of introducing to the audience Prof. J. L. Hughes, Superintendent of Schools of Toronto. I do this with great personal gratification, because a good many years ago I had the pleasure of visiting his school at Toronto.

Mr. HUGHES: I deem it an especial pleasure to stand upon this platform as one of the male kindergartners who have been alluded to. I am glad to be here. My mission here is merely to report—not to explain, not to describe—but to state the facts we have accomplished. We have in Toronto, to a certain extent, solved the problem between the kindergarten and the public-school system. Three years ago we had one of the most liberal school boards in the world, an ideal school board, not one member of which professed to know what he did not know, men of business, who thought that the superintendent ought to understand his business better than they did. Well, they accepted my suggestion to introduce the kindergarten into our system when I thought we were ready for it. They looked at the thing in a business-like way. I had already written to New York to obtain the best idea of a good kindergarten. A lady was selected who had been through the Albany Normal School, who had had some years experience in primary work and had spent two years teaching. When we decided to introduce the kindergarten into our schools, we decided to introduce it permanently, and not as an experiment merely. So we took this teacher, paid her \$600 a year, and sent her to Saint Louis. She came back fully prepared to fulfill her work. She is doing it now, and doing it admirably. We have now

two distinct kindergartens in our city instructed by her, in which she spends alternate weeks, and we would have more if we had teachers prepared to conduct them. We have twelve ladies engaged in the study of the principles of the kindergarten, and they practice under the guidance of our superintendent. In addition, we have some who are in training to be teachers and mothers as they should. Our work is a success so far as it has gone. Two years is altogether too short a time to settle it as a success.

In addition to the public-school work of the city, our kindergarten superintendent has devoted some attention to the normal schools. She has been employed by the Government of the Provinces to give lectures to the students at the normal schools. We expect a great deal from this. During the present session of the Legislature in our Province money has been voted by the representatives of the people to place the kindergarten in the Toronto Normal School. I am also glad to announce that we have taken another departure by establishing free kindergartens. Outside of Toronto, the only town or city in Ontario in which the kindergarten has been placed is the town of Portland. It has been conducted there for three years, and gives complete satisfaction to the trustees and to the parents of the children. We have in Toronto two ladies who are studying with a view of introducing the kindergarten in other schools. They are sent to our city by the Boards of their towns. We expect that the kindergarten will be introduced into all the other cities and towns of the Province as rapidly as we can procure trained teachers. We believe in it. We believe in the organic union of the public school and the kindergarten, and we believe in accomplishing that union by the modification of the public school instead of by the modification of the kindergarten itself.

The CHAIRMAN: I am quite sure that we all regret that Professor Hughes did not bring his Board down in a body, so that the educators of the United States might have a look at them. I understand that arrangements have been made to carry forward this discussion into the meeting to-morrow. Unless there is some special work to be done, this will be the only meeting of the Elementary Section of the Congress. We shall meet hereafter as one body, there not being enough to justify our meeting as a Section.

Mr. W. E. SHELDON: I want to say a word. As a representative of the Elementary Section, I was much pleased with the remarks of the gentleman from Ontario when he said that the organic union of the kindergarten and the public school was to be secured by the modification of the public school to the demands of the kindergarten. I want to say that, having for the last ten or fifteen years listened to the words of wisdom that came from the lips of kindergartners, they now have modified some of their principles, so that the organic cementation of the two schools can be attained with the heartiest good-will of us all.

Mr. W. N. HAILMANN: I do not agree fully with the proposition of making an organic union between the kindergarten and the public school. I do not think such a thing possible. In the first place it seems to me that the public school is complete in itself, thoroughly mechanical to a large extent, while on the other hand the kindergarten is not completed. The kindergarten, as it is, is not so complete in all directions as to fully know the needs or wants of a little child. It seems to me that what we want is not the imperfect union of the two on the basis of the kindergarten, but the infusion of the public school with the same spirit of inquiry for the best ways to do the work in accordance with the child's needs, that, I suppose, prevails in the kindergarten to a large extent.

At the conclusion of Mr. Hailmann's remarks the chairman read a letter from Miss Susan E. Blow, of Saint Louis, Mo., acknowledging the receipt of an invitation and expressing regret that she was unable to be present.

Mr. JOHN HITZ, of Geneva, Switzerland, said: In Geneva, with a population of about sixty thousand, it is surprising how many children attend the kindergarten. There are about four thousand. The superintendent has nothing else to do but to supervise the kindergarten (they call them infant schools there); and furthermore, these schools are so esteemed that in some of the little suburbs of Geneva you will find the church and the kindergarten in one and the same building, and there, I think, is where they should be.

Mr. L. W. MASON, of Japan, said: It is my good fortune, in connection with my duties in teaching music in Japan, to teach in the kindergarten. After serving for three years in Japan, I went through Europe pretty thoroughly, and I have seen the improved kindergartens of this country; but we have the best Froebel kindergarten that I have ever seen, in Tokio, Japan. I will give you the history of it. A native of Japan married a German lady. She was highly accomplished in many things, and, among others, she knew the kindergarten. She also knew the English language, and as the Japanese were determined to have the best things that they read or heard of, after she had established the Tokio school for young ladies it was proposed that this lady should open in connection with the school a kindergarten. She consented to do so, and planned out a building with large grounds; and you will find there to-day a kindergarten of one hundred and fifty children, the best style of buildings made on purpose for it, with teachers trained by this lady; and now the graduates of the Normal School become students in the kindergarten for the purpose of learning the art of teaching its methods. In that institution there is a building about 50 feet long and 30 feet wide, for children's plays. You will find rooms for the different ages of childhood, from the little children with nurses to the older ones. You will find there about sixty nurses who come with the children, and a building outside of the main building is set aside for the accommodation of these nurses.

You will find in the yard, which surrounds the building and covers about two acres, a fish pond about as large as this platform, where the children amuse themselves by feeding the fish.

They have all the improvements and all the means for amusing children that are found in Germany, in England, or in America, so far as I know; and they know how to use them. For myself, my best success was in this school. The younger the children, the more easily they were taught. I hope when you visit the Exposition you will not fail to see the work of the children of the Tokio kindergarten.

The CHAIRMAN: I will say that our friend, Professor Mason, who has just spoken, has faith in children. I can remember when he first began teaching children to sing. Other teachers thought they could not be taught, and the way he met this argument was to go to work and teach them. He proved that they could sing, and on the genuine kindergarten principles, too.

There being no further papers on the programme, the meeting at 4.45 P. M. adjourned.

### THIRD SESSION.

The Third Session of the Congress was held in Tulane Hall, Wednesday, February 25th, at 7.30 P.M.

The Chairman, Col. WILLIAM O. ROGERS, announced, as the first proceeding in order, a paper by Hon. J. W. DICKINSON on "The Massachusetts Public School System." (See p. 103.)

Mr. Dickinson was followed by Mr. ICHIZO HATTORI, Japanese Commissioner at the Exposition, who delivered an address, in which he gave the outlines of the public school system of Japan. (See p. 109.)

Mr. Hattori was followed by Dr. A. D. MAYO, who presented a paper on "A Southern Graded School." (See p. 177.)

At the conclusion of Dr. Mayo's remarks, it being 9 P.M., the session adjourned.

### FOURTH SESSION.

The Fourth Session of the Congress was held in Tulane Hall, Wednesday, February 25th, at 2 P.M.

The first paper read was by Mr. R. L. PACKARD, of the Bureau of Education, Washington, D. C., on "School-room Air, with Directions for Examining It." (See p. 349.)

At the conclusion of Mr. Packard's paper, Mr. W. E. SHELDON presented the following petition:

One of the greatest needs in our grammar and high schools is a higher order of scholarship in the teachers in these institutions. While but relatively a short time since women were employed chiefly in primary grades, and but rarely in higher work, the tendency of the present time is toward giving the *instruction* part of grammar and high school work also in the hands of women. Owing to their natural tact, and to the degree by which this is augmented by normal school training, the skill of women

teachers is very considerable; it is not, however, to be denied that their skill in imparting knowledge is often much greater than the knowledge which they have to impart. It is, therefore, a matter of public moment that all means for enlarging their knowledge should be made accessible to women. The best women's colleges, Vassar, Wellesley, and Smith, do not afford equal facilities to the best colleges for men, such as Yale and Harvard. The experience of Cornell and Michigan Universities is sufficient to dispel the doubts of most of our people concerning the propriety of bringing undergraduates of both sexes together in class and lecture rooms; but if some doubt remain upon this point, the grounds of it cannot be urged in respect to post-graduate study, where the greater maturity and experience of those pursuing it would seem to insure safety. The only institution in this country offering special advantages for post-graduate study is Johns Hopkins University, and it would seem that the admission of women to the opportunities offered by it would in no degree impair its dignity, and would increase its usefulness. The Western Association of Collegiate Alumnae has lately petitioned this university to admit women to its courses of study, to its lectures, and its examinations. A very large number of the officers and most active members of this association are teachers; and inasmuch as the granting of their petition would tend directly toward the elevation of the standard of scholarship among the women teachers in our schools, it seems not improper that this national association of teachers should indorse the petition of the Western Association of Collegiate Alumnae, and formally express its conviction that, by admitting women to its superior privileges, Johns Hopkins University would advance the interests of education in this country, and would in no way deteriorate its own fame or degrade its high standards.

Be it therefore

*Resolved*, That the National Educational Association petition Johns Hopkins University to open its doors to women, giving to them all of its privileges, opportunities, incentives, and honors, on the same conditions that these now are, or may be, given to men.

That is the petition. I am sure that this Congress of Educators will recognize it as one of the important steps in the advance toward securing for women, who are largely, so far as an experience of thirty years of observation and practical work in the school-room leads me to judge, generally qualified to do the noble work of education. I take pleasure in offering this petition and submitting it to the gentlemen present. If it is not deemed wise to act upon it now, I give notice that at Saratoga next summer it will be presented to the consideration of the entire body of the National Educational Association. I have the testimony of the lady who presides with a dignity and ability equal to that of any college president in this country, Miss Freeman, of Wellesley College, that as she was educated in the University of Michigan, she derived her power and strength from the association there in education with the young men. Her great success is largely due to the advantages thus obtained. The author of this petition is Miss May Wright Sewell.

On motion a committee of three, consisting of W. E. Sheldon, Esq., Miss May Wright Sewell, and Dr. W. T. Harris, was appointed to take charge of the resolution.

The CHAIRMAN: I now have the pleasure of introducing Prof. EDWARD A. SPRING, of New Jersey, Director of the Chautauqua School of Sculpture and Modeling.



Mr. SPRING then addressed the Congress as follows:

*Ladies and Gentlemen*—As there are so few of us let us adjourn to the corner temporarily, and I will have a better light to show a little clay modeling in a practical way.

It is very pleasant to come to New Orleans and see so much of its quaint and curious things. Our eyes take in at once what is peculiar, what is strange. If we should go on a journey to Turkey or Japan, we should see still more what was strange and peculiar, and the stranger in that far-off country is struck by the likeness of the people to each other. It is hard for him to tell them apart. For instance, in Japan it is hard for him to see the difference, but the Japanese see the difference. The stranger mistakes the brothers and sisters of families. The parents see no similarity between them. How can a stranger be so stupid as to mistake two boys who are so entirely different? We are all strangers. We are come here from some unknown country, and when we have arrived in this life we see things typically, we see the generic rather than the individual, so that when the child is brought under educational influences he has a special fitness to study what is generic, and if you put him in conditions in which he can study the generic or typical in a clear, wise way, you will gain for him what he will soon lose, the power of doing so for himself. It would be just as stupid for a doctor to tell a child that an animal did not move so and so, that such and such things were not alike, as for the parent to say to the stranger, "How stupid you are to think that my two sons are alike! They are different."

The child sees first that the world around him has outside objects. One of the most pleasant things for a child, one of the things which it will first do if you give it plastic clay, is to pick a piece off, and after finding that it can pick it to pieces, it begins to make balls, and the balls will run. It seems to have produced life, and nothing is pleasanter for a little company of children than to give them clay and a plate and let them make little balls and run them about. They will be fascinated with it, and from that simple exercise, which may be continued for months in a family or kindergarten, there can be developed a great deal of natural history or scientific work, and it could be carried by this simple material through all education. In the technical school for young men, in the professional school where the sciences and arts are studied, the clay comes in everywhere, at every turn, as a valuable help. Froebel saw this and appreciated the fact that a plastic material in the hands of a child was a valuable addition, and it is always in the true kindergarten one of the exercises which is most delightful to the child and useful to the teacher.

Clay can be used to illustrate anything, almost. It can be used to show plasticity; it can be used to show many of the operations that are going on at the surface of the earth. Take a lot of glasses and put a little dry clay into one and a little more into another, measuring off and filling them with water; stir them and let them settle, and you will see

the different grades of deposition. Mix a little sand, marble dust, &c., and you can go through a long series of experiments. There are hundreds of schools now where my pupils are using clay with the greatest success in keeping the child happy and quiet at times when, perhaps, the teacher is occupied with another class. A room at one side with clay, and a little instruction as to how to use it, will be a great source of help to teachers. There was one teacher who told me last summer, when I asked her for a report, that the principal had formerly complained that the primary children when at their recess in the yard disturbed the other classes; and now, instead of having them go out, she had a little room with clay, and they go in there and amuse themselves with the clay, and some of them have done remarkable work. She was astonished at it. The principal has no longer any cause of complaint, for they are as quiet as mice.

Here are four lumps of clay of equal size. I draw them out into an elongated form. Now I will do what any child without any practice in modeling at all might do. There is a bird. Suppose I want to make a long-legged bird. There, that looks like some kind of a bird. In order to make that a bird with long legs, I find by experiment (and the experiment is one that can be perfectly well shown by taking time and going through a series of experiments), I find that that looks better. You experiment a little, and you find that while a head goes on that bird, you cannot have that sized head. I take a smaller head, to see if it does not look better with a long neck. That is much better. Now I will make a bird that has a shorter neck, smaller head, and shorter legs—something between that head and this. Now I see that there is a law that the shorter the neck of the bird, the larger the head can be. Now I will change this again. Thus the child finds out by its own experiment. I find out the natural law in each case.

I take the same piece of clay now and try a human form. Keeping the same mass for the head in each case and the same mass for the body, I find by careful experiment and time spent upon it that the larger the head, the younger the person, and the smaller the head, the older the person. I will go farther. I take my same quantity of clay for the body, but make the head larger still, and you see I intentionally only make the clay as any child might make it, but I get at once a suggestion which, although my hearers may not see it, the child will see at once, that it is not a grown person but a baby. There is where it becomes very difficult to convey to adults ideas on such a subject, because it is already too late for you. You see only the conditions, you do not see the characteristics. Now, the characteristic of the human being is that we are upright, or ought to be; the characteristic of the quadruped is the opposite, and the child lays the thing down and calls it a dog or cat or mouse; he stands it up and calls it a man. Take, for instance, the type *Cetacea*. The axis of the mass of the brain and the direction of the spinal column are coincident. Raise this a little and

you tend to a higher type of life, the manatee or something of that sort. Raise it a little more and you get to the seal or walrus type. The seal and walrus have anterior limbs at the outset, the seal having a clumsy hind leg which is easily mistaken for a tail. The walrus walks much more than the seal. He has a more distinctive neck. From the walrus you can rise through the scale just as you like.

You can go up a ladder of short or long steps from one end to the other; but take the extremes, from the lowest cetaceans to human beings, and you can go up through a series of as many steps as you please. When you get up among the higher quadrupeds, the monkey for instance, they are by no means a human type. The mistake is that any piece of clay which has three holes will have some expression. You can see that these three holes have an expression. Make the holes anywhere and they will still have some expression. Turn it around so that one or the other of the holes becomes the mouth and the two others the eyes. In any way there is an expression. This is why the monkey and a great many animals have an expression, but it is entirely different from the expression of a human being. Every monkey is alike—that is, its expression is the same—because it has the right number of eyes, a nose, and a mouth, but the face is elongated, as all animal faces are. The brain is very small. Now, to model the face of a human being I just reverse the operation, and take the lump that makes the face of the animal and make the brain of the man, and I take that calculated to make the brain of the animal and make the face of the man.

I merely give a few of these instances to impress upon you the idea that with this clay the child can see the generic or typical in nature, and can emphasize and become familiar with things which the adult finds it difficult, if not altogether too late, to go about. In questions of action or motion the child is very quick, and just as the child's tongue is easily turned to a new language and the ear understands readily a new kind of speech, so the comprehension of the child of these typical facts in nature makes him the best of elementary sculptors.

As to the use of clay, there is something curious in the way little children take hold of this clay work. The only fault I have to find with kindergartners is that they so universally report the clay as being the most fascinating exercise; for I think that in the true kindergarten there should not be any exercise that overrides another in importance. Froebel, in choosing clay as an exercise, was wise enough to see that there were others that would educate in other ways. The important thing is to bring out the whole being, and this clay work is an important means of bringing out certain facts. Now you see that I have used there the clay that I had for the brain of the animal to make the face of the man. I take it again, and you see that there is the face and there is the brain. I return it again. I will make a still more elongated face of an animal. This is the expression of the horse's head; all I have to do is to add

the ears in order to say that it is a horse's head, the "horse" that draws the horse-car in New Orleans.

These are simply rough illustrations, of course. Does this suggest any question to you?

Upon being asked why clay particularly should be used, Mr. Spring said:

I do not know that it is necessary to use clay. I could make a horse's head so that its proportion and expression would be shown by the use of paper. There was a professor at the medical college in Geneva who used to show almost all the portions of the human anatomy with paper and a sponge. He would twist and turn the sponge, and make it express almost anything in his hands.

Mr. WARREN EASTON: Is that natural clay or composition?

Mr. SPRING: This is natural clay. It comes from New Jersey, and there are perhaps no other beds like it to be found; but for school modeling any clay may be used, and by sending the children off in the country to look for clay, you will have several kinds, generally, to choose from.

Mr. EASTON: Is blue clay good?

Mr. SPRING: Almost any clay is suitable, after washing. Stir it up and then let the clay water settle and run off.

Rev. A. D. MAYO: Is there any treatise which gives directions for working this sort of clay?

Mr. SPRING: No; I am sorry to say that it is not written yet. The difficulty of teaching anything of manual work is so great, the absurdity of the first attempt is so prominent, the failures so formidable, that I have been deterred until I could find a satisfactory opportunity. It is difficult to write anything which will tell people how to do practical work with their hands.

Dr. MAYO: Would you advise teachers who have had instruction to teach it?

Mr. SPRING: Yes; I would send out and get some clay and give the children instruction; or you might use wet paper. I do not advise taking pains to get the best clay.

Dr. MAYO: Would you allow the children to make anything indiscriminately, or would you have them adopt some system about it?

Mr. SPRING: There is the difficulty. I like system and order much, but there is a general tendency among people interested in the idea to find out what the child can do.

Mr. WARREN EASTON: What would be the range of designs you would encourage teachers and children to attempt?

Mr. SPRING: That is a good question. A while ago I was at a meeting of teachers in New York. I talked a little about the importance of using natural forms instead of copying manufactured designs. As I stand here holding the corner of this chair, I can feel that it is a good design. I take hold of the chair, and when I feel it the impression is

on my mind. These impressions are very subtle. In modeling in a lecture on the growth of age, I began with a young baby head and then went up to an old man's head.

Dr. MAYO: Where would you have modeling begin in our schools—in what grade?

Mr. SPRING: It is more easily taught among young children, in my opinion, if they have had no preliminary training.

Dr. MITCHELL: Have you not in Chautauqua some system by which teachers desiring to inform themselves could be helped?

Mr. SPRING: Yes, but this is a thing which requires practice rather than talk, and practice in three lessons, I find, is enough to start teachers in introducing clay into their schools. I open my memorandum book to a list given to a kindergarten when I urged them to take natural forms. They said, "We have no models; it is so hard to get proper things to work from; we are unprovided, we are poor, and we cannot afford to buy them." It did seem rather hard. On my way home I stopped before the nearest grocery store, and I noticed a good collection of green things. I saw Irish potatoes, sweet potatoes, beans, peas, beets, squashes, cabbages, celery, &c.; there were eighteen kinds of vegetables and many kinds of fruit—apples, raisins, lemons, pears, citron, &c., making a list of forty or fifty different forms, any one of which could be taken for three or four lessons, and all would have occupied a year of work and careful study. One of my pupils spent several hours in copying a potato, and people mistook it for a real potato. It was a conscientious work of several hours, and she said, "I did not know there was so much to learn about a potato." She found that the eyes had a certain order, and her work on that potato consisted in studying a single thing, until it was more or less exhausted.

Dr. MAYO: May I ask if you advise any apparatus for use in the school-room?

Mr. SPRING: One of the best things is a school slate, and the next best thing is a small piece of pine board. If I should put this clay on this polished marble, it would stick. On the board I can work it into any shape or design. The clay can be kept in an earthen jar, which is better than a wooden vessel to keep it in. The clay can be kept for many years, and the addition of a little water is all that is necessary to enable it to be worked.

Mr. EASTON: While using animal and vegetable objects, is there any objection to the geometrical solids?

Mr. SPRING: That is a large part of the instruction. By a wire or knife I can cut this piece of clay in any way. It does not make any difference whether a knife or wire is used; in certain forms you can do a great deal with a good, fine wire. I put a piece of clay in the shape of a cube on this board. It does not stick. If I want to cut it I can use the diagonal of the cube; I cut it by a wire and get a perfectly even cut. I can make all kinds of geometrical figures in this way. Ladies

and gentlemen, I thank you for the kind attention which you have given me.

At the conclusion of Mr. Spring's remarks, it then being 4.20 P.M., the Congress adjourned.

### FIFTH SESSION.

The Fifth Session of the Congress was held in Tulane Hall, Thursday, February 26th, at 7.30 P.M., Hon. ASBURY COWARD, of South Carolina, in the chair.

The first paper, by Brother AZARIAS, of Rock Hill College, Ellicott City, Md., was entitled "Literary and Scientific Habits of Thought." (See p. 456.)

Dr. M. A. NEWELL, in announcing the programme for the ensuing day, said:

There are a number of papers still to be read. I think the President agrees with me that in the long years of attendance upon such meetings as these we have never heard papers which, for variety, for clearness and profundity, have been superior to those presented here. I believe the papers to be presented to-morrow will be quite equal to those of the preceding days of the meeting. We propose to have, as usual, three sessions; in the morning at half-past nine, in the afternoon at two, and in the evening at half past seven. To-morrow we shall have papers by Professor Hogg of Texas on "The Railroad in Education," Mons. B. Buisson, the French representative, on "Recent Reforms in Education in France," Miss Alice C. Fletcher upon the "Education and Civilization of the Indians," Dr. Bicknell on the "History of Educational Journalism," Dr. Barbour on "Competitive Studies and Resultant Prizes," Prof. L. W. Mason on "Music in Schools," Prof. W. T. Thom of Virginia on "Race in Education," R. C. Burleson on "Character Building," and perhaps Professor Bartholomew and Prof. F. L. Soldan of St. Louis.

The CHAIRMAN: The next subject is a paper by Dr. W. T. HARRIS, on "The Modern Growth of Cities and the Education Demanded by It."

Here ensued the reading of Dr. Harris's paper. (See p. 474.)

The CHAIRMAN: The next thing on the programme as announced is a paper by Dr. T. W. BICKNELL of Boston, entitled "Some Practical Suggestions Relating to National Aid to Education." (See p. 482.)

After the reading of Dr. Bicknell's paper, it then being 9.45 P.M., the meeting adjourned.

### SIXTH SESSION.

The Sixth Session of the Congress was held in Tulane Hall, Friday, February 27th, at 9.30 A.M., Hon. G. J. ORR, State Superintendent of Public Instruction of Georgia, in the chair.

The first proceeding in order was the reading of a paper entitled "The Railroad as an Element in Education," by Prof. ALEXANDER HOGG, of Texas. (See p. 493.)

Professor Hogg was followed by Mons. B. BUISSON, Representative of the French Ministry of Education at the Exposition, who presented a paper on "The Recent Reforms in Public Instruction, and especially in Primary Instruction, in France." (See p. 111.)

Before entering on the subject of his paper, M. Buisson, as delegate of the French Government and representative of several public and private educational institutions which took part in the Exposition, assured the members of the International Congress that he was the bearer of a warm and hearty message of sympathy to them, and was commissioned to salute in a spirit of true brotherhood the teachers of America in the name of the teachers of France.

After the reading of M. Buisson's paper the session adjourned.

### SEVENTH SESSION.

The Seventh Session of the Congress was held in Tulane Hall, Friday, February 27th, at 2 P.M., Dr. M. A. NEWELL in the chair.

The first thing in order on the programme was the presentation of a paper by Miss ALICE C. FLETCHER, entitled "An Historical Sketch of Indian Civilization and Education." (See p. 508.)

The Chairman announced as next in order on the programme a paper by Dr. T. W. BICKNELL, entitled "History of Educational Journalism in New England." (See p. 517.)

Upon the completion of the reading of Dr. Bicknell's paper, it then being 4.15 P.M., the session adjourned.

### EIGHTH SESSION.

The Eighth Session of the Congress was held in Tulane Hall, Friday, February 27th, at 8.30 P.M., Dr. M. A. NEWELL in the chair.

The first paper announced was read by Dr. L. G. BARBOUR of Virginia, on "Competitive Studies and Resultant Prizes." (See p. 532.)

After the reading of Dr. Barbour's paper, the Chairman announced a paper on "Race in Education," by Prof. W. T. THOM of Virginia. (See p. 537.)

Dr. E. E. WHITE said at the conclusion of Professor Thom's paper :

I have been deeply interested in the paper just presented, and I rise to say that I do not feel entirely competent to speak on this great problem. The more I understand it, the more deeply I am impressed with that feeling. It is a problem requiring great wisdom, but there is one assertion in that paper which I think is an inadvertence, yet I have heard it once or twice, and that assertion is that moral education has no place in the public school. The paper assumed that position—that the moral education of the negro was to be treated as impossible under our American system of free schools.

As many of you know, for a good many years I have been quite familiar with American educational ideas and features. One of the

questions on which American teachers as a body are agreed, is that the vital moral training of the pupils of the public schools is its highest commission and its supremest duty, and we never concede that the work of the public schools is not open to this class of education, and it is vastly better that this generation of scholars shall go out alive to truth and virtue and honor and God, than that they should go out trained in the best methods in the scholastic phase of education. I go further. We never concede the point that virtue has no place in education. It is true that there have been some appearances which would indicate that religious influences would disappear, but that is exceptional. So far as my experience goes, the education of the schools is Christian. The great body of American educators bring to-day the influence of religion into the school. It may be that religion is not taught directly in the school, but everywhere, with few exceptions, there is the recognition of God as the supreme authority. There is the recognition of man's duty toward God everywhere, in the school. The conscience of our youth is fortified with religious influences. We do not teach denominational theology, but the recognition of God and the influence of religion must be in every school if you are going to have any vital moral training. Our whole system of moral training must be vitalized by religious influences breathed by the teacher from his life and spirit into it. I repeat that I think that statement of the paper was an inadvertence. The American school does not ignore the importance of vital moral training.

Hon. G. J. ORR: I feel a little as though I should like to trespass on the regular order. I feel so deeply upon this question that I rise to say a few words. There never has been a people put in the position of the people of the South. We feel this question much more deeply than our brothers coming from the other quarters of the nation can feel it. The question of what shall be done with the negro is the greatest question among us. The negroes are in our houses, they mingle with our children, they are of us, and this is our problem. It is the greatest question that has ever been considered in this country, or perhaps in any other. I agree with Dr. White. If you teach these people simply intellectual training, and the moral training is neglected, no one can tell the result. One great help to training that race is wanting. They know nothing of the family and its influences. The Bible teaches me that the family is at the foundation of the Christian Church. You cannot build up a church and make it such a church as it ought to be until all the obligations growing out of it are observed at home by the head of the family. The family rests at the bottom of everything in the Church, and at the foundation of everything valuable in the State. This feature has been entirely wanting. The moral training given in the homes of the American people has been what has saved this country in the past. These people have been without it, and we know the result. We know the morals of that people. I have not heard a paper during



the sittings of this body that was so very valuable, so full of suggestions, that discussed this greatest question of all questions with so much temperateness and in such a philosophical way. While saying this, I must also say that it was wanting, I think, just at the point Dr. White mentions. My notion of the treatment of that people is that the Christian Churches, all of them, must come in and labor with them, in order to form a proper sentiment among them and give them a religious training. Let us give them an intellectual training, and let every church come in and labor in their moral training. This is the missionary field of the churches. I have felt that myself in relation to this people. They have no truer friend upon this great continent than myself. Their presence among us incites this matter of national aid. But for their presence we would not ask any help, we would be able to manage that question ourselves. In my own State I believe we have 128,000 whites over ten years of age who are unable to write, and 392,000 colored, making a grand total of 520,000 out of a population of one and a half million. They call Georgia the Empire State of the South. She is a State great in resources, great in achievements, great in many directions, and, as the census shows, great in illiteracy. The Southern States, as I have said, are the States that are affected immediately by the presence of this population among them. I have been studying this question for years past; for seven long years I have been laboring in the cause of national aid to education; I have gone to every assembly of citizens where it was discussed; I have used all the influence I could in its favor. It is because I feel that we have a problem with which we are unable ourselves to deal. It is beyond our power to grapple with it, and a wise man hath said, "Hope deferred maketh the heart sick." I did hope that the present Congress would help us by the passage of the Blair Bill, but information comes to us from the Capitol that we are not to have it. Will you agree with me here to begin anew in that direction? Will you promise to take hold and labor with us?

I ask you as brethren to give us help. I feel that I can say that there is no longer a North and a South, no longer two sections. We are one people. While I say that, let me say a few words more in the same connection. I wish to make an appeal to you to-night that you take the same ground upon this question, which we feel to be essential. I said a while ago that this was our question. True, Massachusetts and Minnesota and all the States are interested, and if we go down we drag them down; we either sink or swim together; but while this is true, we are more immediately affected, and we will go down first. What I wish to say is this:—Numbers of us are studying the question. We are doing all that can be done, and we ask you simply for help. We feel that whatever is done must be put in the hands of some one. Now I do not object to discussion by my brethren from the North. They can give us valuable suggestions. But let me say to-night that it is im-

possible for you to understand this question as those of us who are connected with it understand it.

I should not feel that I was fully qualified to deal with the question of how the city of Boston should be managed in her school interest. I should feel that my friend Dr. Bicknell and others understood that question better than I did. But reared on Southern soil, and having mingled with the population from my earliest infancy to this hour, I think I know them. There are certain things connected with the question that no man can know who has not been a long resident among them. The Southern States are the States to work out this great question. We welcome aid from abroad, we feel that you are acting magnanimously when you rise up and help us. I think I understand the temper of the people of my own State, and I feel just as well assured as I can be of anything that is not an actual occurrence, that they would not accept outside help unless they are left to work it out themselves.

He who assumes to put conditions upon us will injure the people whom he seeks to benefit. I feel that we ought to be trusted. Let me say what I said to Senator Blair. I found him with a bill creating a commission, and I said this to him in reply to a conversation: "I am known all over the South as an advocate of universal education. I have labored in that field for thirteen years, but if you pass such a measure as that I tell you the people would not accept the tendered aid; it would be rejected." Twelve months ago, as a member of the sub-Committee of Education and Labor that traveled over this Southern country, he telegraphed me to come to the Parker House in Atlanta, as they wished to examine me. I went and was examined for an hour and a half. When I finished giving that testimony he said: "When I was here a few years ago I felt that we could not trust the South. I have been traveling over your Southern country. I have had men before me representing all conditions of society, and I feel thoroughly convinced that I was wrong in my estimate." He went back to Washington and framed a bill which the great majority of people in my State will accept gladly.

Professor THOM: I desire to correct a misapprehension. As far as I gathered from the remarks of the gentleman who followed me, it seems to have been understood that I was not in sympathy with the work done by the several denominations in the South. It is exactly this which I do appreciate. If I may be allowed to say so, I think they have wisely pursued the right course, and I am heartily in sympathy with them.

Professor BARTHOLOMEW next delivered an address, in which he made some remarks on educational progress in Kentucky; he said:

The work in Kentucky is to be judged by its results; and when you come to our State and see the results produced, that is sufficient to determine the character of the work. There is no man in this country to-day who stands higher morally than does Albert S. Willis, of Kentucky, and he is a graduate of the public schools of Louisville. We met with

opposition, but education was the victor; and when the Superintendent of Public Instruction made his report, after an earnest contest of nearly eighteen years, then it was that the existence of great illiteracy was demonstrated; then it was that the people appointed a convention to meet at Frankfort, out of which grew the inter-State convention of Louisville, and the State of Kentucky called to its aid in the solution of this problem gentlemen who are here to-night, the Chairman, Professor White, Mr. Hancock, Mr. Harris, and gentlemen from the South.

A committee was appointed to memorialize Congress in reference to Federal aid to assist us to bring our people up to the proper standard, and Kentucky to-night extends to you her profoundest gratitude for the work which you have done in influencing the State Legislature, which gave to the State a new law which has incorporated all good features, which has established systems of instruction, and which takes an interest in favor of popular education. If you will pardon me, I want to say something in regard to my native State, and I want to mention one point here which seems to me works in beautifully in reference to the discussion just had. If you are agreed that popular education is necessary for the white man in order that he may properly be prepared to exercise citizenship, how does it come to pass that the white man should have it and not the negro? If it is necessary in one case, it is necessary in the other. In Kentucky a colored man stands upon the same level as a white man.

I desire to say that we are proud of our system of public instruction. The city of Louisville has its primary schools, its intermediate schools, and its high schools, extending to the same level for each race, except that the negro is in a separate school. The same qualifications for teachers are required, the same rules are in force, the same course of study is pursued, and the same salary is paid; and I believe that the public school system of the city of Louisville to-day is built upon a foundation which will reflect honor and credit upon itself and upon the State.

It is not necessary for me to enlarge further in reference to the provisions which have grown out of the last convention held at Louisville. Nearly everything recommended by that convention was incorporated in the new school law. It only remains for me, in the spirit of our great son, Henry Clay, to place the hand of the northern brother in the hand of the southern brother, and say that the teachers of this country are the saviors of this country, and that in the work of removing illiteracy and elevating the intellectual and moral standards you must adopt the motto of my State, "United we stand, divided we fall."

Dr. HANCOCK, from the Committee on Resolutions, reported the following resolutions, which were unanimously adopted:

*To the International Congress of Educators:*

The undersigned committee, appointed to draw up suitable resolutions to express the pleasure and interest which the members of this body have derived from their inspection of the extent and perfection of this, the largest of world expositions ever

held, and to set forth in fitting terms their gratification at the friendly zeal and assistance manifested by its managers in the cause of education, which has thus been enabled to offer for study so complete a display of educational work and appliances hereby offer the following resolutions :

*Resolved*, That this Congress bears its testimony to the fact that the World's Industrial and Cotton Centennial Exposition is not only more extensive in its buildings and space occupied, but may claim precedence on the far more just grounds that it has applied the skill gained by former experience in similar expositions in such a way as to bring together all the valuable devices heretofore discovered for showing to the eye at a glance the resources of a country, the quality and peculiarities of mechanical construction, and usefulness of goods and machinery, offering in this respect an exhibition of new phases and aspects of national wealth not before thought possible to make objects of display.

*Resolved*, That this Congress expresses its feelings of grateful acknowledgment to the managers of this Exposition for the recognition they have extended to education as one of the important elements of national strength and development, especially as related to industry and the production of wealth.

*Resolved*, That this Congress hereby returns its sincere thanks to the citizens of New Orleans, to the members of the Louisiana Educational Society, the New Orleans Teachers' Association, and especially to the President, trustees and officers of the Tulane University, for the warm hospitality and obliging attention with which they have welcomed it to their city and provided it with all the facilities for holding its sessions.

JOHN HANCOCK.

WM. T. HARRIS.

J. W. DICKINSON.

Dr. M. A. Newell then read a list of papers which were received by the Congress, but which were not read.

Dr. M. A. NEWELL then said :

Before we adjourn I wish to express my personal thanks to the members of the Congress for the great kindness they have shown me in the arduous task I had in making the necessary arrangements, and also my gratitude to the citizens of New Orleans for the attention which I have received from them.

At the conclusion of these remarks, at 10 P. M., the Congress adjourned *sine die*.

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# PAPERS.

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## SECTION A—ELEMENTARY INSTRUCTION.

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### HONORARY CHAIRMAN.

**F. BUISSON**, *Inspector-General of Elementary Instruction, Paris, France.*

### HONORARY SECRETARY.

**J. G. FITCH**, *H. M. Senior Inspector of Schools, London, England.*

### CHAIRMAN.

**HON. JOHN HANCOCK**, *late Superintendent of Schools, Dayton, Ohio.*

### VICE-CHAIRMAN.

**BROTHER NOAH**, *of the Christian Brothers.*

### SECRETARY.

**HON. W. O. ROGERS**, *New Orleans.*

### ASSISTANT SECRETARY.

**HON. A. P. MARBLE**, *Ph. D., Worcester, Mass.*





## EDUCATIONAL PROGRESS IN JAMAICA.

BY COL. GEORGE HICKS,

*Assistant Inspector of Schools of Jamaica.*

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When the Island of Jamaica shall become more fully known it will be noted for its wondrous beauty, its delightful and health-restoring climate, its fruitful soil, and the variety of its fruits and other productions. At present it is chiefly noted as that one of the West India Islands which was the main battle-ground for fighting out, from time to time, all the great questions which arose respecting slavery in the English colonies, and also as the Island where, more than in any other, the results of emancipating the black man from the bondage of the white man have been investigated, analyzed, and discussed from diverse points of view and for the purpose of establishing diverse conclusions.

My theme is "Educational Progress in Jamaica," and the great event of emancipation gives me my starting point. Speaking generally, the educational progress of the people of Jamaica dates from that epoch; for "the abolition of slavery rendered it possible to offer education to the children."

The Church of England, at that time established by law in Jamaica, had had its churches and ministers in the island for many years. The Moravians had been patiently doing what was permitted to them for eighty-four years, and the Wesleyans and Baptists had also planted their churches; but until emancipation elementary education was under ban. When the restrictions were removed, all these churches entered upon educational work,—some of them with very great zeal. Other organizations also entered the newly-opened field. The London Missionary Society, the Presbyterians of Scotland, and the American Missionary Society sent their missionaries and schoolmasters to take part in supplying the religious and educational needs of the enfranchised people.

It yet remains for some one to write the first chapter in the history of educational progress in Jamaica with an adequate appreciation of the educational laborers. Briefly, this can be said: A number of educated men and women, taking with them the habits, tastes, and character of civilized and Christian descent and training, went to Jamaica upon the great event of emancipation, eager to impart that which the people, just freed from bondage, seemed eager to receive. The number of such men and women was few compared with the great need, but so far as their work extended it was very valuable. What they *were* doubtless produced results of no less worth than what they *did*. With their civilized habits and Christian character, the indirect influence for good of their daily life among the people cannot be reckoned of less value than what was accomplished by direct instruction in school and elsewhere. But the demands of the churches upon their ministers increased, and, as speedily as possible, the missionaries who had engaged in school

work gave it over into other hands, and those who had been sent out as school-masters entered upon ministerial work; and even the ablest and best educated of the native school-masters were very soon transferred from desk to pulpit. The schools suffered, while the churches gained; for very many able ministers now in the island were, at one time, school-masters.

The second chapter in the history of educational progress in Jamaica would show some increase in the number of schools, corresponding to the increase of the churches, but a less number of thoroughly capable teachers, and less zeal for education on the part of the people.

At first the expense of establishing and maintaining elementary schools in the Island was defrayed by the contributions of missionary societies and philanthropists (especially English Quakers), by the income from some bequests, by a small amount of fees paid by parents, and by a very small government grant. This government grant seemed at first to be distributed upon no definite system; but afterwards an inspector, Mr. John Savage, was appointed, and the small sum granted by Government was awarded according to his report of merit.

Then came the outbreak of 1865 in one of the parishes, formidable not in itself, but in the fear of a general insurrection; and consequent upon this the Island legislature yielded up the reins of government into the hands of England. With the establishment of Crown government the third chapter in the history of educational progress in Jamaica begins.

As one means of bringing the Island into a better state, so that such an outbreak would not again occur, the Government recognized the fact that a more systematic effort must be made to promote education among the people, and it instituted a system of government grants, upon a plan devised by Mr. Savage, to aid established schools and to encourage the opening of new schools. The scheme provides for organizing each school so that, as far as possible, the pupils will be placed in six distinct classes; it defines the attainments expected of each class, and it makes provision for an annual inspection and examination. The amount of grant to each school is determined annually, and depends partly upon the number of pupils in average attendance, and partly upon the quality of the work as tested at the examination and reported by the inspector. The essential features of the scheme adopted were those of the English system. Instead, however, of providing for individual examination and a payment according to individual passes, which are features of the English system, the scheme made the grant dependent upon the general state of the school. The English system has been somewhat modified, having been found too rigid and exact, while the administration of the Jamaica system is undergoing some modification, it having erred too much in the opposite direction.

Since the inauguration of the system the schools have largely increased in number, and, under the influence of the annual testing by the inspector, the work in the schools has generally improved in quality. The scheme was adopted in 1868. As the system of inspection and the standards of attainments were new, a number of elementary schools in the Island did not apply for inspection. Of the 286 schools, which were inspected in 1868, only 96 passed, and the grant given was small—some £3,000. This sum increased year by year with the increase in the number of schools, until in 1872 the grant amounted to £10,000. In another 10 years the grant reached the sum of £17,000.

Jamaica has a population of 600,000. The whites number 14,500; the blacks, 450,000; and those of mixed blood (denominated in the census as "colored"), 110,000; and besides these there are a number of

coolies and a few Chinese. The whites, as a rule, and some of the colored, send their children to schools not aided by Government. The poorer whites, together with the rest—some 560,000—send their children to government-aided schools, if to any. These schools now number 703, and have an enrollment of 57,289 children, with an average attendance of 33,215. The 96 schools which passed in 1868 included 1 in the first class, 6 in the second class, and 89 in the third class; now there are 60 first class, 215 second class, and 384 third class.<sup>1</sup>

#### PROGRESS OF THE PEOPLE.

Before referring to several important steps taken recently to insure further and more extensive educational progress, it may be well to inquire here what is the condition of Jamaica after these years of educational effort. What that condition is generally supposed to be, I am well aware. Those of you who have read certain London newspapers and English magazines have met with frequent allusions to Jamaica as lying in a state of ruin. This alleged state of ruin is sometimes set forth with much detail, but more frequently it is simply alluded to as an accepted, undisputed fact.

In my study of the history of this English colony I find that it has suffered "ruin" several times. At one period Port Royal, now a naval station at the entrance to Kingston Harbor, was the richest spot of its size in the known world. It was made rich by piracy. The pirates, pillaging Spanish galleons and towns on the Spanish Main, brought their booty to Jamaica, and riches abounded; and when the Government interfered, abolishing piracy and drying up this source of wealth, there was grievous lamentation in the Island that Jamaica was ruined. When the African slave trade was abolished, the houses of Parliament resounded with the cry that the brightest island gem in the British Crown was ruined. And when finally it was proposed to abolish slavery in the British possessions, there arose a loud wail from Jamaica that its ruin would be utter and complete.

Is Jamaica, with all the effort and expenditure for its advancement, indeed in a state of ruin? Were you to travel through Jamaica you would observe many sugar plantations, in a high state of cultivation, yielding, in ordinary years, a good revenue to their owners; you would notice many coffee and pimento properties, held by their proprietors at a high valuation; and you would see many and extensive stock-pens, with large inclosures of rich pasture land. With all this, it is certainly true, Mr. Chairman, that you would behold on the plains and in the valleys many abandoned sugar estates, some "thrown up" soon after the abolition of the slave trade, and more since the abolition of slavery. And it is possible you might meet with some planter of the old school, who has not outgrown the traditions of the past (we still have some such in Jamaica), and who would not unwillingly embrace another opportunity to dilate upon the "ruin" of the Island. He would point out to you the ruined walls of some large mansion, the former "great house," where at one time a planter had lived in affluence and dispensed a lavish hospitality to tourists. He would show you the broken-down walls of the sugar-works, overgrown with the cactus and the wild fig, while lying about in the weeds would be seen rusted iron wheels and cylinders, and, all around, you would notice hundreds of acres in a wild state of ruin.

"Here," the despairing planter would say, "was once the busy scene of industry and prosperity, where all is now desolation and ruin. This

<sup>1</sup> See Appendix A.

is what Jamaica has come to! This was once a great estate. It had a thousand slaves, and made a thousand hogsheads of sugar every year; and now all is ruin."

And you might reply, and the conversation be continued, somewhat as follows:

"Certainly, this seems the reverse of a progressive and prosperous state of things. Yonder walls would indicate that the planter had a very fine mansion."

"Sir, it was palatial."

"And those ruins are all that remains of the planter's palace! A *thousand* people, you say, lived on the estate! I should like to see the ruins of *their* homes."

"Oh, they lived in huts; mere thatched and wattled affairs that could be put together in a day or two, and would soon crumble away."

"A thousand people! There must have been many children. I should like to see the ruins of their school-house."

"There were no school-houses in those days, sir. And in my opinion it would be better if we had not so many now. They are simply spoiling the people."

"A thousand people—quite a village. Will you be good enough to show me the ruins of their church?"

"Well, sir, the fact is they had no church. Sunday was their day for working in provision grounds and for going to market. Almost everywhere Sunday was the market day; and what better are they now with their churches?"

Gazing upon the ruined walls and thinking of the thousand people, you might recall the words of Rasselas, Prince of Abyssinia, in Dr. Johnson's tale. Standing in the midst of Egyptian ruins, Rasselas said: "My curiosity does not very strongly lead me to survey piles of stone or mounds of earth; my business is with *man*." And you might say further:

"I am thinking of the thousand people all gone from this abandoned estate. Did they starve to death? or leave the country? or what became of them?"

The planter would tell you that they had scattered among the hills, and he would probably give you a description of the people very much like that of a correspondent of the *London Times*, who not long ago wrote thus of the negro peasant of Jamaica: "Nature and circumstances in Jamaica have combined to give his indolent propensities a terrible impulse down hill. He squats where he pleases, scrapes the soil, throws down a handful of seed, composes himself to sleep, and awakes to find his daily bread growing within reach of his arm. If he wants a few yards of cotton or of osnaburg he may sacrifice a day in the week in the interests of decency, and seek the labor that is always going a begging. In Jamaica the black \* \* \* has dwindled in numbers, deteriorated in morals, and compromised with every feeling of decency or desire for comfort."

With curiosity excited to test the accuracy of this picture, you would go among the people up in the hills (Jamaica is nearly all hills), and you would observe some things having the appearance of signs of a certain degree of industry and progress in civilization. You would notice the "provision grounds," each an acre or two in extent, bearing yams, potatoes, cassava, corn, beans, bananas, plantains, etc., and mango, breadfruit, orange, cocoanut, and other fruit trees; patches or small fields of coffee and sugar-cane, and now and then a small sugar mill or coffee barbecue. You would notice that the people, the former labor-

ers upon the estates and their descendants, were living in homes none worse than in former times and some much better, and in some neighborhoods the majority of homes *vastly better*. You would not go far in any direction without finding a school-house with scores of children under instruction by a native teacher, nor very far without finding a church where the people are accustomed to assemble for religious worship every Sunday, neatly clad in tweed and muslin, and not a few riding to church on horseback. Seeing these things you might feel inclined to inquire more fully into the condition of the people of Jamaica, to ascertain what is the extent of the "ruin" which it is so often asserted has come upon Jamaica since the time when educational advantages have been brought within reach of the people, and they have been free to make use of them. Upon inquiry you would find these facts:

1. **POPULATION.**—The 335,000 of black and colored inhabitants in 1834, the date of emancipation (311,000 slaves and 24,000 free), have not "dwindled away." The cholera came and decimated them; still the 335,000 have increased to over 560,000.<sup>1</sup>

2. **PHYSICAL CONDITION.**—(a) *Dwellings.*—A considerable number of people live in much better houses than in former times. In many neighborhoods the peasants, as a rule, have each a spot of land, and have built neat and comfortable cottages, immensely superior to the huts they used to live in. Inside, their houses are much better furnished than formerly, while the outside surroundings are of a more civilized character. The cottages of our peasantry in such neighborhoods would compare most favorably with the dwellings of the major part of the peasantry of Ireland and Scotland. In 1871 there were 512,801 mud cabins in Ireland, and of these 155,675 had but one room each, but contained 227,379 families. In Scotland, in 1861, out of a total of 666,786 dwellings, more than one-third (226,723) had but one room, and more than another third (246,601) had but two rooms. It must be borne in mind that in these cases the cooking of food, washing of clothes, etc., was done within the one room, or the two rooms, while in Jamaica the cooking, washing, etc., is never performed within the dwelling, the kitchen or cooking shed being always separate. A few years ago I had occasion to make inquiries respecting improvement in the people's cottages, and from a number of sources in various parts of the Island I received reports showing a considerable degree of improvement in the dwellings. This improvement, which continues from year to year, is not caused by any felt physical want, and is not made to meet physical necessities, but is due to a more civilized taste, a higher regard for refined home comforts, and a better appreciation of the moral influence of the dwelling. The six benefit building societies which have been established in Jamaica within the past few years, and which continue in vigorous operation, have been helpful to some of the peasantry, who have, by their aid, built cottages of an expensive style.<sup>2</sup>

(b) *Dress.*—The people generally throughout the Island are wearing better clothes than heretofore. They spend more money upon dress for themselves, and they send their children to school better clad. The cheap osnaburg suit of former times would now, in most places in Jamaica, be quite a rarity in a Sunday congregation. With the increased expenditure for dress there has been a very notable improvement in taste. The loud, glaring colors, inharmoniously blended, at one time characteristic of the dress of the women, have largely given place to what is more refined and pleasing to the cultivated eye.

<sup>1</sup> See Appendix B.

<sup>2</sup> See Appendix C.

(c) *Food*.—As a rule, the food of the people is more varied and costs more than formerly. Their meat does not now consist so exclusively of "salt fish" (cod) and herring. A dealer in cattle in a certain neighborhood, who used to slaughter one ox every fortnight and found difficulty in disposing of the flesh, now slaughters two every week, and the people buy the meat readily. This instance of an increased consumption of beef by the people is typical of many neighborhoods in the Island.

3. **INTELLECTUAL CONDITION**.—The change in the intellectual condition of the people, as gauged by the establishment of schools and the circulation of books, is very marked. Substantially, the advance is to be measured from zero. Since the opening of schools for the people, upon the epochal event of emancipation, great and continuous progress has been made. There are now more schools, more children in the schools, a better and more general supply of school books and school appliances, and a larger number of trained and capable native teachers, than ever before. More books for general reading are bought by the people, and they read more papers—not many, comparatively, but more than formerly. And a large number of people have the ability to read. The census shows that of our 600,000 inhabitants 230,000 can read, and of these 115,000 can both read and write. In 1861, 50,726 could read and write.

4. **MORAL AND RELIGIOUS CONDITION**.—A veteran Moravian missionary, giving an account of Jamaica at that period in its history when, if we are to believe those who insist that Jamaica is now in a state of ruin, the Island was in an enviable condition, makes the following statement: "Up to the year 1800, with the exception of a very few negroes, the whole population, white and black, appears to have been sunk in ungodliness, having no other god than Mammon and the lusts of the flesh. Though there were a few churches they were not often opened, even on the Sabbath day, and six or ten persons might perhaps be found in them when well attended." An elderly English lady, whose life has been spent in Jamaica, informs me that she recollects a state of things as to the church in her neighborhood quite similar to what is above described. Before emancipation the number of churches had increased, but the great increase has been subsequent to that event. The attendance upon worship on Sunday is very general throughout the Island. The Sunday market has long been discontinued, and is unknown to the later generation. Sunday-schools are also generally established in connection with the churches, and are largely attended. So far as there is a change in the moral condition of the Island (and the change is not inconsiderable) it is a change for the better, both among whites and blacks. For some time after emancipation it was a generally understood fact that the white overseer on a sugar estate might live in concubinage, but would forfeit his position upon marriage. There were not a few neighborhoods where the one married man was the minister. The example of the wealthier class had its influence for evil upon the laboring population. A former mayor of Kingston, so highly respected that his statue now stands at the entrance to the public park, gave in 1866 his testimony respecting the people, stating, as one of the causes of their immorality, the "bad example set by the better class in an open and unblushing manner, unknown in other British colonies." Within the last fifteen years there was an important town where the judge, the doctor, the customs officers, and all other officials except the clergyman, lived in a manner to verify this testimony. In this respect matters have changed, and the present state of morality, unsatisfactory as it is, is a great improvement upon what it was twenty years ago.

5. PUBLIC WORKS AND INSTITUTIONS. — With improvements in other things, the public works and institutions have been improved so as to contribute more than formerly to the welfare of the people. The means of communication — the token and the efficient cause of progress in civilization — have been greatly enlarged. There are more roads and better roads; more of the streams are bridged; the railway is greatly extended; there is steam communication around the island coast, and an increase of steam communication with the outer world; the inland telegraph has been established, bringing every part of Jamaica into telegraphic connection with the civilized world; there are many more post-offices, and the rates of postage are lower; many market-houses have been built, so that instead of a bare spot of land, open to sun and rain, for a market-place, the people have the use of fine structures which now are found in many places in the Island; the hospitals have been increased, and medical assistance is much more accessible to the people; and several towns are provided with water-works.

6. LABOR.—The people do not labor so much as formerly. Man for man, there is less of labor in Jamaica than in the olden time. The laborer does not get out to work by sunrise and remain at work until sunset for six days in the week, and take the seventh for working in provision grounds or for going to market. Jamaica, however, retains at home far more of the results of labor, in all that contributes to the well-being of the people, than before. Released from compulsory continuous toil, the Jamaica laborers find that with one day's work in the week they can provide the bare necessities of life—the bread fruit, or yam, and fish, and the osnaburg; but they are not content with bare necessities. Many of them desire to possess freeholds, good houses, expensive furniture, horses, and other stock, and these they procure by labor. Very many desire better food, and they get it by labor. All, with hardly an exception, must have more costly dress, and they obtain it by labor. The contributions from abroad for building churches and maintaining religious services have nearly ceased, and now nine-tenths of the cost of maintaining the churches and building church edifices is defrayed by the people of Jamaica. More ministers of religion are now maintained in Jamaica than ever before, and in the past few years the number of church edifices, with school-houses, parsonages, and teachers' residences, have been largely increased, the expense being met, mainly, by the labor of the people. The greatly increased expenditure for the education of their children has been made possible by labor. Besides what they invest in lands and stock and expend for house comforts and schools and churches, they make use of the savings bank, depositing small amounts of money obtained by labor, and the number of small depositors is steadily increasing. In the main, the cost of the public works—the roads, bridges, railway, telegraph, markets, hospitals, water-works, &c.—is paid, ultimately, by the people by their labor. In extending the railway, lately, laborers have been in demand, and there has been no lack. In Jamaica, as everywhere, high wages attract labor; and the Panama Canal, bidding for Jamaica laborers, gets them by thousands. They leave their homes for a strange land, endure many privations, run many risks, toil laboriously, and return (many of them) with considerable amounts of money earned and saved. Manifestly, the schools have not wholly spoiled the people for labor.<sup>1</sup>

These are facts respecting the condition of the people of Jamaica which careful inquiry would bring to your knowledge. When I recall

<sup>1</sup> See Appendix D.

these facts, the steady growth of the population, the lessened hours of toil, with the vast increase of what toil can procure of the comforts of life, and all that ministers to the physical, intellectual, and spiritual welfare of the people, and, in a word, the great increase in Jamaica in the past few years of the elements and the means of civilization, and then read the statements of English newspaper correspondents and magazine essayists that Jamaica lies in a state of ruin, I am both curious and impatient to know what they mean by "Jamaica," and what they mean by "ruin." If by "Jamaica" they mean the small class of landed proprietors, a large proportion of whom lived in England, spending there the fortunes realized from Jamaica sugar and rum,<sup>1</sup> and if by "ruin" they mean the loss of luxuries dependent upon the receipt by this small class of £25 annual profit from every able-bodied laborer in the Island, it may be conceded that to such extent "ruin" has come upon Jamaica. But when they tell me that the country is "gone to the dogs," I must dispute that. The country has not gone to the dogs. In part it has gone, and more and more it is going, to the laborers. The day I left Jamaica for New Orleans a government surveyor told me that the laboring people now hold, as owners or as tenants, more than one-half of the utilized land in the island, and that the major part of the work now done by the government surveyors is to divide the large properties into small holdings of a few acres each, to be sold to the peasantry. The number of property-holders and tax-payers is steadily increasing. From 1874 to 1884 the increase of population was 14 per cent., while the increase in the number of tax-payers for the same time was 17 per cent.—86,655 in 1884, as against 73,924 in 1874.

And now, perhaps, some one, hoping the best from the educational and other efforts made on behalf of the emancipated people of Jamaica, will say, "The results, then, are satisfactory?" No, not altogether. And some one, of opposite prepossessions, hearing this reply, will say, "After all, then, the results are disappointing?" To those who looked for greater results the results actually achieved are, in part, disappointing. Some seemed to think that the change from compulsory to voluntary labor would of itself change inherited tastes and tendencies and life-long habits and desires; that the privilege to enjoy the highest fruits of civilization would create a strong desire for them in natures habituated to be quite satisfied with what is lowest. Not a few, knowing that the public school is characteristic of New England, and knowing what New England is, seemed to suppose that if you planted the public school in Jamaica you would produce New England intelligence, industry, enterprise, ingenuity, and thrift, while wholly omitting the thousand influences preceding the child's entrance into the school of New England, accompanying him all through his school life, and following him after leaving school, and from first to last molding his character and influencing his destiny immeasurably more than the school itself.

There is a little feeling of disappointment, also, on the part of some who think the most has not been made of the opportunities offered for improvement. The fact seems to be that the laborers of Jamaica have suffered both from those who did not seem to like them and from those who sought to benefit them. Much has been written to delineate the characteristics of the negro, but the best description I have seen is that

<sup>1</sup>As long ago as 1811 the Jamaica Assembly, in a petition to the Prince Regent, said: "There are large districts, whole parishes, where there is not a single proprietor of a sugar estate, resident."



by General Saxton, who, in lieu of filling up a sheet with minute distinctions and particulars, as requested, described the negro simply as "intensely human." Now Goethe, the German thinker and writer, speaking of universal humanity, says: "A great deal may be done by severity, more by love, but *most* by a clear discernment and impartial justice, which pays no respect to persons." And Stanley, with sufficient experience to speak authoritatively, says of the African: "What is required is pure, simple justice between man and man." What is true of humanity, according to Goethe, is true of the negro, according to Stanley. In many cases, I think, planters and missionaries have both erred, the one in not awarding to the Jamaica laborer what was due to him, and the other in not exacting from the Jamaica laborer what was due from him. Undue partiality has had its ill-effect, as well as undue severity. I think I have observed in some quarters a tendency, when dealing with the Jamaica people, to estimate the small as if it were large; the crude as if it were perfect; a partial performance as if it were full performance; an attempt as if it were a thing accomplished; and to accept an easily made excuse and a readily made promise as sufficient satisfaction for unfulfilled engagements. Some of my friends among the ministers of religion in Jamaica confess that their kindness has often defeated its own purpose; that their gifts have not proven to be benefits, and that, by the ill-judged bestowing of favors, a spirit of dependence has been fostered where a spirit of self-reliance should have been developed. Doubtless, if some mistakes had not been made, greater results than those accomplished might have been achieved. Still (to use Daniel Webster's phrase), one "would dispute against the sun," who would deny that the change for the better in Jamaica is a very great change, and the results achieved for good exceedingly valuable.

I recognize how difficult it is to frame a statement that shall satisfy my own mind as being the exact truth in this matter, and how much more difficult it must be to communicate the exact truth to another mind. I may say simply this: Standing here, where the question is to be answered whether educational progress in Jamaica has been accompanied by a general progress of the people, I put the emphasis upon all that has been achieved by a considerable number of the people, and, in some neighborhoods, by the greater number. When I am in Jamaica, as occasion offers, I put the emphasis upon what remains to be accomplished to bring up the many to the heights reached by the lesser number; to improve the home life; to elevate the condition of woman; to arouse a deeper interest in the education of children; to have the homes supplied with books and papers; to break the bonds of heathenish customs and superstitions, and to create a more general moral public sentiment which shall be founded upon the truth that that tree of religion that is barren of the fruits which include the moral virtues abides under the curse of the Master.

#### THE NEW EDUCATIONAL ERA.

Within the last four or five years Jamaica has entered upon a new era in her educational progress. There is an advance all along the line. We have now the ladder which reaches from the elementary school to the English university. During the governorship of Sir Anthony Musgrave, and at his instance, the Government founded a university scholarship of the annual value of \$1,000, open to the competition of all Jamaica boys. The Jamaica High School has also been established, in which boys are prepared for the university, and admission to this school

is determined by competitive examination. Our best elementary schools will soon be sending boys to the high school, and they will have their chance for the university.

There is an increase in the number of schools for secondary instruction, some of which have been established for many years and are of high repute. The Cambridge local examination is now extended to these schools, and there is no doubt that they will feel a beneficial effect from submitting their pupils to the same tests that are applied to the pupils of similar schools in England. Some of the Jamaica pupils have gained high honors at these examinations.

Greatly increased attention is given to female education in Jamaica. Our new Governor, Sir Henry W. Norman, makes the first year of his administration memorable by establishing upon a liberal basis a normal college for the training of female teachers, an event which is to have a most important influence upon the educational future of the Island. The Wesleyans have recently added to their educational institutions a high school for girls, which at once reached a success requiring enlargement of the premises, and the Baptists have just established a similar school of a less advanced grade and designed to meet the needs of the less wealthy members of the community; this school, also, is filled to the limit of its capacity.

Increased effort is made to supply trained and competent teachers for the schools. Soon after emancipation some normal schools were established, and a few years ago the Government instituted a normal college. This is now to be enlarged, and as other training institutions are subjecting themselves to the government examination, their efficiency will doubtless be increased. These normal schools include one for females, established upon a limited scale by the Moravians, to meet their own wants. The larger institution for the training of female teachers just established by the Government will meet a more general want that has been greatly felt throughout the Island. One of the most important steps taken by the present chief inspector of schools, the Hon. Thomas Capper, to improve the educational system, is the admission of teachers to the examination of normal students, and providing for the grant of a bonus of from \$25 to \$75 yearly to each teacher who passes,—thus giving teachers substantial inducements to fit themselves more thoroughly for their work.

Within the past three years teachers' associations have been formed in ten of the fourteen parishes of the Island. While the existence of most of them is due, in some measure, to efforts put forth by myself, it gives me great pleasure to state that the last one formed, a very good one, is the result of the spontaneous action of teachers themselves. These associations hold quarterly meetings for essays and discussions, and circulate among their members the best works on teaching and such educational periodicals as the *Journal of Education*, *American Teacher*, *Canada School Journal*, and some from England. In some of the parishes the Church of England has also formed parochial teachers' associations, doing work similar to the others. As one means to aid teachers and students in the normal colleges to become thoroughly acquainted with the literature of the teacher's profession, the public library in Kingston has added an educational section, which now contains several hundred educational works. I beg to express my personal thanks to the many members of this International Congress who, in response to my request, have contributed to this library many and valuable educational reports.

During these past three or four years there have been held more educational meetings in Jamaica, and there has been more discussion of educational topics in the local press, than in all the previous history of the Island since the first African was brought to its shores. At some of these meetings planters and landed proprietors have taken a prominent part, expressing their cordial sympathy with the educational efforts made on behalf of the people. Among the chief questions engaging the attention of the legislative council, now in session, is that of perfecting the educational system so as to extend its benefits to all the children in Jamaica.

During the past year an effort has been made to introduce into the homes of the people, and into the schools, a continuous supply of suitable and attractive periodical literature—a movement which many regard as one of the most important which has been made for many years. Finding that much of the work of the schools seemed to be lost because of the dearth of literature in the homes of the people—the children who had learned to read in the schools afterwards losing the desire, if not the ability to read, because of the lack of anything to interest them after leaving the school—I have suggested to the working people of Jamaica that they should supply themselves with some of the penny and half penny illustrated monthly papers published for the benefit of the working people of England. To some extent this has been done by the forming of shilling reading clubs among the people.<sup>1</sup> A few members of a congregation send for several different periodicals and exchange them every week among themselves, so that each has the reading of several at the expense of paying for one. Similar clubs are formed in schools, so that at a slight expense Jamaica boys and girls may have the advantage of reading the beautiful and interesting periodicals prepared for the instruction and delight of English children. A few “clubs of four” have also been formed among young men, to obtain monthly periodicals of a higher price, each contributing the price of one, and all having the privilege of reading the four during the month. Just before leaving Jamaica I had a small pamphlet printed, giving fuller information respecting these clubs, and I have a few copies with me, which I shall be happy to furnish to such members of the Congress as may feel a special interest in the subject. Samples of the periodicals which are circulated among members of the shilling reading clubs and the school clubs can be seen in connection with the school exhibit from Jamaica, at the Jamaica Court in the Exposition.

Having referred to our school exhibit, I may say that after seeing the very extensive and admirable educational exhibits from many States in America and from foreign countries, constituting one of the most interesting features of this great Exposition, I could hardly venture to make mention of the small exhibit from Jamaica if it were not that, small as it is, it is fairly representative. Owing to various causes, the notice given to the schools was very brief, and only a few schools prepared exhibits to be sent to the Exposition; but these exhibits were all prepared under such strict conditions and with such careful precautions to secure the individual, unassisted work of the pupils, that they are of considerable educational value, for they furnish a fair sample of the work that can be done in the ordinary first-class and second-class elementary schools of Jamaica on any day without any special preparation.

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<sup>1</sup> See Appendix E.

## CONCLUDING WORDS.

In conclusion, I beg to express the gratification it affords me to be present at this Congress and to participate in the proceedings of such an assemblage of educators, and I beg also to express the hope that some of you, with your thorough knowledge of the best methods of school work and your enthusiasm in promoting educational progress, may, in the course of some of your holiday excursions, find your way to our beautiful island in the Caribbean Sea, for we need the instruction and the stimulus you would bring to us. In return, Jamaica would give to you upon her myriad hills a constant succession of your most perfect June and October days, with scenery which at one and the same time displays the beauties of vernal bloom and summer loveliness and autumnal fruitage. And if any, suffering loss of health from the rigorous climate of the North or from extreme changes of temperature, should fly to our sunny and equable clime, I am warranted in expressing the hope that Jamaica, my adopted home, would deal as kindly with you as it has with myself, in restoring in large measure the lost and inestimable blessing.

## APPENDIX A.

## JAMAICA SCHOOL SYSTEM.

All elementary schools aided by Government are required to have an average attendance of at least 20 scholars and to be kept in operation 180 days in the year. In ordinary practice the latter requirement is met by keeping the school open 4 days in the week for 45 weeks in the year.

The inspector of schools and the assistant inspectors make special unannounced visits to the schools, as often as convenient, and an annual visit, when the school is fully examined. For the purpose of this annual inspection the teacher prepares for the inspector a class list, giving the name of each pupil, with the following particulars: age; date of admission; class in reading, dictation, and arithmetic, in which the pupil was placed upon admission; the class in these subjects in which the pupil appeared at the last previous inspection; number of days of attendance at school since last inspection; class in these three subjects in which the pupil is placed for examination.

The inspector (or assistant inspector) reports the condition of the school, giving marks for each subject, upon a graduated scale, according to merit. The three chief subjects are reading, writing from dictation, and arithmetic, for each of which the maximum of marks is 12. For the secondary subjects the maximum of marks is 6, the secondary subjects being scripture knowledge, general knowledge (common things), grammar and composition, geography and history, handwriting (including map-drawing), and singing. Marks are also given for discipline and for organization upon the same scale as for secondary subjects. The marks for organization are awarded partly with regard to the state of the school-room, school appliances, etc., partly with regard to the proper classification of the pupils and a judicious timetable, and partly with regard to the state of the school records. These records comprise a journal or logbook, an admission register, an attendance register, and (where sewing is taught) a sewing-class register.

For the purpose of giving instruction in the secondary subjects the pupils are usually grouped in two or three graded divisions. The standards of classification for the six classes of a school, for the chief subjects, are as follows:

## READING.

- I. The alphabet and easy words of from two to five letters; primers.
- II. The First Reader.<sup>1</sup>
- III. The Second Reader.
- IV. The Third Reader.
- V. The Fourth Reader.
- VI. The Fifth and Sixth Readers; any kind of reading, poetry or prose.

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<sup>1</sup> The "Royal Series" of readers is in general use.

## WRITING FROM DICTATION.

I. Forming letters and easy words on slates, from copies set on the blackboard, or from writing sheets.

II. Copying words and sentences on slates, from copies set on the blackboard, or from writing sheets; transcribing from the daily Reading Lesson.

III. Writing on slates a portion of the daily reading lesson, from dictation.

IV. Writing on slates, from dictation, sentences containing words liable to be misspelled; also from Reading Lesson.

V. Writing on slates or paper sentences or short paragraphs, dictated from the Reading Lesson; exercises illustrative of the rules of orthography.

VI. Writing on paper selections dictated from the highest readers and from newspapers; or, from memory, business forms, notes, bills and receipts, etc.

## ARITHMETIC.

I. Counting objects; making figures; addition and subtraction to 100 from dictation.

II. Simple addition and subtraction on slates, from dictation, to hundreds of thousands.

III. Simple multiplication and division, on slates, to hundreds of millions.

IV. The four compound rules in money, weights, and measures; also reduction.

V. Simple proportion, practice, and simple interest.

VI. Compound proportion, percentages, fractions, etc.

Schools are ranked according to the number of marks awarded in each of the three chief subjects, together with the total number awarded altogether, as follows: First-class schools, a minimum of 8 marks in each of the chief subjects, and a total of 56 marks—two-thirds of the total maximum; second-class schools, a minimum of 6 marks in each of the chief subjects, and a total of 42 marks; third-class schools, a minimum of 4 marks in each of the chief subjects, and a total of 28 marks. New schools which fail to reach third class, but obtain 24 marks, are ranked as exceptional.

Grants are allotted to the schools according to the number of pupils in attendance (the capitation grant), and the attainments of the school as indicated by the marks (the class grant). Because the pimento-picking or the coffee-picking season, or the rainy seasons in May and October, or special seasons of labor on the sugar estates, seriously affect the attendance and diminish the ordinary average attendance, the teachers are permitted to select 144 of the best days of school attendance for the year as the basis upon which to calculate average attendance. The capitation and class grants are as follows:

	First-class schools.	Second-class schools.	Third-class schools.	Exceptional schools, half of third class.
<i>Capitation grant.</i>				
For each pupil in average attendance during the year...	s. d. 6 0	s. d. 5 0	s. d. 4 0	s. d. 2 0
<i>Class grant.</i>				
For each mark obtained at the annual examinations.....	8 0	7 0	6 0	8 0

Sewing is not compulsory, but is taught in nearly every school, one hour per day being devoted to it. The grant for sewing is three shillings to each girl in average attendance at the sewing-class, the basis for calculating average attendance being similar to that for calculating the average attendance of the school.

Annual grants are also given by the Government to first-class schools only, for the training of pupil teachers, who shall personally pass a satisfactory examination in accordance with the government regulations relating thereto. The following are the rates:

Year.	To each pupil teacher.	To the teacher for instructing them (each year).		
		For one in the same school.	For two in the same school.	For three in the same school.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
First year .....	4 0 0	3 0 0	4 10 0	6 0 0
Second year .....	5 0 0			
Third year .....	6 0 0			

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In addition to these grants, the sum of £1,500 is distributed annually among school managers to aid in the erection, enlargement, and repair of school buildings. As a rule, the government grant does not exceed 50 per cent. of the amount expended in each case.

### APPENDIX B.

#### INCREASE OF POPULATION.

From the time Jamaica ceased to import slaves from Africa (1807) until emancipation (1834) there was but very slight, if any, increase in the number of black and colored inhabitants. Of such inhabitants there were, in 1791, 250,000 slaves and 11,400 free (Edwards). In 1807 the slaves numbered 319,000 (Jamaica Handbook), and the free could not have numbered less than 13,000—a total of 332,000. In 1834 the slaves numbered 311,000 and the free (a large estimate) 24,000—a total of 335,000. This estimate assumes that there was an increase of at least 8 per cent. in the decade from 1834 to 1844. In the decade from 1861 to 1871, the increase was 13 per cent.; from 1871 to 1881, 12½ per cent.

That the former condition of things was not favorable to the increase of population is very manifest. A late prominent citizen of Jamaica, in a carefully prepared letter to the editor of the *London Times*, presented the following significant facts:

"We find by a return made to the House of Assembly in 1815, that the number of slaves in the island in the year 1800, was 300,939; in the year 1810, the number was but 313,683; yet in the interval 72,937 slaves had been imported. There was thus an actual decrease of 66,193. \* \* \* By a return to Parliament it appears that between 1817 and 1829 the slave population had decreased by 18,074."

A complete census of the island was taken in 1844, and again in 1861, 1871, and 1881. The steady increase in the black and colored population shown by these returns stands out in prominent contrast to the state of facts prior to 1834.

The census returns for the years specified, of the white, colored, and black population, are as follows:

Year.	White.	Colored.	Black.
1844.....	15, 776	68, 529	292, 128
1861.....	13, 816	81, 065	346, 374
1871.....	13, 601	100, 346	392, 707
1881.....	14, 432	109, 946	444, 186

### APPENDIX C.

#### IMPROVEMENT IN DWELLINGS.

The information furnished me respecting improvement in the people's cottages shows that while in some parishes the improvement is not great, in most it is very considerable.

A large proportion of the cottages in many districts in the parish of Manchester is of a superior order. In a letter received from the Rev. A. G. Hogg, a Presbyterian minister, when he was residing at Woodlands, in Manchester, mention was made of a man who in early life was a slave on that property, but who then had a good house, and had his five sons and a married daughter settled on Woodlands near him. Mr. Hogg wrote:

"Each of the six has a neat and comfortable cottage, such as I am about to describe. These cottages were planned and built by a very good native carpenter. They are all shingled and floored, and each has its barbecue and its tank, or 'kick-and-buck' pond, and a coffee piece adjoining. I think they are all about one size and form, 20 feet long by 12 feet wide, height from floor to ceiling 9 feet, and from foundation to eaves 14 or 15 feet. Each cottage has a porch, a hall (sitting-room), and either two bedrooms, or one bedroom and an additional bedroom in the yard. Each has a wooden frame, and foundation of stone and lime to the height of from 4 to 6 feet. The walls are of Spanish walling and plastered, the floors are all boarded, the roof shingled, and inside there is a board ceiling. Each house has five doors and ten jalousies. There is a partition-wall between the portico (a small room) and hall, also between hall and bedrooms. The doors and molding are of cedar; the other wood-work, of bullet-tree. The cottages are painted inside and washed outside, and each is tastefully finished. Being a large family, the members helped each other in

building. They burned their own lime, quarried stone, mixed mortar, and did a good deal of the unskilled work themselves. Each cottage cost in cash about £60.

"I might name similar cottages in Salmon Town, at Broughton, Resource, Grove, and Plowden; but I restrict myself to one more cottage at Salmon Town. This is a beautiful and tasteful house, built by David Booth, carpenter, for Robert Ansem, a negro, head man to George Miles, Esq. It looks like a two-story house; but, like those I have described, the under part is used as a storehouse, a cellar for crops, etc. There is a fine porch, a flight of cut-stone steps on each side, a fine hall, and two good-sized bedrooms. There are suitable outhouses and a tank. This house cost in cash £150."

My attention has recently been directed to the fact that a large number of young men from twenty to twenty-five years of age are now building fine cottages in St. Ann, Trelawny, and other parishes. While there are instances where the sons build cottages inferior to those erected by their fathers, the general fact is that where there is difference there is improvement. The Rev. A. B. Lind, of Westmoreland, has noticed what he terms "three generations of houses": the first, built by the grandfather,—a hut, with posts in the ground, and no floor; the second, built by the father,—floored, and otherwise somewhat improved; the third, built by the son,—a framed house on a stone foundation. A notable case, where one man in the course of his own lifetime had the "three generations of houses," was that of James Kinlock, a black man, of the parish of St. Elizabeth, recently deceased at the age of fifty. He was born in slavery, began life as a blacksmith, and, with his industrious and frugal wife, lived at first in a house of the ruder sort; later, he moved into a better cottage; and, before his death, he had erected an exceptionally fine residence at a cost of £600, and furnished it very elegantly. I have heard of a similar instance in the parish of St. Andrew.

Rev. W. M. Webb, of Stewart Town, wrote to me in 1879 respecting the improved cottages in the Gibraltar district, on the border of the parishes of St. Ann and Trelawny, where the people are "small settlers and growers of coffee." Mr. Webb said:

"I was counting up with one of my deacons there the number of new and improved houses which have been erected within the last ten years in his district alone—a district called Watt Town. We counted no less than fifteen new houses, and others in course of erection—all upon an improved scale—real neat, commodious, peasant family cottages. . . . I will now describe one of these nice cottages that have sprung up in these mountains within the last ten to twelve years. There is a solid base wall, 25 feet by 15 feet, 7 to 8 feet high—probably on a hillock or on the slope of a hill. In any case there are two rooms below; the sons occupy one as a sleeping room, and one is used as a lock-up for coffee or ground provisions for market, etc. Upstairs there are two sleeping rooms—one for the parents, and the other for the daughters. There is what is called a hall, where a few pieces of mahogany furniture show off to advantage. Upon a corner table are cups and saucers, mugs, etc., all of the latest and most approved designs, placed there more for show and ornament than for use. There is also another hall which is used for dining and for general family chit-chat. A passage, which in many cases leads into a neat portico in front of the house, completes the design."

Instead of quoting from a number of similar letters from other ministers, received at about the same time, I will append here a letter received from Mr. Webb since preparing the paper read at New Orleans. Replying to my request for later information, Mr. Webb has written as follows:

"In response to your request that I would furnish you as early as possible with a supplementary statement to that which, along with others, I made some few years ago on the improved dwellings of our peasant farmers or small settlers, I now submit a few facts on the subject.

"I confine my remarks to the districts with which I am best acquainted (though I have no doubt that they apply pretty generally), where our people have become independent of the small wages per diem on the sugar estates, have bought and gone to reside upon their own small holdings, and have had sufficient time and opportunity to develop the resources of their land on their own account.

#### 1.—WATT TOWN.

"I begin with this district, having referred to it in my former communication to you. Here I have a class of intelligent, thriving people, connected with the Gibraltar Church. The marked progress in their dwellings is very gratifying. Since my former letter to you, about twelve new houses upon the same improved scale, and if anything a little better, have been commenced, most of which have received their finishing touch in colored walls and paint. Let me describe three of the largest and best, good enough for persons in much higher stations of life.

"House No. 1.—This is a large two-storied house, with three sleeping rooms above, a sitting hall and a dining hall. On the first floor there are two sleeping rooms and

a lock-up room for coffee and bread kind for market, etc. There are five sash windows in the house besides jalousies. This is one of the finest houses in the district, and occupies a commanding situation on a hillside.

"House No. 2.—This house is near completion; is situated upon the top of a small round hill, and belongs to one of the young men of the Gibraltar Church, who has, not long ago, taken to himself in a respectable manner a wife. It is also an upstairs house with a front portico. There are in it three sleeping rooms and two halls, and will be when quite completed a nice comfortable home for our young friend and his wife.

"House No. 3.—This is one of the lately finished houses in the district. It is, like all the rest, built upon a hill, and presents a fine appearance from the road. There are two sleeping rooms upstairs, a large sitting room or hall, and a passage, with the necessary rooms below. Its colored walls, painted jalousies and blinds, barbecues in front, and outbuildings, make up quite a pleasing picture of a peasant's cottage in the St. Ann's Mountains of Jamaica. I visited unexpectedly the friends residing in this house a few weeks ago, and was very pleased to observe the general neatness and order of all the internal arrangements. Had they expected me, I should have inferred that they prepared the house to receive "minister"; but as my visit was unexpected it was to me no ordinary pleasure to observe the nicely-polished floor, the clean furniture, tables and chairs all in order, and the inside of the house quite in keeping with its outward appearance.

"One noticeable feature of progress in this district is the attention that necessary family conveniences are receiving, in addition to the improved dwellings of the people. These are seen in the erection of better kitchens and closets, so long neglected by most of our people, and provision for water supply by the erection of tanks. This water supply is of great importance in those districts of the island where there is the limestone formation; fissures in the rocks above and under ground, and cavities here and there in the earth, prevent a collection of surface water in ponds, and are equally inadmissible of running streams in the shape of rivers and springs, so abundant in more favored parts of the island. Many of the lately erected tanks of the people contain sufficient water to sustain a reasonably long drought.

## 2.—MADRAS.

"A similar progress in the dwellings of our people is observable in this district. Madras is an old coffee plantation, and was some years ago cut up into small holdings, which the people purchased. More recently Bryan Castle and Brampton, Bryan Mountains, have undergone a similar process, to the great advantage of the people. Here some very commodious and neat houses have been erected, with the family conveniences already described. The water supply of our people here is very plentiful, nearly every house having a tank or wooden butt, so that in the late prolonged drought the people had enough for themselves and to spare.

"The first indication of a new house is the burning of a lime kiln; next, a spot is selected and cleared; then timbers and other building materials are collected, after which a mason is employed to build the foundation walls and the carpenter's work progresses according to the means of the owner. Judging from the number of lime-kilns lately burnt in this district and spots cleared, we shall in the near future have quite a number of improved family dwellings.

## 3.—GOMERSAL.

"Here lived for a number of years, and died lately in a good old age, Mr. Benjamin Hilton, whom we delighted to call "Father Benjamin." He was one of God's nobility, though at one time a poor slave. He was an humble and genuine Christian, in all the relations of life. By dint of industry and force of character he bought from his old master the coffee plantation on which he was formerly a slave. He lived to see gathered around him a host of children and grandchildren, walking in the hallowed footsteps of their aged father and mother. Benjamin Hilton died a few years ago, and left at the death of his aged widow his property to be divided equally between his six daughters. The widow followed to an honorable grave not long after. The property has been divided according to the tenor of the will, and upon each share there has been erected a real comfortable family dwelling of the most approved style. The younger men, who bought portions of the property from Mr. Hilton, have also erected, or are now engaged in erecting, similar houses on their freeholds.

"I might name the Ulster Spring and Sherwood districts of the parish of Trelawny, where to my knowledge similar improvements in the dwellings of the people have within a comparatively short time taken place, but probably those residing in the districts will be better able to describe such improvements than I.

"I will now point to three results which I have noticed as following in the wake of improvements in the dwellings of our people.



"(1) *The moral standard is at once elevated.*

"I have for several years observed that my church exclusions for the sin of immorality increase or remain the same, painfully numerous, where the people continue to live in *so-called* houses, in which no decency can be maintained and no religious virtue cultivated; while, on the other hand, in such districts as I have named, where the people are rapidly improving their dwellings, exclusions for immorality decrease in the ratio of such improvements, and in the houses I have already described exclusion from church fellowship for this social sin is very rare.

"(2) *The religious and educational advantages at command are more readily laid hold of and appreciated.*

"The small settlers owning their own plots of land, and who are fast rising up into a respectable middle class, are the strength of the Church and State. They contribute liberally to erect their places of worship, to support gospel institutions, to erect their school-houses and teachers' residences. For such there is no need of a compulsory scheme of education, as they voluntarily and gladly keep their children at school during a reasonable period of the year.

"(3) *Trade is benefited by such, and the revenues of the country proportionately increase as the people are induced to improve their dwellings.*

"These householders are the most honest dealers the shopkeepers have on their books. Having their hard-earned property at stake they cannot afford to be sued and levied on, while in their dress and food they add considerably to the indirect revenue of the country, not to speak of their direct contribution to local or parochial rates.

"In conclusion, I would observe that whatever can be done by the Government to assist this growing desire among our better-class people for 'better homes' will be substantial gain to all concerned in the very near future."

## APPENDIX D.

### JAMAICA LABORERS.

Sir Anthony Musgrave, late Governor of Jamaica, made an address in 1880, before the Royal Colonial Institute, London, in which he said:

"I am convinced that the same great laws which regulate the action of capital and labor everywhere will be found now to operate in Jamaica, as everywhere else, and that the negro laborer only needs to be treated with the same justice and consideration accorded to his fellows in other places. All that is required now is to dismiss, on the one hand, any sentimental philanthropy, and on the other the notion that any one class of men is bound to work for another class, unless it is to the interest of the class that they should so work."

Upon this text the experience of the contractors who have undertaken the extension of the Jamaica Railway is a very good comment. Mr. G. M. Campbell, manager of the railway extension, has given me the following information:

"I had no difficulty in obtaining all the labor I required. I began by paying the men 1s. 6d. per day and the women 9d. and 1s., and found no difficulty in getting all the labor I wanted. We began work in February, 1882. During that year the average number of laborers at work daily was 4,145; during 1883, 3,836; 1884, 3,074. We have as many people at work as we desire or can employ to advantage.

"Wages paid per day: Masons, 3s. 6d. to 4s. 6d.; carpenters, 3s. 3d. to 4s. 6d.; blacksmiths, 3s. 6d. to 4s. 6d.; laborers, 1s. 6d. to 2s.; women, 9d. to 1s.; boys and girls, 6d. to 9d.

"A considerable portion of the work was done by subletting it as subcontracts at so much per cubic yard. Our best subcontractors were the black men, who worked themselves and made their men work. The men who were above work and 'bossed the gang' from under the shade of an umbrella, were worse than useless, and had soon to be got rid of, both in the interests of the men and ours.

"As instances of their amenability to teaching, I may mention that Carr, who built the three splendid viaducts which would be creditable to any country, and Brown, who erected the scaffolding, never saw such works before; yet now they would be considered first-class foremen in England; it paid us to teach them, and they taught their men. To come down lower, the common laborers in the tunnel, before they had been at work a month, could work the compressed-air drills as well, nearly, as the English miners; and before the tunnel was finished we had not an Englishman in it; all the work was done by Jamaicans, and well done too.

"In all my experience of labor, extending over eighteen years, and including the navy, Chinaman, Malay, Cingalese, and all the laboring races of British India, I have not had to do with a more orderly, well-behaved, cheerful, obedient workman than the Jamaica negro. Since we began the works we have paid out nearly £200,000 in wages, and during all the time there was not a row calling for the interference of a single constable.

"It is my own humble opinion, come to after careful consideration of the subject, that a fair day's pay for a fair day's work will secure any labor that is ever likely to be required in Jamaica. Had I another contract here on which I could employ six thousand men, I should have little fear of not getting them."

Mr. R. H. Lowndes, foreman of one section, including the tunnel, states that the workmen labor nine hours a day six days in the week, and that substantially the same hands employed the first year still continue at work on that section.

## APPENDIX E.

### READING CLUBS.

To organize a shilling reading club, eight or more members of one congregation join together, contributing each one shilling in advance, thereby constituting themselves members of the club for one year. The money is then transmitted to some bookseller in England, together with an order that certain specified illustrated monthlies be sent by post, in monthly parcels, for one year, to some one person named,—usually the minister of the congregation. As a rule, the net cost of periodicals thus sent and delivered at any post-office in the Postal Union will be 50 per cent. above the London price. Thus a club of two dozen members could obtain, with their 24 shillings, 16 penny periodicals each month, amounting to 192 periodicals during the year. The order should be so given that the periodicals for two months will be included in the first parcel. The periodicals are to be distributed weekly (usually on Sunday) by some one appointed to take charge of the matter (usually the school-master), each member receiving one periodical. This is to be retained for a week (and not over two weeks under penalty of a fine to be fixed by the club), and when returned the member will receive another; and so, week by week, the periodicals are read and exchanged. By the time any one member has read four or five of the periodicals first received, the supply for another month will have come, and thereafter during the remainder of the twelve months there will always be on hand periodicals more than enough to give fresh reading matter every week to each member. After the first quarter, when the periodicals will have accumulated, if any members desire to read two in one week they should be permitted to do so. At the end of twelve months all the periodicals for the year will be divided equally among the members of the club.

The plan for school clubs is similar; but as many children's papers and magazines cost only a half-penny monthly, the rate of payment for the year is fixed at sixpence; and because many children might find it difficult to obtain a sixpence, the school clubs are organized for six months, and each member pays threepence, the club to be renewed half-yearly instead of yearly. Frequently the teacher contributes one shilling or more, so that some of the penny magazines for children may be included in the order for the school club. On one day in the week the periodicals are exchanged, and on that day it is intended that a portion of the reading exercises be selected from the periodicals instead of the ordinary school books.

In a few clubs the fee is increased so as to procure a larger supply of the penny magazines. When circumstances will permit, this increase would be desirable.

Most of the religious denominations publish attractive periodicals for adults and for children. Among the most interesting of the undenominational penny and half-penny periodicals are the following:

For adults: At one penny—*British Workmen*, *Cottager and Artisan*, *Friendly Visitor*, *Home Friend*, *Light and Love*, *Mother's Friend*, *Mother's Treasury*, *National Temperance Mirror*, *Tract Magazine*, *Welcome Hour*.

For children: At a half-penny—*Band of Hope Review*, *Band of Mercy*, *Child's Own Magazine*, *Children's Paper*, *Dayspring*, *Gleanings for the Young*, *Sunrise*, *Young Standard Bearer*. At one penny—*Child's Companion*, *Children's Friend*, *Little Gleaner*, *Our Own Magazine*, *Prize*, *School Newspaper*, *Young Days*, *Youth's Miscellany*.

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<sup>1</sup> Guest, Hayworth & Co., 29 Paternoster Row, London, E. C., attend to orders which I send.

# PROGRESS OF EDUCATION IN THE PROVINCE OF ONTARIO, CANADA: AN HISTORICAL SKETCH.

BY J. GEORGE HODGINS, M. A., LL. D.,  
*Deputy Minister of Education.*

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The educational history of Ontario (formerly Upper Canada), naturally divides itself into three periods, viz:

I. The Early Settlement, or United Empire Loyalist, Period.

II. The period preceding the union of the two Provinces of Upper and Lower Canada.

III. The period since that union, and including the administration of the Rev. Dr. Egerton Ryerson, Chief Superintendent of Education.

During the early settlement period, and that preceding the union of the two Provinces (in 1841), two social forces were slowly taking form and shaping themselves into antagonistic relations to each other. This was apparent from the attitude which each assumed on the religious, political, and educational questions of the time. And, although they frequently expressed strong and opposite views on educational topics, yet the question of an educational system for the Province had, during all this time, taken no definite shape in the public mind. Indeed, such a thing was not deemed practicable, except by men who were years in advance of their times.

It will simplify my statement of the case if I take a somewhat prospective view of events in the order in which they afterwards transpired. For convenience, therefore, I select two noted men of their times as representatives of the two social forces to which I have referred, and of the opposite opinions on education and other subjects which then prevailed.

The first was the Rev. Dr. Strachan (afterwards first Church of England Bishop of Toronto), and the other was the Rev. Dr. Ryerson, the trusted leader of the Methodist body.

Dr. Strachan was the undoubted representative of the English and European views on popular education. Dr. Ryerson, on the other hand, was the equally true and faithful exponent of the British Colonial, or United Empire Loyalist, views and opinions on the same subject. What these latter views and opinions were may be gathered from a reference to the early colonial history of the thirteen colonies.

The first real systematic efforts put forth in America to promote popular education began in New England, and thence spread in all directions. In 1635 the first school was opened in Boston, and in 1647 the first legislative enactment in favor of schools was passed in Massachusetts. In 1670 the Governor of Connecticut declared that "one-fourth of the revenue was devoted to schools." General Eaton, in his valuable and comprehensive report for 1875, says:

History, with hardly a dissenting voice, accords to the English colonists of New England the credit of having developed those forms of action, in reference to the education of children, which contained more distinct features adopted in the systems of the country, than any other,

Trained in such an educational school, and filled with the educational traditions of these old colonial times, the "United Empire Loyalists," or "defenders of the unity of the Empire," as they were called, brought with them into Canada their zeal for education and their devotion to the sovereign.

The first settlers of Upper Canada were "exiled tories," so called, from the revolted colonies. In that, and in the other Provinces, they were warmly received and welcomed as the heroic defenders of the royal cause. They sacrificed everything but their principles and their honor in maintaining "the unity of the Empire." Even after the struggle was ended, they adhered to the "lost cause" with the same devotion as they had shown in following the royal standard, not only to victory, but even to disaster and defeat. They were men of wonderful resolution and daring, as well as of superior intelligence. Such were the first settlers of Upper Canada.

There were nine colleges founded in the thirteen colonies before the Revolution of 1776.<sup>1</sup> Dr. D. C. Gilman, President of Johns Hopkins University, speaking of these old British colonial colleges, pays the following high tribute to their value in giving breadth and culture to the distinguished colonists who afterwards shaped the destinies of the American Republic. He says:

These nine colleges were nurseries of virtue, intelligence, liberality, and patriotism, as well as learning; so that when the Revolution began, scores of the most enlightened leaders, both in the council and on the field, *on both sides*, were found among their graduates.

Soon after the arrival of the "U. E. Loyalists" in Upper Canada, a tide of emigration set in, chiefly from the three kingdoms. These immigrants brought with them the feelings and habits of home life in the old world, with the opinions and prejudices of their class, illustrating the truth of the old Latin quotation, "*Cælum, non animum, mutant qui trans mare currunt.*"

By degrees portions of the U. E. Loyalists and of these immigrants, whose views on "Church and State" coincided, united their forces and formed a powerful and dominant party. They ruled the Province with a high hand for many years. From their social position and frequent intermarriage they became a compact and exclusive party, and were distinguished by the *sobriquet* of the "Family Compact." Against this powerful party was arrayed the majority of the U. E. Loyalists and their descendants, and the entire liberal and progressive party, under the leadership of Dr. Ryerson and other noted men, some of whom afterwards left his standard and became involved in the political troubles of the rebellion of 1837-'38. It is sufficient to say in this connection that under the skillful leadership of Dr. Ryerson and other prominent men of moderate views who acted with him, the power of this Family Compact was broken, the compact itself dissolved, and its opponents became in turn the ruling party in this Province, a position which their legitimate successors still occupy.

The Family-Compact party, in the heyday of their power and influence, were not averse to education. Far from it; for they were men of education themselves. But it took the form of zeal for higher education and for the higher classes. Rev. Dr. Strachan, who was the most energetic and powerful leader of this party, occupied a seat in the Legislative Council (Senate) by appointment of the Governor. He devoted all

<sup>1</sup> These were Harvard, Yale, Columbia, Princeton, Brown, Pennsylvania (Univ.), Rutgers, William and Mary, and Dartmouth.

his energies to the establishment of a university, with district classical schools as feeders. He entirely ignored elementary schools, or rather made no provision for them; and it was not until nine years after these district classical schools were established that the U. E. Loyalists, combined with the progressive party, of which it formed no inconsiderable portion, were able to get a measure passed by the Legislature for the establishment and maintenance of common schools. The chief reason for the perpetration of this educational anachronism was, that the friends of popular education, while all-powerful in the House of Assembly, were few and consequently uninfluential in the Legislative Council, and were, therefore, not able at all times to influence that body so as to secure its assent to the education bills passed by the popular branch.

But in order to understand more fully the sequence of events which led to the development of the educational spirit in this Province, it will be necessary to give a condensed summary of the facts. With this historical background in prospective view, the distinguishing features of that comprehensive system of education which, in later years, Dr. Ryerson was privileged to found, can be more clearly seen.

The U. E. Loyalists settled in British America in 1783, the date of their exile. Most of them settled in Upper Canada along the north shore of the St. Lawrence River and the corresponding margin of Lake Ontario. They brought with them from the old colonies their zeal for education and their devotion to the flag of England. Those of them who had settled along the Bay of Quinté united in 1789 in framing a memorial to Governor-General, Lord Dorchester (Sir Guy Carleton), in which, lamenting the educational privations which they had endured, they prayed the Governor to establish a "seminary of learning" at Frontenac (Kingston), at the east end of Lake Ontario. Their prayer was granted, so far as the setting apart of lands for the support of the seminary was concerned, as well as for the support of schools wherever the expatriated colonists had settled (or might settle) in the country.

Immediately after the passing of the Constitutional, or Quebec, Act of 1791, by which, among other things, Upper Canada was separated from Quebec, the Governor of the new Province (J. Graves Simcoe) sought the co-operation of the Church of England bishop having jurisdiction over both provinces, in urging upon the Home Government the necessity of providing for a university and for classical schools in Upper Canada. Provision for elementary schools formed no part of this plan. The British colonial idea of providing for such schools first never crossed the minds of the leaders of public opinion in these days nor that of the bishop. They were chiefly Englishmen, with the old-fashioned English ideas of those times, that the education of the masses was unnecessary, for it would tend to revolution and the upsetting of the established order of things.

After the retirement of Governor Simcoe the Legislature of Upper Canada presented an address to the King in 1798, praying that a portion of the Crown lands should be set apart for the maintenance of higher education, as proposed by Governor Simcoe. King George III, in the same year, gave a gracious answer to this address, and instructed his colonial minister, the Duke of Portland, to issue directions to the Acting Governor (President Russell) to have the lands asked for set apart. This was done, and 549,217 acres were devoted to the purposes set forth in the address. The share which afterwards fell to the university was 225,273 acres.

As these lands thus set apart were, in those early days, unproductive of revenue, nothing could be done to give practical effect to the gracious

act of the King. A principal for the proposed university was, however, selected in Scotland. The position was first offered to the afterwards justly celebrated Rev. Dr. Thomas Chalmers, but declined. It was then offered to a successful parish schoolmaster, Mr. (afterwards so distinguished in this Province as the Rev. Dr.) Strachan, among whose pupils was the gifted painter, Sir David Wilkie. When it became apparent that no university was then possible, Mr. Strachan became a private tutor in the family of the Hon. Richard Cartwright, of Kingston, and was afterwards the highly successful head master of the Cornwall District Grammar School.

Dr. Strachan's early and practical experience as a teacher gave to him an additional and keen sense of the educational wants of the country. His success as an educator proved to him what could be done in that direction. It also enlisted his feelings and fired his ambition to be the founder of an institution of superior learning, in which the young men of the Province could be thoroughly educated. The education of the masses was not provided for by him, but in an Act passed in 1819 and relating to classical schools (which he promoted), it was agreed—

That in order to extend the benefits of a liberal education to promising children of the *poorer inhabitants*, trustees [of common schools wherever established] shall have the power of sending scholars, not exceeding ten in number, to be chosen by lot every four years, to be taught gratis at the [classical] schools.

Thus, in this exceptional manner, provision was made, so that, should a limited number of the children of the *poorer inhabitants* develop ability or taste for learning, they should not be wholly excluded from the privileges so liberally provided for children of the richer classes. These class distinctions have, happily, forever disappeared from our statute-book. They were no doubt conceived in a benevolent spirit, and were characteristic of the social ethics of the times, but they were pernicious as a principle to embody in a school law.

In his "Appeal" in behalf of a university for Upper Canada, published in 1827, Dr. Strachan gave a fuller expression to this idea of providing education only for the wealthier classes. He said:

It is indeed quite evident that the consequences of a university \* \* \* possessing in itself sufficient recommendations to attract to it the sons of the most opulent families, would soon be visible in the greater intelligence and more confirmed principles of loyalty of those who would be called to various public duties required in the country—i. e., the governing classes.

In justice to Dr. Strachan, it is proper to state that a few years afterwards (in reply to a question put to him by a committee of the House of Assembly) he laid down a broader, a nobler, and a more comprehensive principle in regard to a system of national education. He said:

The whole expense [of education] in a free country like this should be defrayed by the public; that promising boys, giving indication of high talent, though poor, might have an opportunity of cultivating their faculties, and, if able and virtuous, taking a lead in the community.

During all this time the friends of popular education were not idle. From 1827 and for many years Dr. Ryerson was engaged in waging war against the opponents of liberal institutions and religious equality. His chief antagonist was Dr. Strachan. The subjects in dispute related to a dominant church, the application of clergy-reserved lands to the purposes of education, and the liberation of the provincial university from exclusive control under the presidency of Dr. Strachan, first as arch-deacon and afterwards as bishop. Not being eligible to the popular branch of the Legislature (being a minister), Dr. Ryerson had to develop his powers of resistance to the dominant and ruling party in other di-

rections; and this he did with wonderful success. As a writer and debater few equaled him in his presentation of facts, and in his skill in detecting the weak points of his adversary's position or argument. As a controversialist and pamphleteer he had confessedly no rival. He, therefore, was able to furnish his friends in the House of Assembly with facts and arguments which were irresistible. There were, too, in that Assembly some men of rare power and ability, who did noble service in the popular cause. They passed resolutions and school bills time and again, but could not always induce the Legislative Council (Senate) to concur in their adoption. This state of things continued for many years, and with disastrous effects on the intellectual growth and well-being of the Province. This fact is attested by indubitable witnesses, and is recorded in the proceedings of the House of Assembly of the time. I shall quote a few examples:

In a petition of the United Presbytery of Upper Canada, presented to the House in 1830, the clergy who signed it say:

It is with deep regret that your petitioners (in their ministerial capacity, as connected with a very large portion of His Majesty's subjects in this Province) are compelled to say that the state of education is, in general, in a deplorable condition.

The House of Assembly itself, in a report of a committee on a petition laid before it in 1831, says:

The common schools of this Province are generally in so deplorable a state that they scarcely deserve the name of schools.

The reason for this state of things is thus set forth by the House of Assembly in an address to the Governor, adopted in the same year:

We, the Commons of Upper Canada, in Parliament assembled, most respectfully represent that there is in this Province a very general want of education; that the insufficiency of the school fund to support competent, respectable, and well-educated teachers, has degraded common-school teaching from a regular business to a mere matter of convenience to transient persons, or *common idlers*, who often teach school one season and leave it vacant until it accommodates *some other like person*, whereby the minds of our youth are left without cultivation, or, what is still worse, frequently with vulgar, low-bred, vicious, or intemperate examples before them, in the capacity of monitors [*i. e.*, teachers].

*Per contra*, the House, in its address to the Governor, further says:

If provision were made for the liberal and punctual payment of teachers, \* \* \* gentlemanly, well-educated persons *would not be ashamed* to take charge of our youth, our schools would be no longer vacant, nor our youth ignorant, etc.

In the Third General Report of the Education Committee of the House of Assembly, presented in the session of 1832-'33, the committee present the financial aspect of the question in the following graphic language:

Your committee most earnestly draw the attention of your Honorable House to the astounding fact that less is granted by the provincial Legislature for educating the youth of 300,000 people than is required to defray the contingent expenses of one session of Parliament.

To place this in a point of view more striking, it may be observed that one-third of the population of any country are subjects of school education, but, allowing one-fourth, we have a grant from the provincial treasury of \$16,000 for educating 75,000 children (a little more than 20 cents per annum for the instruction of each scholar), a provision so pitiful, so miserable for this most important of all objects, that it cannot fail, when thus presented, of exciting astonishment; and when contrasted with the vast sums expended by other countries in support of public instruction, reflects no credit on the Province.

The chairman of this committee of the House of Assembly, in a personal memorial which he presented to the Governor of the Province in 1835, uses the following language:

This rapidly-growing colony \* \* \* may be pronounced at this moment totally uneducated, for the little instruction given to the children, under the name of educa-

tion, has no influence over their morals—does nothing to open or expand their intellectual faculties, much less to direct them in their conduct through life. English reading, imperfectly taught; something of writing, and the first five rules of arithmetic, which the teachers we employ are seldom able to explain, make up the meager sum total of what the rising generation learn at our common schools.

Several attempts have been made to amend the law and to increase the assistance from the provincial treasury to more than its original amount, but hitherto without effect.

The Legislative Council, which had been the chief obstructive in school legislation, in inviting a conference with the House of Assembly in 1838, makes the following statement, in giving reasons for the rejection of the last educational measure passed by that House:

The Legislative Council have to acquaint the House of Assembly that they cannot pass the School Bill [sent up to them], because it proposes to levy an assessment at the extent of 14*d.* [3 cents] in the pound [8*d.*] to support common schools; and as Acts have lately passed imposing additional rates for the purpose of defraying the expense of building jails and court-houses and macadamized roads, the Council fear that the assessment for common schools might be found burdensome, &c.

Thus, and because jails, court-houses, and even roads were considered of more importance than schools and teachers, the last measure for the promotion of education ever passed by the House of Assembly of Upper Canada was rejected by the Legislative Council.

In three years afterwards the House of Assembly and Legislative Council of Upper Canada ceased to exist, and the two Provinces of Upper and Lower Canada were united under one Legislature.

Such was the untoward aspect of affairs when this legislative union took place.

The momentous political events which preceded this union, and which led to the total disruption of all political parties and combinations, were very salutary in their effects. Under the liberal policy pursued by the Home Government grievances were redressed, and a broad and comprehensive scheme of popular government inaugurated. The result was that the wise and statesmanlike measures, designed to promote public tranquillity and local self-government, were proposed to and adopted by the Legislature.

Amongst these was a measure providing for the establishment of a municipal council in each local division of the Province of Upper Canada (and partly so in Lower Canada) for the regulation of internal matters.

On this system was ingrafted, by means of a separate Act applicable to the whole Province, a scheme of public education, with a liberal provision for its maintenance.

In recommending this scheme to the favorable consideration of the first Parliament of United Canada, in 1841, Lord Sydenham, the first Governor-General, used the following language:

A due provision for the education of the people is one of the first duties of the state, and, in this Province especially, the want of it is grievously felt. The establishment of an efficient system, by which the blessings of instruction may be placed within the reach of all, is a work of difficulty, but its overwhelming importance demands that it should be undertaken. I recommend the consideration of that subject to your best attention, and I shall be most anxious to afford you, in your labors, all the co-operation in my power. If it should be found impossible so to reconcile conflicting opinions as to obtain a measure which may meet the approbation of all, I trust that, at least, steps may be taken by which an advance to a more perfect system may be made, and the difficulty under which the people of this Province now labor may be greatly diminished, subject to such improvements hereafter as time and experience may point out.

The enlightened expectations of the Governor-General were, happily, realized. But so diverse were the populations of the two Canadas thus united, and so different were their social conditions, that the School Act



then passed was repealed two years afterward (in 1843), and a school bill for each Province was passed by the Legislature in that year.

Up to this time Dr. Ryerson's energies, as I have shown, were wholly engrossed in contending for the civil and religious rights of the people. He had also ten years before projected and collected money for the establishment of an academy or college for higher education at Coburg, on the north shore of Lake Ontario. This he did so as to provide a superior institution for members of his own church and the public generally, and as a protest against the exclusiveness of King's College (to which I have referred), which was projected and afterwards established at Toronto, by Bishop Strachan. His efforts in this, and in the establishment of the Victoria College at Coburg, as a university, in 1840, aroused a widespread interest in education generally, which bore good fruit afterward. This university has now been in operation forty-five years, and from it the first arts graduate in Upper Canada was sent forth in 1846. Its first president was the Rev. Dr. Ryerson. Its present distinguished president, the Rev. Dr. Nelles, was his pupil, and has held his position with honor to himself for the last thirty-five years, an unprecedentedly long period in the history of colleges in this country.

Dr. Ryerson enjoyed much of the confidence of the Governors during these times, and was often consulted by them. He would have been appointed to take charge of education in 1842 had not the then Governor-General (Lord Sydenham) suddenly died, as the result of an accident. He was, however, appointed in 1844, and for thirty-two years was, first the founder, and afterwards the successful administrator, of the school system of Upper Canada, now Ontario. It was my good fortune to be associated with him from the time of his appointment in 1844 until he retired from office in 1876.

Immediately after his appointment, Dr. Ryerson went to Europe, remaining for over a year to familiarize himself with the systems of education there. On his return he published an elaborate report on his projected scheme of "Public Instruction for Upper Canada." That report was approved by the Governor-General in Council, and he was directed to prepare a bill to give effect to his recommendations, which he did in 1846. A brief analysis of that report may be interesting, and is as follows: It is divided into two parts: 1, Principles of the system and subjects to be taught; 2, machinery of the system.

After defining what was "meant by education," the principles of the system were laid down as follows:

1. It should be universal.
2. It should be practical.
3. It should be founded on religion and morality.
4. It should develop all the intellectual and physical powers.
5. It should provide for the efficient teaching of the following subjects: Biblical history and morality, reading and spelling, writing, arithmetic, grammar, geography, linear drawing, vocal music, history, natural history, natural philosophy, agriculture, human physiology, civil government, political economy. Each of these topics was fully discussed and illustrated in the first part of the report.

The second part explained the machinery of the system, which was summarized as follows:

1. Schools—their gradation and system.
2. The teacher and his training.
3. The text-books recommended.
4. Control and inspection on the part of the Government.
5. Individual and local efforts.

These several topics were also fully discussed and illustrated, so that the whole comprehensive scheme of education proposed by Dr. Ryerson was clearly and fully understood. The report occupied nearly 200 pages.

The school law founded upon this report provided, amongst other things, for—

1. A general Board of Education for the Province, to take charge of a normal school, and to aid the chief superintendent in certain matters.

2. A normal school, with practice or model schools attached.

3. The establishment of school libraries.

4. Plans of school-houses.

5. Appointment of district school superintendents.

6. Apportionment of school moneys to each school according to the average attendance of pupils at such school.

7. Levy of a school rate by each district (county) municipal council, of a sum at least equal to the legislative grant to each such district.

8. The collection, by the local school trustees, of the balance required to defray the expenses of their school, in any way which the school-rate papers (at the annual meeting) might determine.

9. The recommendation of a uniform series of text-books, with the proviso that no aid would be given to any school in which books disapproved of by the general Board of Education might be used.

10. The establishment of district model schools.

11. Examination and licensing of teachers.

12. Visitation of schools by clergymen, magistrates, municipal councillors, etc.

13. Protection of children from being "required to read or study in or from any religious book, or join in any religious exercise or devotion, objected to by parents."

14. Establishment (as provided in the law of 1841) of Roman Catholic separate schools, where the teacher of the locality was a Protestant, and *vice versa*. (These schools received grants in accordance with their average attendance of pupils.)

15. Levy of rates by district municipal councils, at their discretion, for the erection of school-houses and teachers' residences.

Such were the principal provisions of the first School Act, proposed and adapted from other school laws by Dr. Ryerson in 1846.

It was not to be expected that so comprehensive a scheme of education would meet with universal acceptance. The very reverse was the fact, and it was assailed as revolutionary and oppressive. It certainly was revolutionary in the best sense, but not oppressive, for it was largely permissive and wholly tentative. It authorized councils and trustees, at their discretion, or with the assent of the rate payers, to do certain things, but it did not compel them to do them. The new system was so far revolutionary that it was almost wholly different from the former one. It was composite.

One of the ablest of the leading papers of the day assailed the new system and its promoter in the strongest terms, chiefly with a political animus in its assaults, and urged the dismissal of the offender from office. The Government of the day, being personally friendly, stood firm and gave the assailed superintendent of education all necessary support.

The machinery of the system was adapted chiefly from New York, the principle on which the schools are supported was taken from New England, normal schools from Germany, and the uniform series of text-books from Ireland. All were, however, so blended and harmonized to

meet the requirements and circumstances of the country that they became, in Dr. Ryerson's molding hands, "racy of the soil."

It was fortunate that just at this crisis Canada was favored with the presence of one of the most accomplished, in every sense of the term, of the Queen's representatives, the Earl of Elgin and Kincardine.

That distinguished statesman, who afterwards filled with great dignity the highest post in the civil service of Great Britain, that of Governor-General of India, reached Canada at a critical transitional period in our history. Few can recall the incidents of those days without a feeling of admiration for the fearlessness, tact, and ability with which he discharged the delicate and difficult duties of his high office.

When Lord Elgin arrived in Canada in 1847, and when he removed to Toronto, after the riot and burning of the Parliament-House in Montreal in 1849, educational affairs were fiercely discussed and were yet almost at the low ebb at which Dr. Ryerson had found them. Not that they had previously reached a higher plane and had gradually settled down to a lower one. The reverse was the fact, but the question of education had only then (in Dr. Ryerson's hands) begun to attract serious public attention. It was, however, as I have explained, in an adverse direction, for the whole subject, in the advanced form in which it was presented by Dr. Ryerson, was unpopular. It involved taxation and other unpalatable "burdens," as its opponents averred.

Up to this time no one else had ventured to give a practical turn in the public mind to the crude theories then held in regard to systems of popular education. Dr. Ryerson paid the penalty of all reformers like him, but yet lived to see that the after-details of the system of education were worked out "on his lines."

It is needless to say that Dr. Ryerson's scheme was assailed as impracticable. This I have explained. It was held to be too comprehensive for this country. Even his reference to the compact and systematized plan adopted in Prussia was seized upon as an indication of his covert design to introduce the (as then so considered) baleful system of "Prussian despotism." His commendation of "free schools," as a prospective feature in our educational system, was denounced as an attempt to legalize an "outrageous robbery," and as a "war against property."

It was at this period of our educational history that Lord Elgin first came into official contact with our educational system. He at once mastered the whole subject, and soon perceived the great importance to the whole country of the question which was then being so fiercely discussed.

I shall not dwell upon the great services which Lord Elgin then rendered to the cause of education at a critical period of its history in this Province. Suffice it to say that his speeches and addresses on that subject and at that time had a wonderful effect in moderating the opposition which Dr. Ryerson received in laying the foundations of our system of education. They had also the potent effect of popularizing that system in the estimation of the people which it was designed to benefit. That popularity has, happily, continued to this day, thanks in a great degree to the dignity imparted to the subject by the persuasive eloquence of Lord Elgin. His eminence as a distinguished graduate of Oxford, and his general knowledge of European systems of education, enabled him to speak with a precision and certainty which few could gainsay. It was a gratifying fact that he identified himself personally, as well as officially, throughout the whole of his seven years' administration, with the general education and intellectual improvement of the people of Canada. The first bill to which His Excellency

assented in Her Majesty's name after the removal of the seat of government to Toronto was the school bill passed in 1850, and which constitutes the legal charter of the educational system of to-day. He afterwards laid the corner-stone of the handsome buildings for the normal school at Toronto, accompanying the act with one of his most eloquent and powerful speeches on the subject of our system of education. And one of His Excellency's last acts in Toronto, when about to leave the country, was to visit those buildings and express his satisfaction with the several departments of the system therein conducted.

In founding the system of public instruction for Upper Canada, Dr. Ryerson wisely laid down certain fundamental principles which he believed to be essential to the success and stability of that system. These general principles may be thus summarized :

1. That the machinery of education should be in the hands of the people themselves, and should be managed through their own agency ; they should, therefore, be held, be consulted, by means of public meetings and conferences, in regard to all school legislation. This he himself did every few years.

2. That the aid of the Government should only be given where it could be used most effectually to stimulate and assist local effort in this great work.

3. That the property of the country is responsible for, and should contribute toward, the education of the entire youth of the country ; and that, as a complement to this, "compulsory education" should necessarily be enforced.

4. That a thorough and systematic inspection of the schools is essential to their vitality and efficiency.

These, with other important principles, Dr. Ryerson kept steadily in view during his long administration of the school system of Ontario. He was not able to embody them all at once in a school bill, but he did so in the final school legislation with which he was connected in 1871. Their judicious application to the school system contributed largely, under the divine blessing, which he ever sought, to the wonderful success of his labors.

But to return. Notwithstanding the zeal and ability with which Dr. Ryerson had collected and arranged his facts, analyzed the various systems of education in Europe and America, and fortified himself with the opinions of the most experienced educationists in these countries, the system which he projected, and the school law which embodied it, continued to be fiercely assailed by a portion of the press, and by hostile politicians. This hostility culminated in an event which brought things to a crisis in 1849.

In that year a provincial administration personally unfavorable to Dr. Ryerson was in office. A prominent and popular member of it, with the inexperienced aid of some malcontents outside, concocted a singularly crude and cumbrous school bill, covertly designed to oust Dr. Ryerson from office. This bill, as was afterwards explained, was taken on trust by the other members of the Cabinet and, at the very close of the session, it was hurriedly passed through the legislature and became law. Dr. Ryerson at once called the attention of the Government to the impracticable and un-Christian character of the bill, as, under its operation, the Bible, among other things, would be excluded from the schools. Rather than administer such an act, Dr. Ryerson tendered his resignation of the office he held to the Government. The late Hon. Robert Baldwin, C. B., Attorney-General, the Nestor of Canadian politicians and a truly Christian man, declined to recommend the accept-

ance of the resignation, and was so convinced of the justness of Dr. Ryerson's views, and the reasonableness of his remonstrance, that he took the unusual course of advising the Governor-General, Lord Elgin, to suspend the operations of the new act until Dr. Ryerson could prepare a draft of a school bill on the basis of his former act, embodying in it the conclusions suggested by his own experience up to that time. The result was that a school law was passed in 1850 adapted to the municipal system of the Province, and so popular in its character and comprehensive in its provisions and details that it is still (in a consolidated form) the primary basis of the Ontario school system.

In 1850-'51, Dr. Ryerson, while in England, made preliminary arrangements for establishing a library, and a prize book and map and apparatus depository in connection with his department. His reasons for doing so may be briefly stated:

1. He felt it to be practically useless to train teachers in the best methods of imparting instruction, and in the use of apparatus and other school appliances in the normal school, and not provide for them, when in charge of schools, a constant and abundant supply of these necessary appliances at the very cheapest rates.

2. He held it to be equally necessary that the pupils, who had acquired a taste for reading and knowledge in the schools, should have an equally abundant and perennial supply of the best and purest literature as it is issued from the press; otherwise they would be sure to procure reading matter (often pernicious, as he had painful proof) for themselves.

3. He could see no distinction, and therefore could not admit of any, in the principle of providing such a twofold supply of school material and reading matter, and in that of providing trained teachers and skilled inspectors at the expense of the Province, as well as a money bonus to aid in maintaining the schools in a state of efficiency.

4. He further felt that it was immaterial whether the money voted by Parliament was expended in one direction or the other, so long as in each department of the system the best interests and necessities of the schools were consulted, and the symmetry and efficiency of the school system, as a whole, were preserved and promoted.

5. He projected this plan of supply on a purely commercial basis, and so arranged and successfully carried out his scheme that while there was distributed nearly a million dollars' worth of school material and books up to the time when the depository was closed, it did not cost the country anything for the expenses of its management, as it more than paid its way.<sup>1</sup>

I might mention in this connection another of the agencies which Dr. Ryerson employed to diffuse valuable information in regard to education generally, and to inform the school authorities throughout the Province (trustees, teachers, inspectors, &c.) of the proceedings of the Department. This was a monthly *Journal of Education* of sixteen pages, which he established in 1848, but which ceased to be published the year after he left the Department. During the early years of the *Journal* I acted as associate editor with Dr. Ryerson, but during twenty-five years of its existence I was its sole editor. The following is the estimate of its value, as expressed by that veteran educator, Hon. Henry Barnard, LL. D., himself for many years the able editor of the *American Journal of Education*.

<sup>1</sup> This subject is discussed and illustrated in the accompanying paper on *Libraries and the Library System of Ontario*, by John Hallam, Esq.

He said :

Your *Journal of Education* is so full of the history, the principles, the methodology, the biography, and literature generally of schools and education, why do you not have a minute topical index of it prepared? Such an index will make your sets valuable not only to your own scholars, teachers, and statesmen, but to educationists everywhere. It is a monument of intelligent and practical editorship.

In 1855 Dr. Ryerson established meteorological stations in connection with twelve selected county grammar schools, ten following the coast line of the Lakes and on the large rivers, and two entirely inland. In this he was aided by Colonel now General Sir (J. H.) Lefroy, R. E., for many years director of the Provincial (now Dominion) Magnetical Observatory at Toronto. Sets of instruments, having been purchased in London and tested at the Kew Observatory, were sent out to the twelve stations, duly equipped and provided with all necessary appliances.

In 1857 Dr. Ryerson made his third educational tour in Europe, where he procured, at Antwerp, Brussels, Florence, Rome, Paris, and London, an admirable collection of copies of paintings by the Old Masters, statues, busts, etc., besides various other articles of a typical character for an educational museum in connection with the Department. In 1867 I was deputed to largely add to this museum collection, which I did in Paris, London, etc., especially in the direction of Egyptian and Assyrian antiquities, busts, casts, fictile ivory, etc.

In 1858-'61 Dr. Ryerson took a leading part in a protracted public discussion before a committee of the House of Assembly, in favor of grants to the various "outlying" denominational universities, chiefly in terms of Hon. Robert Baldwin's liberalized University Act of 1853. He maintained that these colleges "did the State some service," and that it was right that their claims should be recognized in a substantial manner, as colleges of a central university. He deprecated the multiplication of universities in the Province, which he held would be the result of a rejection of the proposed scheme. His plan was not adopted, owing to personal feeling and prejudice. Events proved the truth of his prediction, and universities were increased from five to eight subsequently. Twenty-five years after the close of that discussion a scheme for the confederation of these colleges was again considered, and has been favorably reported upon by most of the colleges concerned.

In 1867 Dr. Ryerson made his fourth and final educational tour in Europe and America. On his return he submitted to the Government a highly valuable "Special Report on the Systems and State of Popular Education in the several Countries in Europe and the United States of America, with Practical Suggestions for the Improvement of Public Instruction in Upper Canada." He also made a separate and interesting "Report on the Institutions for the Deaf and Dumb in various Countries." A few years afterwards he had the happiness of seeing institutions of a similar kind in successful operation in this Province.

For the various objects which he had recommended during the years from 1850 to 1870, liberal grants were made by the Legislature. The policy of the Government during those years was to sustain Dr. Ryerson and to second his efforts to build up and consolidate the system of public instruction which he had taken such pains to establish. The result was that our school system expanded and grew in every direction, and became firmly rooted in the affections of the people. In this way it came to be regarded as one of the most successful and popular

of all our public enterprises, and this is the feeling in regard to it at the present day.

School legislation, chiefly in regard to high schools and matters of detail, took place at intervals in subsequent years; but in 1871 the final school legislation, under Dr. Ryerson's auspices, took place. This legislation was partly remedial, but largely progressive. There were then first introduced into our school law some important principles, which as yet had not received legislative sanction. They were chiefly those relating to—

1. Governmental, combined with local inspection of the schools.
2. A high and fixed standard of qualifications for inspectors of public schools.
3. The abolition of the inferior office of township superintendents of schools, and the substitution of duly certificated county inspectors therefor.
4. The institution of simultaneous and uniform examinations in the several counties for teachers desiring certificates of qualification. This principle was soon extended to other examinations.
5. The fixing of a higher standard of qualifications for teachers.
6. Giving the profession of teaching a fixed legal status, and providing more fully for the retirement and support by the profession and the Legislature of worn out or retired teachers.
7. The establishment by law of a national system of free schools. Hitherto for twenty years this question was annually debated and settled for each year at the school section meeting of rate-payers.
8. Declaring the necessity for, as well as the right by law of, every child to attend school, thus recognizing the principle of, and providing for, "compulsory education."
9. Requiring that "adequate school accommodations," both in regard to school-house, play-ground, and site, be provided by trustees for all of the resident children of school age in their localities.
10. Prescribing a more systematic and comprehensive, yet practical, course of study for each kind or class of pupils in the public schools.
11. Discriminating, by a clearly defined line, in the course of study, between public and high schools.
12. Providing for the establishment of collegiate institutes, or local colleges.
13. Declaring the duty of municipalities to maintain high schools equally with public schools, and as part of the general system.
14. Providing for the substitution of township boards of education in place of local section trustees.
15. Authorizing the establishment of industrial schools.

These were the main features of a wisely progressive School Act passed in 1871. In many respects it revolutionized the existing state of things, and gave a wonderful impetus to the schools and to every department of the school system.

An entire revision and consolidation of the laws relating to public and high schools took place in 1874, in which Dr. Ryerson took a leading part. But the revision related chiefly to details and to the supply of former omissions in the law.

The last important official act of Dr. Ryerson was to arrange for the educational exhibit of the Department at the Centennial Exhibition of 1876. That was successfully carried out; and at the close of the exhibition the following gratifying "award" was communicated to the then venerable ex-chief after he had retired from office. The award

was made by the American Centennial Commission, and was to the following effect:

For a quite complete and admirably arranged exhibition, illustrating the Ontario system of education and its excellent results; also for the efficiency of an administration which has gained for the Ontario Department a most honorable distinction among government educational agencies.

This award was quite a gratification to the now retired chief of the Department, then in his seventy-third year, and amply repaid him, as he said, for many years of anxious toil and solicitude, while it was a gratifying and unlooked-for compensation for all of the undeserved opposition which he had encountered while laying the foundations of our educational system.

In a letter to a friend toward the close of his official career, Dr. Ryerson thus explained the principles upon which he had conducted the educational affairs of the Province during his long administration of them. He said:

- During these many years I have organized and administered the Education Department upon the broad and impartial principles which I have always advocated. During the long period of my administration of the Department I knew neither religious sect nor political party; I knew no party other than that of the country at large; I never exercised any patronage for personal or party purposes; I never made or recommended one of the numerous appointments of teachers in the normal or model schools, or clerks in the education office, except upon the ground of testimonials as to personal character and qualifications, and on a probationary trial of six months.

I believe this is the true method of managing all the public departments, and every branch of the public service. I believe it would contribute immensely to both the efficiency and economy of the public service. \* \* \* It would greatly elevate the standard of action and attainments and stimulate the ambition of the young men of the country, when they know that their selection and advancement in their country's service depended upon their individual merits, irrespective of sect or party, and not as the reward of zeal as political partisans in elections or otherwise, on their own part, or on that of their fathers or relatives.

The power of a government in a country is immense for good or ill. It is designed by the Supreme Being to be a "minister of God for good" to a whole people, without partiality, as well as without hypocrisy, like the rays of the sun; and the administration of infinite wisdom and justice and truth and purity.

I know it has been contended that party patronage \* \* \* is an essential element in the existence of a government. \* \* \* The Education Department has existed—and it is the highest public department in Upper Canada—for more than thirty years without such an element, with increasing efficiency and increasing strength, in the public estimation, during the whole of that period. Justice, and virtue, and patriotism, and intelligence are stronger elements of power and usefulness than those of rewarding partisans; and if the rivalry and competition of public men should consist in devising and promoting measures for the advancement of the country and in exercising the executive power most impartially and intelligently for the best interests of all classes, then the moral standard of government and of public men would be greatly exalted, and the highest civilization of the whole country be advanced.

In conclusion, I add a few figures to show what a great advance our school system made under the administration of Dr. Ryerson. In this connection few of the present generation can realize, not only the low status, but the positively inert condition of the Province when he took charge of the Department. Men who were fit for no other occupation were considered just the men to "keep school."

In 1844, there were 2,706 public school teachers employed—2,060 males and 646 females; in 1876 there were 6,185—2,780 males and 3,405 females, being an increase of 3,479 teachers—720 males and 2,759 females. The total expenditure for elementary schools in 1844 was \$275,000; in 1876 it was \$3,006,456, an increase of \$2,731,456. (Includ-



ing expenditures for high schools, &c., the gross total in 1876 was \$3,538,952.) The number of elementary school pupils in 1844 was 96,576; in 1876 it was 499,978, an increase of 403,222.

Thus we see that in everything that was material to the progress of the schools the increase was most gratifying. The increase in expenditure alone, which is the touchstone item, was 800 per cent. in thirty-two years, or at the average rate of nearly 20 per cent. per annum. And thus all along the line of educational progress Ontario has given abundant evidence of her zeal and devotion to the cause of popular education and the intellectual enlightenment of her people.

J. GEORGE HODGINS.

TORONTO, *February*, 1885.

## THE APPLICATION OF KINDERGARTEN PRINCIPLES TO PRIMARY EDUCATION.

BY PROF. W. N. HAILMANN,  
*President of the Kindergarten Union.*

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The one principle on which the kindergarten rests is formulated by Froebel as follows: "Education is the conscious development of the divine in man and in mankind." This made education broadly and essentially religious. It required that in all that was done the feeling among the children to each other, to nature, to God, the growing sense of wholeness in regard to these, should pervade the work. From these all the principles of the current new education can be derived; the laws of organic growth, of harmonious unfolding of the faculties, of self-activity, are embodied in this formula.

The kindergarten is a practical application of these principles in the training of children between the ages of three and six. Here the children find ample opportunities for all-sided growth—objects and play-things judiciously constructed so that information and skill come to them readily and with the glow of success; here they have opportunities for sympathy, for helpfulness and gratitude, for loving intercourse with nature, for vigorous exercise of the imitative and creative tendencies, under the guidance of a wise teacher, who knows how to keep behind the child and keep its face in the right direction, without compulsion, but only by judicious arrangement of surroundings.

The chief obstacles to the application of these principles lie in the inertia of custom among patrons, school officers, and teachers who have for years held the one-sided views which make ordinary school education exclusively intellectual (?), mechanical, and egotistical, and who look with suspicion on all that lies beyond their accustomed scope. However, this opposition is not to be much deplored. It creates a healthy friction which enables progress to get rid of the vagaries and blunders of immoderate enthusiasm and incompetence among reformers. In spite of this opposition, or with its help, much has been done already in bringing kindergarten principles into the primary school. There is everywhere evident a desire to beautify the school-room and render it more homelike, a growing tendency to adapt courses of study and methods to the needs and even the wishes of the pupils, to regard the training of the hand in the introduction of drawing and of a number of kindergarten and other occupations, to respect the emotions in the time given to music and even painting. All these and many other tendencies clearly show the growth of the new education in the primary school.

There are, however, many directions in which concerted action would find it easy to place the school on the path of all-sidedness, harmony, and love. There is, first, the course of study, in which the distribution of the work can be made wholly on the basis of the child's mental

power, instead of on the basis of the text book. This has been done successfully in the public schools of La Porte, Ind. [Here the speaker read extracts in proof of his statement.] In the methods, similar improvements can be made. At La Porte the children make their own first and second readers, and they are a great improvement on those written and compiled by adults. Arithmetic during the first year is taught wholly with things, and the results are most remarkable.

Again, it is easy to give the child constant opportunities for making use of what it learns in social work, in class exercises, school festivals, and a variety of ways suggested by kindergarten work.

[The speaker here illustrated his remarks by many accounts from his experience and observation, and closed by referring once more to the need of a broadly and essentially religious atmosphere in all that is done in the school-room.]

## THE APPLICATION OF KINDERGARTEN PRINCIPLES TO THE CHILD'S EARLIEST DEVELOPMENT.

BY MRS. ANNA B. OGDEN.

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The theory of the kindergarten has been, for several years, a leading topic at most educational meetings, and one who recollects how little was known about it in America fifteen years ago, can but look with wonder upon the rapid growth of kindergarten ideas since that time.

The visitor at the Exposition must observe that there is not an educational exhibit from any State in which the kindergarten is not represented. When we notice also that the New England States are chiefly conspicuous by the fact that they do not exhibit, and that, besides the New England kindergartners, several others are conscientiously opposed to the public exhibition of children's work, we realize that the friends of the cause have not long to wait. We shall soon see the kindergarten in its place at the foundation of our system of education.

As it has been my vocation to work out and apply theories, rather than to expound them publicly, I cannot help feeling diffident in undertaking to follow feebly in the wake of those who have so often and so ably explained the beautiful philosophy of the kindergarten. Hence, I shall only venture to present a few tableaux from my own experience, turning upon them the red light of mother love.

The most perfect theory is useless, unless it be applied to the life about us. And as in physical science all truth is based upon experiment and observation, so should we base educational science upon facts discovered and principles proven, in lives made better and happier by their application.

For the last fourteen years the kindergarten has been the most absorbing interest I have had in life, not only because of its fascinating beauty in theory, but because of my need, because it has solved the problem of motherhood, which was before so difficult, and because its results have so much more than realized my hopes.

In the kindergarten, as in life, ideals differ, even where general principles coincide; and sometimes a comparison of ideals throws a clearer light upon the principles involved.

From the standpoint of motherhood then, I ask you to follow me in the application of kindergarten principles to the child's earliest development. That the interest in this subject, though general, is vague and shadowy, has been repeatedly proven by the numerous questions to which I have given patient heed during the last two months, such as, "What is a kindergarten?" "What is the Exposition kindergarten for?" "Is your system different from others?" "Is there anything new about it?" "Are these motherless children?" "Where do you get them?" And perhaps the most pointed inquiry of all was asked by a teacher who walked in one afternoon, the very embodiment of earnestness, and said, "Will you please tell me what is the point to this method?" Of course the kindergarten is more than a method, and the points are as endless as the phases of the child's character. Too often, alas! it has

neither point nor method, but in such cases there is very little kindergarten, and a great deal of our national tendency to haste, emulation, and display.

On the other hand, the spirit of the kindergarten, to some extent, pervades all of our best educational efforts; and now and then, at the busy work table in a good primary school, work is done more nearly in accordance with its principles than is found in the kindergarten department of a fashionable school.

The general principles of kindergartening are so simple, and many of them so old, that one of the most common remarks is, "I never went to a kindergarten, but my mother was a natural kindergartner." Of course she was. Froebel invented the material, it is true, but the principles by which we are guided in its use he discovered in the study of mother and child. No one can invent God's truth. Are we not in danger of overlooking this source of his knowledge in our eager desire to apply his theories exactly after his pattern? If so, we are mere copyists, and our kindergarten is but a colored lithograph at best. The real kindergartner, like the real Christian, is neither hide-bound nor ambitious to display new and startling effects; but drinking deeply from the inspiring fountain of Froebel's life and words, goes forth, with eager, reverent purpose, to rediscover for her own needs the nature of each little child. Her joy is similar to that of the little child she studies, as he lives again in epitome the life of the race from which he sprang. I need only, for purposes of illustration, refer to the following general principles already so familiar:

You have repeatedly heard, as one of your number more wittily than reverently remarked, of "the child with three fathers," nature, man, and God. So self-activity, or knowing by doing, is the first principle of all true education; then clear impressions must prepare the way for clearness of thinking, willing, and doing; and thirdly, we must lead the infant mind from the concrete towards the abstract.

Things must precede words; the child should represent his own ideas in a variety of ways, by blocks, sticks, rings, tablets, clay, etc., before he attempts to understand the representation of another's thought on the printed page. In play, through the charm of rhythmic sound and motion, he should form habits of voluntary order, attention, and obedience. And, above and beyond all these, selfishness should be eliminated by the indwelling principle of love, which should pervade alike the atmosphere of home, kindergarten, and school.

These principles are not only the theory of the kindergarten, but of life, as expounded by our best and wisest thinkers. Yet here again, as in life, perfection of theory does not necessarily include its equally perfect application in practice. Is it because way down in our hearts faith is weak? Or are we too indolent to apply to the actual training of the living child the charming system we have worked out again and again on paper? May it not be because teachers are so far in advance of the average parent that their efforts are not seconded in the home by parental example and influence? How can this be helped? We have the normal school for teachers, the special training class for kindergartners, but where are young parents to fit themselves for the greatest responsibility in life?

When instruction in kindergartening is a part of every high and normal school course, and young women enter the training class, not merely with a view to acquiring a livelihood, but as a preparation for *life*, which, whether one is married or single, necessitates some contact, either for better or worse, with childhood—then shall the natural kin-

kindergarten mother be the rule, not the exception, and kindergartners shall be born, not made. When young men cease to look upon children with selfish indifference, or as the playthings of an hour, and the young father gives even one-tenth of the time absorbed in the pursuit of material wealth, or scientific research, to the study of his own child, then, and not till then, may kindergartners and teachers hope to realize more than a faint outline of the ideal kindergarten and school.

It seems to me I have gathered more of Froebel's thought from watching the effect of his Gifts upon baby hearts and hands than from any teacher or book. There is no book like the living book. As well may one study geology without stones, botany without plants, zoology without animals, as kindergartening without a baby. It is not enough to observe and practice in the model kindergarten, any more than to confine botanical study to blooming plants. The child should be observed, not handled, from a very early period, before the divine thought of which he is the expression has been robbed of half its meaning and beauty by those who with irreverent haste seek to mold the lovely natural leaflet into a conventional form, fit only for the borders of life.

Like many young mothers, I sacrificed myself and some of childhood's divine rights to experiments containing more or less of failure, until I was fairly driven into the kindergarten by the ever-restless "What shall I do now?" of my first child.

Since the kindergarten became a part of our home life, I have watched with the most intense interest the early soul development of three children. I hope the egotism of the following memory pictures may be pardoned, because one cannot study so closely another's child.

Froebel discovered, by visiting babies in the homes of German peasants, that a child at the age of six months gave such tokens of intelligence as to suggest giving it a red woolen ball for its first plaything. For this reason little Fred was given no playthings, but simply surrounded by proper physical conditions for healthy growth, till one day he cried when turned away from some gilt picture-frames on which the sunshine danced. No doubt the motion of the glancing sunbeams and leaf shadows had as much to do with attracting his attention as the bright color; but, at any rate, it seemed to me that he was quite ready for his First Gift, though but little over four months old, and I felt equally sure that, as an impression of yellow had been partially made already, it was best to give him a yellow ball first. He had also a yellow-covered almanac, which it was his great delight to shake, and the breaking of a brother's toy furnished him with a yellow wooden cup, in which his ball just fitted. This met another universal want of babyhood—to put in and take out. Kindergartners have no doubt noticed that little children like to take the blocks out of the boxes again and again. He received the rest of the First Gift in the usual order; but by the time he knew yellow, red, blue, and green, he had arrived at the pounding period, when babies delight in the exercise of force, and in addition to the soft colored balls, he had the wooden ball of the Second Gift.

In the course of a month more the cube was added, and as he showed clearly that he enjoyed contrasts in size, as well as in color, he had in addition a pretty large red ball.

When about a year old, the destructive tendency was nipped in the bud by giving him the Third Gift, consisting of eight little cubes. I shall never forget the mixture of surprise and delight with which he watched the effect of knocking it over. I was careful not to disturb him till he showed a desire to go to work; then I rebuilt the cube.

Gradually I taught him how to rebuild it. By and by he would "make two pieces," as he called the separation into halves. This, of course, took some months, during which time he began to learn to talk, and was never tired of saying, "Mamma make two pieces," "Mamma make one piece," "Freddy make two pieces," "Freddy make one piece."

He was obedient because his will was not antagonized. The first time I refused a request he was about fifteen months old. I had never before said "No" to him, and I was obliged to partially remove the object he desired, to make him understand the meaning of the word. He looked up in a half-puzzled, questioning way, and still intently watching my face, reached his hand out toward the object. I said once more, "No, Freddy," and moved it a very little farther. He drew a long sigh, took his hand away, and quite cheerfully gave his attention to something else.

One day, when he was about two years old, he went to the kindergarten cabinet with a very determined air, and began to open the door. I thought he meant to help himself to the material, and said, "No, Freddy, mamma's." To my surprise, instead of obeying me as usual, and waiting for me to give him the First and Second Gifts, he hastily flung open the door, and, seizing one in each hand in the most excited manner, said triumphantly, "Dis Freddy's." After that he was allowed to help himself to his own Gifts, and he never once meddled with the blocks belonging to the kindergarten.

These experiences led me to watch baby Mary more closely, and when she was only two and a half months old I saw her gazing with a new look of intelligence at the blue lining of her basket-bed. When she next awakened from her morning nap she found suspended over her little bed, within easy range of vision, a blue ball. (The ball should be suspended by a fine black silk thread instead of the customary woolen one; the child then sees only the ball, and the impression is clearer.) When, at the age of four months, she began to try to grasp the ball, it eluded her, and her cry became impatient. So I put the ball away and substituted a piece of blue cashmere until she had acquired more skill in grasping.

I tried to give her the yellow ball next, but she would not have it. I then placed three balls before her, blue, yellow, and red. She seized her blue ball at once, then looked from one to the other of the two remaining balls, and grasped the red one with the other hand, still holding fast the first. Please note, that a baby who has had too many playthings, when given a new one, drops the old. This is because one is not retained long enough to develop affection and constancy. I discovered that when she began to care for *two* things, she enjoyed a *pair* of balls, similar in size and color, connected by a short string.

When she was eight months old she would, in play, "jump" the red, blue, yellow, or green ball into my hand, suiting her action to my words. When she learned to talk her first word was ball, and she clearly applied the term to color, form, and motion. Anything blue was "ba," as were an oval postage stamp and a pictured globe in her brother's geography; whenever he came in, cap in hand, she shouted "ba', ba'," meaning that she wished him to toss his cap up and down, like the ball.

She is now eight years old, and from that day to this her mental development has been a series of delights. Experience with her and her classmates has convinced me that it is unwise to continue many of the kindergarten occupations into the primary school proper. I found it best to make use of them one year, especially group work, in connec-

tion with lessons in writing and reading, taught simultaneously, and plant, animal, and stone lessons, in which the children wrote out their own observations. The second year the children were so busy observing nature and writing their own books that we could save only half an hour a day for regular kindergarten work. They are as infatuated with their school work as they used to be with the kindergarten.

It seems to me important that at least by the eighth year of his life, the child should learn to distinguish between work and play and form studious habits. This he prefers to do if he receives intelligent guidance.

The work done by the class referred to has been entirely voluntary. I should have made more use of the advanced kindergarten occupations had not the children objected. We still use clay, drawing, building, paper-folding, and cutting. It seems to me very important to let the child outgrow the kindergarten when the proper time arrives. Of course, early kindergarten training is presupposed, and kindergarten principles are applied to school work.

Determined to give the red ball to one child, for the sake of former theories, I prepared the proper outside surroundings for little Helen, who found her basket bed trimmed with white and red. Red ribbons looped back the window-curtains of the nursery, and round clusters of scarlet geraniums greeted her wandering gaze. At the same age as Mary she began to observe with some intelligence, and the red ball was suspended over her bed during her morning nap, so that it might attract her attention when she awakened fresh and happy. She was never allowed to become tired of it before it was removed.

From my own experience and that of other mothers, I feel convinced that the baby should have the ball before he is three months old.

If mothers only knew how fascinating is the play of expression on a baby's face, and how rapid is the growth of awakening intellect, nurses would be seldom wanted.

Both of these children spent about an hour a day in the kindergarten during infancy, and entered as pupils at the age of two and a half years. Mary's first choice of color was blue and Helen's red, when allowed to weave and sew. Helen is nearly four years old, and her whole life centers in the kindergarten. Almost every morning, as soon as her eyes open, she asks, "Is it kindergarten day?" Five other three-year-old children were taken last year for her sake, and our baby class is the most perfect one we have.

If we take these little ones to study, and, while giving them the usual occupations, allow them to develop naturally, without forcing this process of development, from the automatic fixation of the attention on an attractive object to that growth of will-power and mental activity which leads the little child to voluntarily bend all of its powers to the making of an attractive object for some dear one, the clearest light is thrown upon much that seems mystical in Froebel's theories.

If these personal reminiscences lead one parent here to careful observation instead of arbitrary handling of the little child; if they turn the attention of one teacher from a cursory and outside survey of her school, to studious, earnest effort to develop the individual nature of each pupil "from within outward"; if, of the thousands who through pure indifference and thoughtlessness trample daily on the sweet flower of spontaneity, one can be led to at least let children alone, I shall not regret having gone so far from the well-beaten path of my predecessors.

Men of science give years of patient study, not only to the natural world, but to all the phases of human life, except infancy. The physi-



cian thinks it worth while to study mental disease, but pays little attention to the phenomena of healthy mental development.

Statistics on insanity give the clew to its probable causes, ill-temper and want of self-control predominating over others; but where are the statistics and information to guide the young mother in that early development of her infant which shall lead to the formation of those habits of industry and self-control which would go far towards the prevention of insanity and crime?

Darwin did take some notes on the mental development of his child. But he seems to have been led to it through the study of comparative anatomy, after his best years had been spent in observing lower animals; and you may count on the fingers of one hand the men in America who dare devote themselves to this subject.

Babies and the kindergarten have, by universal consent, been turned over to women; and, while some of us are doing our best, we shall do better when more men take a personal and scientific interest in both. Not only is the child improperly handled at home, so that it often enters the kindergarten heavily weighted with habits of selfishness, rudeness, indolence, and willfulness, but in the kindergarten we are prone to feel that some of Froebel's most important theories are not practical. For instance, in the city it is thought difficult to bring the child in contact with nature. If we sufficiently realized its importance, difficulties would only spur us on to greater effort to overcome them.

The planting of seeds and the care of growing plants is just as important as the handling of blocks and sewing of cards. I admit its practical difficulty. It is far easier to let a child sew the outline of a representative flower (as like and unlike the lovely violet God made as one of Nast's cartoons is like and unlike the face he caricatures) than to give him earth, seeds, water, and sufficient oversight to secure the growth of the plant as well as the child. But can there be a question as to the comparative benefit to the child? Can there be a question as to the kindergartner's duty? Dare she shirk her duty?

Again, it is far easier to handle large groups of children in a routine, mechanical way, thus securing showy apparent results, than to carefully study and foster the growth of each individual in a smaller group.

But which is the better preparation for the child's future life? Is it as important that he shall execute intricate figures under the guidance of one who understands how to handle a number, but who does not know how to refrain from handling the individuality of the child, so that the action of the whole shall be a mere expression of the will of the one, as that, like a plant in a well-kept garden, he shall be supplied with the outer conditions of sunshine, both physical and moral, pure atmosphere, natural and moral, variety of occupation for the busy fingers, and frequent natural outlets for the inner activity?

When the ideal kindergarten is even approached, children bubble over with joy, and their movements have a spontaneous grace that no drilling can produce.

Here, we touch upon one of the most intricate problems of education. How shall we reach the individual through the masses? We cannot. It is absolutely impossible, except, it may be, in spots. But we can reach the mass through its individual members.

As the tiny ant gives its whole strength to the particular grain of sand it carries, so if you and I, my fellow-kindergartners, will reach, by patient study, as many individual children as we can help without hurting; if we can reach their mothers, not only from the outside, in festivals and exhibits of work done by tiny hands, but from within, by send-

ing home to their loving embrace little hands made helpful, little feet made willing, little lips made truthful, and little hearts made joyful; if we can reach young girls and turn their thoughts from silly pleasures to the holy, reverent study of childhood, shall we not secure better and more permanent results than by lowering our ideal to the demands of what we choose to call the practical?

I know we want the kindergarten in the public school, but more yet we want fewer scholars under the care of one overworked primary teacher. If we must crowd, let us crowd the big children, not the little ones.

Do we gain anything by introducing a makeshift because we can't yet afford the real thing? Is it the true kindergarten theory? I submit these points, not in a spirit of captious criticism, but because all children are dear to me, and I so often see them suffer at the hands of those who are sincere and earnest, but who look at the kindergarten from the outside. Because I have made so many of these mistakes myself, and have realized when too late the mischief I had done, I cannot help bringing to every kindergarten these test questions: Would I dare put my little child here? Is the moral atmosphere pure and natural? Would her nature unfold healthfully, lovingly, spontaneously? Is there wise care that the occupations do not overstrain the eyes or overtax the nerves? Is there no tendency to hurry or confusion? American children need especial care in these respects.

I suppose it is useless in an age of steam and electricity to think of taking adult life at less than railroad speed. We must keep going or be trampled under foot. But surely we may give the babies their infancy. We owe them a fair start in health and happiness before they plunge into the turmoil of life. Yet I have seen children who were rushed through the Third, Fourth, and Fifth Gifts in little more than one year; who were miniature men and women, or rather puppets, at six years of age. They looked half worn out already. So much stress was laid upon difference of sex that a dear little boy, only four years old, was sharply reprimanded for offering his arm to another little boy instead of a little girl. He had only been away from his mother a few days, and I felt that he would be safer at home than there.

Having always had a personal interest in my own kindergarten, I have constantly applied the same tests to my own work. Many times I have discovered mistakes, from the fact that my own child showed plainly, by the reaction in the afternoon, that he had been overworked or overexcited in the morning. Not one of my own children could engage in the occupation of pricking without risking the straining of eyes and nerves, and I am satisfied that if it is used at all, it must be with the greatest care in regard to the effect upon each individual. The use of picture sewing cards seems to me attended with danger. The children become mentally indolent, because a pleasing result is secured with so little effort.

I have sometimes been obliged to lock my doors upon visitors, because they discussed, not only the system, but the children, within their hearing. For a similar reason I never dare exhibit a child's work in its presence.

Our Christmas festival is a morning reunion of parents and near friends, who receive the presents the children have made for them.

Perhaps my views are narrow and one-sided; if so, I hope I am open to conviction; but it does seem to me entirely foreign to the Froebel spirit to disturb in any way the simplicity and spontaneity of early

childhood. I do not believe that the best good of the cause is secured by the sacrifice of the best part of even one child's nature.

The true test of our work is what the child is, not what he does. It does not matter how much weaving, sewing, paper folding and cutting he does, it does not matter what beautiful inventions he makes; if he becomes vain, full of emulation, greedy for observation and praise, or discontented and captious at home, there is a mistake somewhere. The kindergartner should see to it that it is not in herself. If, with a high ideal before us, we honestly seek the child's highest interests, viz, development of self-control and will-power, not with eye service as men-pleasers, but as unto God, we will not go far astray. We cannot too carefully examine our work and our motives.

The kindergartner's vocation is second only to that of the parent. For the time she stands in the mother's place, and is responsible, not only to her, but to her Maker, for the manner in which she accepts and fulfills her trust. Does the mother seek to make herself famous as a mother? Does she not rather forget self entirely in the joy of motherhood and in the development of her child? What does she care, either for the applause or the criticism of her neighbors, if her child is growing strong, wise, and good, from day to day? If not, if she sees that through some mistake of hers he is going astray, how tearfully and prayerfully she seeks to correct it! How she ignores opposition, and goes steadily forward in the path which will secure the best future for her child!

Kindergartening is a vocation, not a mere business, or even a profession. Only she who is called by a deep love for childhood; by a divine faith in its possibilities; by an humble yet sincere conviction that here is the place in life for which she was intended by her Creator; and by that unselfish devotion to the cause and her God which will lead her to sink self in the general good—should dare enter upon it. There is no such thing as an indifferent kindergartner. We do good consciously, or evil unconsciously.

In the words of another, "I am, I ought, I can, I will," are the only firm foundation-stones on which we can base our attempt to climb into a higher sphere of existence." Not only should we rest firmly upon these foundation-stones ourselves, but we should aid little feet to secure a similar footing. Undoubtedly the most important time in the child's life is when, as he obtains bodily independence and consciousness of the world outside of self, he plants himself firmly on the "I am." He can hardly step alone from "I am" to "I ought." He needs the helping hand of mother love and attractive objects to secure him a temporary footing on the little stone, "I want to."

If, instead of thus aiding nature, we refuse to offer the helping hand in front and above, and from the towering height of our own self-will reach down only to drive and push him with "you must," and "you shall," the chances are that he will either fall into the mire of eternal vacillation, without aim or definite purpose in life, or, with reckless leap, skip entirely the stone "I ought," and from the vantage-ground of "I can" and "I will," hurl defiance back at our vain attempts to reach him.

If, as kindergartners, we second the mother's efforts to balance the child on the "I want to" of unselfish desire to work for others long enough to secure his permanent foot-hold on the "I ought," and if, without rivalry or jealousy, we unite in a cordial welcome to each other in a combined effort to bring all within hearing to a knowledge of the truth—not our own pet method of applying it, so that it may be said of us, "Behold, how these kindergartners love each other!" then may

we and they hope to climb that summit of earthly perfection so well described by one whose words I quote in closing:

The highest exercise of the will is shown in those who are endowed with vigorous intellectual powers, and whose strong emotional nature gives force to all their tendencies to action, but who determinately fix their attention on the *divine ideal*, and steadily endeavor to shape their character and direct their conduct in accordance with it.

This is not to be effected by dwelling exclusively on any one set of motives, or by endeavoring to repress the energy which is in itself healthful. Even the idea of duty, operating alone, tends to reduce the individual to the subservience of a slave doing his master's bidding, rather than to make him master of himself; but it gives the most powerful aid in the acquirement of that power of fixing the thoughts and affections on things on high, which most effectively detaches them from what is earthly and debasing.

It is by the assimilation, rather than by the subjugation, of the human will to the Divine, that man is really lifted towards God; and in proportion as this assimilation has been effected, does it manifest itself in the life and conduct, so that even the lowliest actions become holy ministrations in a temple consecrated by the felt presence of the Divinity. Such was the life of the Saviour of mankind; towards that standard it is for the Christian disciple to aspire.

## THE MASSACHUSETTS PUBLIC-SCHOOL SYSTEM.

BY HON. J. W. DICKINSON,

*Secretary Massachusetts State Board of Education.*

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*Mr. President, Ladies, and Gentlemen*—I have been invited to make a brief explanation of the Massachusetts system of public schools, and of the mode of their administration.

A system is a collection of things or of principles so related to one another as to be adapted to the production of some common end. By a system of schools is meant a collection of different grades, so related as to be the means of education. The Massachusetts system consists of four grades, called the primary, intermediate, grammar, and high school grades. The different grades may be distinguished from one another by the difference in the kinds of knowledge taught in them, and in the kinds of mental activity exerted in acquiring that knowledge. All the grades below the high school furnish elementary instruction. The high school, theoretically, confines its work to scientific instruction. As our system of schools includes those that teach the facts of science and those that teach the sciences themselves, it may be seen to be complete.

The statutes of the Commonwealth require every town to maintain a sufficient number of schools for all the children who may legally attend school therein, and the school-committee have the sole authority to determine what is a sufficient number. These schools are to be maintained for at least six months in the year. They are to be taught by teachers of good moral character, and of competent intellectual ability to give instruction in orthography, reading, writing, English grammar, geography, arithmetic, drawing, the history of the United States, and good behavior. In addition to these branches, algebra, vocal music, agriculture, sewing, physiology, and hygiene shall be taught by lectures or otherwise in all the public schools in which the school committee deem it expedient. Schools that teach these subjects are to be maintained in all the towns, and are called common schools.

There are in the system two grades of secondary, or high schools. Every town containing five hundred families or householders is required to maintain a high school, to be taught by a master of competent ability and good morals, who, in addition to the branches of learning pursued in the elementary schools, shall give instruction in general history, book-keeping, surveying, geometry, natural philosophy, chemistry, botany, the civil polity of the Commonwealth and of the United States, and in the Latin language. Such high school must be maintained for the benefit of all the inhabitants of the town ten months at least, exclusive of vacations, in each year. This high school is of the second or lowest grade.

If the town contains four thousand inhabitants it must maintain a high school of a higher grade, in which shall be taught, in addition to the branches of instruction already named, the Greek and the French

languages, astronomy, geology, rhetoric, logic, intellectual and moral science, and political economy. All pupils passing thoroughly and successfully over the studies taught in the public schools, are fitted to enter the superior schools or colleges of the State.

The public schools of the Commonwealth are organized and controlled by public officers called town school committees. These committees are chosen by the towns, but they derive their authority from the statutes of the State, and are controlled in their action by them. The towns are required to elect school committees, but they have a very limited control over their conduct.

The school committees elect the public school teachers and fix their salaries. They have the authority to dismiss a teacher whenever they see fit, and his salary does not continue beyond the time of his dismissal. They determine how many schools shall be maintained in the towns, and they distribute the children among the schools established. They decide what text books shall be used, what courses of studies shall be taught, and what method of teaching shall be practiced. It is their duty to keep the school-houses in good order, and to provide the schools with all suitable means of teaching. They are to visit the schools frequently, to inquire into the manner in which the school work is done by the teachers and pupils. They can spend more money for the schools than the towns appropriate, if the towns neglect or refuse to raise enough to support such schools as the laws require. At the end of the school year, it is their duty to make a written report to the towns of their own acts and of the condition of the schools, and to make an estimate of the amount of money to be raised to meet the expenses of the coming year. It is their duty, also, to fill out the blank forms of inquiry sent to them by the State Board of Education. From the nature of the duties which the statutes have imposed, it will at once appear that no one can properly fill the office of school committeeman unless he has been well trained, both by study and experience, in school work. The great problem for the friends of popular education to solve, is to determine by what arrangement all the public schools can be placed under the direction of a competent supervision.

Having spoken of the organization and control of the schools, I desire to call your attention to the rights and duties of the children.

Every child in the State between the ages of eight and fourteen years is required to attend some public day school, or some school approved by the school committee, at least twenty weeks every year. No child under ten years of age shall be employed in any manufacturing or mercantile establishment in the Commonwealth. No child under twelve years of age shall be so employed while the public schools are in session. No child under fourteen years of age shall be so employed, except during the vacations of the public schools, unless during the year next preceding such employment he has attended for at least twenty weeks some public or private school approved by the school committee. Parents, superintendents, and overseers of mills, are liable to heavy fines if they violate these laws.

A child wandering about the streets, not attending school nor subject to parental control, is a truant. The towns are required to provide suitable places for the confinement, instruction, and discipline of truant children. The school committees must appoint two or more truant officers in every town, whose duty it is to secure a regular attendance of all children of school age upon the public schools.

Allow me, now, briefly to direct your attention to some of the results that have been produced by the administration of our school affairs.

The returns of last year show that there were in the State 336,195 children between five and fifteen years of age, and that the number of pupils of all ages in all the public schools was 242,012. The average membership in all the public schools was 277,241, and the per cent. of attendance, based upon the average membership, was 89.5. These statistics show that the school children of the State are in school.

The number of persons employed as teachers in the public schools during the year was 9,398, 1 for every 36 pupils. Of the 9,398 teachers employed, 1,058 were men, 8,340 were women. The average wages of male teachers was \$108.02, of female teachers \$44.18, per month, being higher than in any other year of our history.

The towns are required by law to raise by taxation, for the support of schools, a sum equal at least to \$3 for every child between five and fifteen years of age. Last year they raised by a voluntary tax \$6,502,359.24, a sum equal to \$19.34 for every child of school age, or to 3½ mills on every dollar of our taxable property. The statutes require the schools to be kept for at least six months in the year. The last returns show that they were kept an average of nine months.

The secondary, or high, schools of the State stand at the head of the system. They offer to every child in the Commonwealth the advantages of scientific knowledge, and that training of the reflective powers which is the foundation of self-control and good citizenship. There are now in the State 228 high schools. Sixty-nine towns having less than five hundred families are voluntarily supporting such schools. This shows that secondary instruction is in great favor with the people. The present population of the State is 1,783,000; of this number 1,619,000, or over 90 per cent. of the people, are residing in towns maintaining high schools. These institutions are deservedly popular. They complete our system of schools by including in it the elementary and scientific schools. They stimulate the schools below them by encouraging the pupils to pass through their elementary courses of study, that they may enter the upper schools for scientific study. They furnish an opportunity for all to obtain a good English education, and they prepare all who may desire it to enter our superior institutions of instruction. They make it possible for the children to remain at home while they are pursuing their studies, and, what is of vital importance to a free state, they make it possible for all the children of the State to grow up together during that period of their lives when their habits are forming and their characters are becoming established.

The medium through which the State communicates its will to the towns is the Board of Education. This Board was established in 1837. It consists of the Governor and Lieutenant-Governor of the Commonwealth, and eight persons appointed by the Governor with the advice and consent of the Council. The powers and duties of the Board are defined by the statutes, and its members are appointed to hold office for eight years. They are to hold in trust for the Commonwealth any grant of land, any donation or bequest of money or other personal property, made to it for educational purposes. They prescribe the form of registers for the schools, and the blank form of inquiries on which the returns are to be made by the school committees. On or before the third Wednesday of January they are to lay before the Legislature a report containing a printed abstract of returns from the towns, and a detailed report of all the doings of the Board, with such observations upon the condition and efficiency of the system of popular education, and such suggestions concerning the best means of its improvement, as the experience and reflection of the Board may dictate. They have

full charge of the six normal schools of the State, in which teachers are trained in the philosophy and art of teaching. There are now 2,700 trained teachers in the public schools.

To excite and keep alive an intelligent interest in popular education among the people, the Board is authorized to conduct teachers' institutes in the towns of the State. Last year 35 institutes were held, with a total attendance of 2,770 teachers, representing 152 towns. The day exercises of the institutes are conducted with especial reference to school work, those of the evening have for their object the diffusion of a knowledge of the public schools among the people.

The executive officers of the Board are a secretary and three agents.

It is the duty of the secretary to interpret the school laws and see that they are everywhere observed, to suggest to the Board and to the General Court improvements in the present system of public instruction, to visit different parts of the Commonwealth for the purpose of awakening and guiding public sentiment in relation to the practical interest of education, to collect in his office specimens of the best means of teaching, to arrange reports and returns of school committees, to distribute the State documents relating to the public schools, to hold meetings of teachers and school committees, and to send out the annual report of the Board, secretary, and agents to the various towns of the State. The agents are to assist in accomplishing the same ends.

The school fund of the State was established in 1834. It now amounts to \$2,710,241.30, with an annual income of \$136,035.55.

The income is divided into two parts. One part is appropriated to defray general educational expenses, the other to aid the small towns in supporting their public schools. The establishment of the school fund, in connection with the organization of the Board of Education, has been the occasion of a great reformation in our school affairs.

By furnishing material aid the State has established a necessary relation between its own control and the control of the towns over the management of their public schools. The income of the Fund may be withheld from those towns that do not comply with the school laws.

Governor Boutwell said that the establishment of the school fund was the most important educational measure ever adopted by the Government of the Commonwealth, and that, in connection with the organization of the Board of Education, it had wrought a salutary change and reformation in the character and influence of our public schools. "With the Fund," he went on to say, "it is possible to obtain accurate and complete returns from every town in the State; without it, each town is kept ignorant of what its neighbors are doing. With the Fund, we have a system; without it, all is disjointed and disconnected."

At the time of the establishment of the Board of Education in 1837 the schools were in a low and inefficient condition. A general indifference existed toward popular education. There was no department of the State Government organized to look after the interests of the public schools. One of the first acts of the Board after its organization was the establishment of normal schools for the professional training of teachers. These schools have proved the sources from which have emanated all our reforms in methods of teaching. They have introduced the study of the philosophy of education and of those general principles upon which all true teaching must be founded. The Board have also sent out into every town and school district of the Commonwealth its agents, who have visited the schools, consulted with the teachers and school committees, and have awakened the school spirit in the minds of the people. The Board meets once every month for the



discussion of all topics pertaining to the general welfare of the public schools, and on or before the third Wednesday of January of every year it presents to the legislature its annual report, upon which is based all our school legislation.

Our public educational institutions are conducted in accordance with the theory that it is their province to furnish an opportunity to all the children of the State to acquire so much knowledge and so much discipline of the faculties as are necessary to prepare all to enter with a good chance for success upon any of the practical affairs of either private or social life. Our public schools do not propose to train their members directly for the practice of any trade or any profession. They propose to do much more than this—to give to the children an opportunity of obtaining that knowledge and that cultivation of their mental powers which will in due time bring them to the various occupations of life ready to pursue these things in the most intelligent and productive manner.

John Stuart Mill says: "What professional men should carry away with them from the public schools is not professional knowledge, but that which should direct the use of their professional knowledge, and bring the light of general culture to illuminate the technicalities of any special pursuit. Men are men before they are lawyers, or merchants, or manufacturers, and if the schools make them sensible men they will make themselves sensible laborers."

The public schools should aim to cultivate that general intelligence and that philosophic spirit which will bring the youths of the country to their particular pursuits in life with strong minds and good hearts. By doing this, with all that is implied in it, they will accomplish enough, for they will furnish an education which will prove the source of endless progress in all the affairs of human life. A liberal education has always been considered necessary to a respectable position in the professions, but unnecessary to success in the manual occupations of life. Young people intending to go into business, as it is called, frequently leave school before their courses of study are completed, believing that the abstractions of science and the refinements of literature have no appropriate place among the acquisitions of business men. The experiences of business men are leading them to choose the graduates of our high schools and colleges for important work, on account of the business capacity which a generous culture is adapted to produce. Secondary instruction, they find, is as necessary to guide the hands to successful physical, as it is to guide the faculties to successful mental, labor. The artisan as well as the artist, the business man as well as the professional, the private citizen as well as the law maker, must be lifted above the mechanical operations of their work by a knowledge of causes and by skill in the application of principles. If one passes successfully through all the grades of our public schools, he will be fitted to make, under the guidance of his own acquired knowledge and trained powers, all other acquisitions necessary to enable him to occupy, with credit to himself, his place in life.

The schools are severely criticised. Almost every month there may be found in the public journals labored articles, written to show that the public schools are destroying the health of the young children who attend them, that they are crowding into the learner's mind an indigestible mass of useless knowledge, and that they stimulate the intellectual faculties to an unnatural activity, while the moral nature is left to grow wild in all its inherited tendencies to evil. These criticisms are not unfrequently passed by those who derive their facts by the activity of their

imaginations, rather than by a careful and extended observation of those things upon which they pass their judgments. The work of the schools, as conducted by our skillful and conscientious educators, has no tendency to destroy the physical health, or to demoralize the intellectual or moral nature. Such results, if produced at all, are caused by influences outside the school-room and beyond the influences of the schools.

The amount of illiteracy in the State is large, but it is found among those who have been sent to us from other lands, and among those upon whom our public schools have had no chance to produce their legitimate results. Less than two-fifths of one per cent. of our own native children belong to the illiterate class.

We do not need a revolution in our educational affairs; we need reforms and progress; and we may be encouraged in the great work by remembering that our public schools have given to our free State an intelligent and virtuous people.

## THE PUBLIC SCHOOL SYSTEM OF JAPAN.

BY ICHIZO HATTORI,

*Japanese Commissioner at the Exposition.*

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The Japanese Empire is divided into forty-four divisions, or *kens*, and three *fu*, and has a population, according to the last census, of 37,041,368. All the educational affairs of the country are under the control of a minister of education, who is a cabinet officer. Under him are a vice-commissioner and several secretaries. Each of these *kens* has a superintendent. Each *ken* or *fu* is divided into a large number of school districts. At first six hundred inhabitants composed a school district, but this plan would not answer, and now small districts are arranged according to the needs and location of the population. Owing to the fact that families in Japan occupy the same place for many centuries, the school district is a fixed one. The plan of selecting a school committee is somewhat peculiar. The people elect many more committee-men than are required, and from these the Governor selects such as he deems best for the office. The school age is from eight to fourteen years, and education for at least three sessions a year of sixteen weeks each is compulsory. Parents and guardians are responsible for the attendance of their children. Private tuition is permitted, but pupils thus instructed are examined with the children of the public schools, and if they fail to pass after three trials they are forced to attend the public schools.

The standard programme of elementary studies comprises three courses—a lower course of three years, an intermediate course of three years, and a higher course of two years. The lower course comprises morals, reading, writing, arithmetic, geography, and history, but the last two may be omitted. The intermediate course comprises, in addition, geography, history, drawing, natural history, and physics, with sewing for girls. After completing this course a pupil is prepared to enter the middle or normal schools. There are in Japan 78 normal schools, 29,254 grammar, intermediate, and high schools, with an attendance of 3,017,088 pupils. There are many boys and girls who desire a little higher schooling without going to the normal school, and for these there is provided a higher course, in which, in addition, chemistry, physiology, geometry, political economy for boys, and domestic economy for girls are introduced. The Government has also allowed the introduction of English in the course of studies.

Teachers may be of either sex, and should be over eighteen years of age. All teachers must possess a certificate from the Governor, from a public or normal school, or a teacher's license. Normal certificates hold for seven years, and teachers' certificates for five years. At the end of this time all teachers are re-examined to ascertain whether they are keeping up with the progress of the age. While the Government is exact in examining the quality of teachers, on the other hand it is trying

to make the teachers' positions more attractive. All teachers are exempt from military conscription. Titles, quasi-offices, and ranks are given to teachers, so that the profession may not be treated as a low or unimportant one. According to the statistical report of 1882, there are 29,081 elementary schools, with 300,400 pupils. These schools are inspected from time to time, and no school, public or private, is allowed to shut its doors against private inspection. These inspections are productive of much good. There are 173 middle schools, with 13,088 pupils. There has been a sudden increase in the attendance on the schools within the last two years on account of the revision of the military conscript laws. According to the new law, a student in the middle schools after a one year's course is exempt from conscription for six years, if he remains in the school. If he goes to the university or high professional school, after a two year's course, and being a graduate of the middle schools, he is relieved from military service altogether. If he does not pursue studies higher than those of the military schools, then he has to serve only one year in the army, and his service and treatment are different from those of the other soldiers.

There has been a tendency to establish too many middle schools without sufficient funds to support them, a course which tends to lower the standard of national instruction. The Government, therefore, would rather have fewer middle schools, and have those well organized, than have many poorly organized.

It is desired to have in middle schools well-maintained physical and chemical laboratories and gymnasia. At least three of the instructors in each school are to possess university or middle normal-school degrees, otherwise the Government does not allow the institution to be called a middle school.

The Japanese Government is encouraging education in every way in its power, and the people are eager to send their children to the schools. There is a bright educational future for Japan, and when another international exposition is held, I think Japan will be able to show better results from its educational system.

## THE RECENT REFORMS IN PUBLIC INSTRUCTION, AND ESPECIALLY IN PRIMARY INSTRUCTION, IN FRANCE.

BY MONS. B. BUISSON,

*Commissioner of France to the Exposition.*

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I regret very much that, owing to unavoidable circumstances, France, although it has readily answered the call of America to co-operate in the educational display so happily connected with the extensive World's Industrial and Cotton Centennial Exposition at New Orleans, has not been able also to send delegates to this pedagogic convention. It is not, I have authority to tell you, that your committee's flattering and enticing invitation has not been well appreciated in France; nor is it that French educators fail to realize the pleasure and profit which they would have been sure to derive from a visit to your wonderful land, a land which deserves being called the New World, not so much, in fact, because it has the advantage over ours of being younger, but especially because it is, properly speaking, the land of new and progressive ideas, the land of new and continual experiment and unlimited improvement. But first, Frenchmen, as a rule, are not so ready travelers as the citizens of America, or even as their neighbors of England and Germany. Besides, you will understand that in Europe, at this time of the year, all the most prominent teachers and educators are engaged in professional duties which it is almost impossible for them to interrupt for an absence of several weeks, if not months. It was different last summer when, in connection with the health exhibition held at South Kensington, an international congress of educators was called in London. There the French Education Department was represented by several delegates, not only on account of the facility of the journey, but also because the busy academic and scholastic year was then closed, and our educators, teachers, and officials had entered upon their regular vacation.

But I repeat that the French educators, who will surely follow and watch with interest your deliberations, are thoroughly at one with you, and most sincerely sympathize with the objects of these meetings, so eloquently explained by several of the most gifted and renowned of your educators—for instance, in the exhaustive paper of General Eaton; in the generous and beautiful address of Dr. White, of Cincinnati; in the so-called conservative, but really most liberal, discourse of the eminent president of Tulane University; in the winning speeches of Dr. Mayo, where British humor and pathos are so happily blended; and in other speeches of other great men, whom it has been a great privilege for me to meet and see here after having heard so much of them beyond the sea. I scarcely need say, gentlemen, that after all we are fighting yonder the same battle you are fighting here. We have the same aspirations which make your solidarity and bond of union, the same ambition of bringing about the true emancipation of mankind by education, and by an education more and more comprehensive and suggestive, whilst at

the same time more and more simplified, free from incumbrances, accessible to all sound minds capable of will and perseverance; an education which, instead of widening the traditional separations between castes, creeds, and countries, will on the contrary bring men and nations closer to one another, accustom them to vie with each other in the pursuit of trade and industry instead of making war, and gradually efface the barrier of classes, enabling all intelligent and energetic members of society to have their *place au soleil*, as we say, to better their condition, share proportionally in the enjoyments of science, literature, and art, and find their highest pleasure and reward in co-operating to promote the welfare of their country and of mankind at large.

I am very happy, gentlemen, to be able to say that all our recent reforms in public instruction in France, of which I am going to give you a short sketch, have been achieved in this spirit, in this true *democratic* and *republican* spirit. Pardon me if I use thus these two words in connection. I know here they seem to you contradictory terms, whilst for us they are almost synonymous, and the principal difference we see between them is that one is of Latin, the other of Greek derivation.

When I say that our reforms have been made in a republican or democratic spirit, I mean to say that they are of recent date, a few years only having elapsed since we succeeded in defeating the intrigues of the coalesced enemies of popular government. Although since 1870 we have had the name of Republic, it is only since 1877, and especially since the election of our actual President, M. Grévy, that our Parliament, carrying out the wishes of the country, has been able to give up discussions on the Constitution itself, as sterile as they were stormy, and approach those most needed reforms which were to be the foundation of all others—those of public instruction. The history of these recent times is not yet well known outside our country; but I have a firm belief that the impartial historian of the future will consider it a very remarkable fact, and a very creditable one to our republican legislators, that they at once understood that priority and precedence was to be given, over all questions, to that of education, and especially that they conceived and carried out so daring and radical reforms in the domain of national education.

It is an undeniable fact that a very great step has been accomplished. To say this is not boasting; rather is it humility, being a candid avowal that we had long been backward and far away from that goal toward which free nations, and yours among the foremost, had been gradually progressing. Happily for the honor of our country, if we had not succeeded in organizing sooner that popular education without which there is no true democracy, it was not that statesmen and thinkers had been lacking in France to devise plans and schemes of what it ought to be.

You recollect the beautiful quotation which an eloquent judge of this city read to us in his admirable address on the opening day of this Congress, and which showed that America had prophets who, forty years ago, had already dreamed of and minutely described the ideal school-house of the future, the ideal school system, and most of the fine results recently achieved in several parts of your land. In the same way the gospel of good education had found in France early apostles. I do not speak of the purely speculative and philosophic minds, such as Montaigne or Rousseau; but open the petitions, or, as they are called, the *cahiers du tiers-état* of 1789 (a date, by the way, the centennial of which we hope to celebrate by a universal exposition, and probably also by a monster educational congress, at which your attendance will be urgently requested), read the reports presented to the Legislative Assembly by

Condorcet, or those of Romme, Rabaut St. Etienne, Arbogast, Barère, and especially that of Lakanal, to the Convention. You will see that we also had our prophets, our early seers, of the ideal type of what ought to be a national system of education in a republican country.

I beg especially to dwell on the name of Lakanal,<sup>1</sup> well known in this city, where he came in his old age during the monarchic Restoration and organized a university. His scheme, presented to the Convention in 1794, demanded at least one school, containing two separate classes for boys and girls, for each 1,000 inhabitants, a board of school inspectors in each district, and a central committee of public instruction under the immediate control of the popular branch of the legislature. To the elementary teaching, the three R's, I should say, if it were not an anachronism to apply to that time a phrase coined subsequently, he added the elements of the sciences, geography, and the *history of free nations*.

Notice that this scheme of Lakanal was considered as too *opportunist* (if I may venture upon another anachronism); that is to say, not radical, not comprehensive enough, and was rejected by the Convention, which, however, passed later on a bill very little different from it.

You see, at all events, that our first republic and republicans, in spite of their faults and drawbacks, had a sound instinct of the principles upon which national education was to be established. They understood that teaching all children was not to be considered as a far remote ideal, left to the zeal of religious corporations or to private enterprise, but was the paramount function of the State.

In the same way great foresight had been shown by the legislators of our first republic, or, as they are usually called, our *conventionnels*, concerning the question of the part to be taken by the Central Government in secondary, technical, and higher education. Most of our greatest, and still now most flourishing artistic, literary, and scientific institutions, which, in reactionary periods, have remained the centers of high culture and independent research, the refuge of generous and liberal minds, were the offspring of the Revolution. They were devised and created as national institutions by the Convention. That is the case with the *École Polytechnique* (primitively called *École Centrale des Travaux Publics*); the *École des Langues Orientales*, the *Bureau des Longitudes*, the *Bibliothèque Nationale*, the *Archives* (Record Office), the *Musée du Louvre*, the *Conservatoire de Musique*, the *Conservatoire des Arts et Métiers*, and last, but not least, the *Institut National*, comprising the five academies of belles-lettres, arts, sciences, medicine, and moral and political sciences.

I shall not follow up this history of education. Let it suffice to say that whilst most of the institutions of intermediate and higher instruction survived the fall of the republican government, and managed to thrive (though with many vicissitudes) through reactionary periods, imperial and monarchical, popular education, for which the help of the national exchequer was most wanted, was almost entirely abandoned to religious corporations and reduced to very little till the time of Louis Philippe, when a kind of constitutional government, an imitation of that of England, was adopted. To this awakening of public spirit corresponded, as you know, a remarkable reform in primary instruction, and M. Guizot, then in charge of the Education Department, immortalized his name by presenting a bill, enacted in June, 1833, which organized a comparatively very efficient system for the recruiting and training of

<sup>1</sup> See *Lakanal*, par Paul Legendre, avec préface de Paul Bert. Paris.

school-masters, widened the programme of primary instruction, and added to the elementary course some sort of a complementary one, a course of higher primary instruction.

Before we reach the quite recent and organic reforms of the Third Republic, there are still two important dates to mention in the history of French public instruction, viz, 1848, when Carnot, during a too short tenure of office, tried to make elementary education compulsory and to improve the position of the teachers, and 1867, when M. Duruy, a well-intentioned reformer, greatly improved elementary instruction and again ameliorated the position of the public teacher, whilst greatly developing the secondary education of boys and girls, and especially giving a great stimulus to higher culture and independent research by the foundation of the *École des Hautes Études*.

But the extended programme of popular education which had been sketched out by the National Convention and resumed by the too short-lived Republic of 1848, was only to be realized in its entirety by our Third, and I hope our definitive, Republic. The money—for reform means always increase of expenditure—the money which in time of prosperity neither the liberals of the constitutional monarchy, nor the *Corps Législatif* of the Second Empire had been able to find for popular education, the republican Parliament has not feared to demand of the State, department, and municipality, seven years after a terrible foreign and civil war, when the burden of the war indemnity was still heavily pressing on the nation.

At last the wishes of enlightened public opinion, so long frustrated, have been satisfied. In not more than three years eleven important bills concerning education have been passed by our Houses of Parliament. First (and it was in fact the most difficult as well as the first thing to do), a considerable fund for building schools has been constituted by a law with which will remain connected the name of M. Waddington, our present ambassador in England. It was calculated that in order to put education on a good footing it was necessary to build 17,320 schools, enlarge 5,458, repair 7,381, and buy school furniture for 19,857 schools.

To carry out this vast scheme without draining too much the national exchequer, a sum of one hundred and twenty millions of francs was allotted to the Ministry of Public Instruction to be spent in five years, half in donations to municipalities, half in loans and advances repayable within a period of 31 years. In 1881 an additional sum of one hundred millions was again placed at the disposal of the Education Department for the same purpose.

Many critics have clamored that this was too much, that the State was making extravagant sacrifices for the instruction of the people; but facts will show that, except in very few cases, advances have only been made to municipalities which had already exhausted all their own resources for improving their school buildings, and would have been unable to do more had they not been assisted by the Government. As to the school buildings erected in later years, they have also been pronounced too costly and too luxurious by some of the adversaries of the Republic. But I am sure that if you consider the models of these new schools exhibited in the French gallery at the Exposition by the ministerial committee on school buildings (*Comité des Bâtiments Scolaires*), which examines the plans and estimates presented by all municipalities applying for subventions or advances of money, you will own that those school-houses are no palaces, and could not compete, for instance, as far as their exterior appearance is concerned, with your elegant McDonogh



buildings of this city, but are simply what a common school ought to be, combining the strict requirements of hygiene with those of economy.

At the time when the School Building Fund was constituted, the annual budget of public instruction was raised by several millions; and year after year it has been increased largely, so that from twenty millions before the recent reforms, it has now grown to almost one hundred millions of francs.

These figures, which will not seem enormous to some of your States that disburse so lavishly for educational purposes, are nevertheless very eloquent if you consider them in comparison with the budget of public instruction in France under former governments. The progression is surely very remarkable and clearly shows who is the friend of the school-master and of the school-boy.

Here it is: 4,250 francs under Napoleon I; 50,000 francs under the Bourbon Restoration; 3,000,000 francs under the constitutional monarchy of Louis Philippe; 12,000,000 francs under the Second Empire; 98,000,000 francs under the Third Republic.

Those of you, gentlemen, who have already visited our gallery at the Exposition, know what use has been made of those new resources granted by the liberality of Parliament to the Education Department. They have seen specimens of the scientific and geographical material which the Ministry of Public Instruction has been lately sending gratuitously to many elementary and to all normal schools. Indeed, the first thing to do in order to obtain a better primary instruction, was to provide schoolmasters, and normal school students especially, with all the improved didactic appliances and collections which could be procured. The same has been done in regard to gymnastic apparatus, surveying and meteorological instruments, and much money has thus been most profitably expended for the equipment of our 86 normal schools for male teachers and 66 for female teachers.

Not less useful was the expenditure for strengthening the staff of school inspectors for the creation of an Educational Museum (*Musée Pédagogique*), having many characteristics in common with your world-renowned Bureau of Education at Washington.

I cannot omit to mention also the creation of new normal schools of a higher order which deserve description, those at St. Cloud, Fontenay-aux-Roses, and Sceaux.

The first two are called *Écoles Normales Supérieures d'Enseignement Primaire*. They are nurseries for the training of special teachers destined to become professors in training-colleges for male and female teachers. At St. Cloud the course of instruction consists of the subjects taught in the ordinary normal schools, but taught of course with a broader and more philosophic view. This college, open to boarders and day scholars, is entirely free, and its students are recruited by competitive examination. Candidates must be at least twenty, and not more than twenty-five years old, and have already obtained the teacher's certificate of higher degree for primary instruction, or the degree of B. A. or B. S. C. The entrance examination includes an essay on a question of pedagogy and a *viva voce* examination on school practice. There are two divisions: one for those who wish to become professors of the literary, and one for those who wish to become professors of the scientific, branches. The course of study lasts two years, at the end of which the students are required to come forward to the examination for the special certificate of aptitude to teach in normal schools.

The college at Fontenay-aux-Roses is for women, what that of St. Cloud is for men. An eminent inspector-general of schools has been

appointed as a sort of visitor to have the direction of the studies, but there is also a lady principal. Entrance is by competitive examination in the same way as at St. Cloud. Certificated teachers only can compete for admission. Very able teachers have already come from that school, and occupy now positions as professors and lady principals in training colleges for school-mistresses.

In connection with this college, another one called *École Pape Carpentier* has been created at Sceaux, in remembrance of the late Mme. Pape Carpentier, a justly renowned kindergarten teacher and authoress. The object of this college is to train lady professors for the normal courses or training-schools in which primary school-mistresses are formed.

We have not yet had time to become acquainted with all the fruits which these new institutions can bear, but our educators rightly expect most happy results from them, and the promises are already most encouraging.

A special college (which, for economy's sake, is now to be annexed to that of St. Cloud) has also been created in Paris to enable schoolmasters to acquire some theoretical and practical knowledge of manual work. Those interested in the matter may find at the Exposition extensive specimens of work in the different branches (including wood, iron, and stone work, photography, modeling, stereotomy, chemical manipulations, stuffing of animals, etc.) pursued by the students of that college, among whom were several certificated teachers who had come to learn the main principles of handicraft in order to be able afterward to teach them, or see them well taught by skilled workmen in their school workshops.

In order to complete the list of the principal reforms accomplished lately by our Parliament with regard to primary education, I have still to mention three great bills which became laws in 1881 and 1882. The first one concerns the certificates or titles of capacity to teach. It withdraws privileges formerly granted to nuns and members of ecclesiastic corporations to teach without certificate. It is not in this country that I shall have to waste words in pleading the obvious justice of this law, which nevertheless was hotly denounced by the clerical party as an attempt against their rights. But I hope you will rather notice the equity and tolerance of our legislators, who have allowed three years to non-certificated teachers affected by this new order of things to obtain the required certificate.

A second bill has made primary education entirely free everywhere in France. It includes all public infant schools, primary (including elementary and higher primary) schools, schools of apprentices, and normal schools. In this case again the example of some States of America has been often invoked by our reformers, and has helped us to convert to our views many liberals who, like those of England, would not, or could not, see at first that gratuity and compulsion are two correlative terms.

By the third bill attendance in primary schools between the ages of 6 and 13 years was made compulsory, and local boards were instituted having power to take legal proceedings against parents who do not send their children to school or make manifest that they have them properly taught at home. I know that in several States of America, and especially in the South, you have not adopted this system; but however sad it may be to use the word compulsion when that of persuasion ought to suffice, most of you, I believe, will agree that the arm of law alone is strong enough to overcome the apathy, indifference, or selfishness of many parents who will persevere in misusing their liberty if they have the choice of sending or not sending their children to school.

In the case of France at least, as well as in the case of several other European countries, experience has shown that the word compulsion was more appalling than the thing itself. Attendance at school has now grown very satisfactory, and the new law has met with nothing like the obstinate opposition of parents which prophets of evil had loudly predicted.

Our Parliament was anxious to crown its work on primary education by a law increasing the salaries of elementary school-teachers of all grades. An important step in this direction had already been accomplished in 1875 by a law which divides the school-masters in four categories, with a minimum salary of 900, 1,000, 1,100, and 1,200 francs respectively, whilst granting a yearly addition of 100 francs to all teachers in possession of the higher certificate (*brevet supérieur*), and also a sum of 100 francs yearly to all teachers who have obtained the silver medal for proficiency which the Education Department grants annually to deserving candidates. But it is to be deeply regretted that our Legislature and our Government have been unable, up to now, to find the means necessary for further increasing, in accordance with the wish of public opinion, the salaries of our primary school teachers, whose patience has been exemplary. Their position, however, though not so satisfactory as it might and must be, is better in France than in some other countries, in England for instance, where they have not the advantage of a pension. Our friend, the Commissioner of Education for Japan, humorously said the other evening that he did not know how it was in America, but that in Japan there were still people inclined to look down upon the teachers. There are still in France people of that same disposition; but I am pleased to say that every day they are becoming fewer, and every day the status of the school-master improves; he is becoming more and more respected by the wealthy tradesman, though he has not the chance of suddenly selling his wares at an exorbitant price and making a fortune. As a natural effect of free institutions, teachers have begun to feel more solidarity; they hold institutes and conferences; they have been assembled several times in *congres* by the Education Department and they elect six representatives to the *conseil supérieur*, which has the supreme direction of all the branches of public instruction. Thus it can be said that our teachers pursue their career with a good spirit; they like their profession; they seldom think of changing it for a clerkship or business appointment; they have in the majority of cases embraced with enthusiasm the reform programmes, in regard to which it remains for me to say a few words; and though those programmes have considerably added to their burden, they like the change and understand that it has rightly introduced into our national system of primary instruction many of the most fruitful achievements of European and American pedagogy.

The change, as you know, can be summed up as the victory of realism over nominalism. It consists in teaching less by text-books and more by the aspects of things themselves, and through the communicativeness of the teacher it can be called the triumph of the intuitive method; that is to say, it relies upon the inborn good sense of the child, or the force of evidence. The object which the teacher is recommended to keep constantly before his eyes is the sound and simultaneous physical, intellectual, and moral growth of the child. This doctrine is no novelty, since it has been widely preached by Rousseau, Froebel, Pestalozzi, and many others. The novelty consists in having tried to generalize this method for a whole country.

As good beginnings are often decisive in the formation of the minds of children, many public kindergärten, or maternal schools, are open to

children who have not yet reached the school age, and they are trained in them according to this intuitive or Froebellian method.

Primary education has not done all its function if, in developing the mind, it does not also tend to invigorate the body, to strengthen the constitution of the child, to surround him with all favorable hygienic conditions, at the same time increasing his agility, dexterity, and physical activity—qualities which, valuable at all times, are more particularly necessary to the children of primary schools, destined for the most part to professions of manual labor.

The principal object in intellectual instruction is not that the child should learn much, but should know well and in a lasting manner what he does learn; his knowledge must necessarily be limited, but not superficial. Therefore the teacher must from the beginning make use of sensible objects, proceed by ocular demonstration with the pupils rather than by affirmation, cause them to see and touch sensible things, and only little by little lead them from concrete realities to abstract ideas, to reasoning and generalization. The Education Department has made great sacrifices in order to help the school-masters in that direction. As they had, if not a harder, at least a more delicate task to perform than their predecessors, and a rather novel one, it was only just to provide them with improved tools; and therefore, as you will see at the Exposition, many good maps, globes, magic lanterns and slides, cheap sets of physical and chemical instruments, specimens of raw material or manufactured products for object lessons of every kind, have been distributed to schools. At the same time the teachers were recommended (and you will find proof that they have followed the advice) to try to make for themselves, with the co-operation of their pupils, their own school museum, herbarium, collection of insects, even their own maps, in flat or relief, and drawing models.

Linear and free-hand drawing occupy a more important place in the ordinary curriculum, which also contains manual work, not with the view of preparing children from a tender age for any especial manual profession, but in order to develop the dexterity of their fingers, and to familiarize them early with the handling of the principal tools used by workers in wood and iron. This practice, already well organized in the schools of Paris, as you will see, is also spreading rapidly and with good results in many of our provincial towns and villages. We expect it will exert a good influence, because it inspires children of all classes with a taste and a due respect for manual work, and besides, in a hygienic point of view, the hours spent in the school workshop are eminently healthy for town children.

The entire programme of elementary instruction, which is rather too extensive than too narrow, includes, besides gymnastics, drill, notions of hygiene, and manual work, the following subjects: 1, reading; 2, writing; 3, native language; 4, history; 5, geography; 6, civic instruction, common law, principles of political economy; 7, arithmetic, mathematics; 8, geometry; 9, drawing and design; 10, elements of physical and natural sciences; 11, agriculture and horticulture; 12, singing. You will see by the exhibit of a special commission on school decoration, that we do not despair of disseminating, even in the elementary schools, some appreciation of the beautiful, some taste and zeal for good art.

The introduction of regular moral and civic instruction in the common school has been denounced as an attempt to make the schools godless. If you have time to examine, first, the recommendations issued by the Department to teachers on the method of teaching that new subject, and then to look at a few of the manuals written by several of our most

eminent thinkers to serve as guides to school-masters, you will agree, I am sure, that this new task intrusted to the public teacher, who represents the civil and lay society and the family, and stands neutral between creeds and confessions, has, on the contrary, a very noble, elevated, and in some sense a religious character, and cannot fail to exercise in due time a healthy influence on the hearts of children taught to understand that besides theological opinions, which vary greatly, there is a common ground, an indisputable worship accepted everywhere by all the leaders of mankind, the worship of honesty.

Among the points on which I should like also to touch, if I had not already abused your patience, is the great development lately given to higher primary instruction. It is already a long time since several States of the Union have added the free high school to the elementary, primary, and grammar grades. We had also for many years pretty good resources in some great towns for the continuation of primary studies, but it is only in recent years that free complementary courses of one and two years and higher primary schools proper, including a good development of essential subjects theoretically taught as well as practical initiation in some of the principal professions, have been organized on a large scale all over the country. All schools of apprentices for manual work have also been adopted by the State and declared part of the free national system of primary instruction. I hope you will see in our galleries, in the Paris exhibit, and also in those of the towns of Rouen and Havre, very good specimens of what we understand on the one hand by a higher primary and professional school, on the other by an apprentice school. To facilitate the access to those schools of children belonging to families of limited means, numerous national scholarships (courses of 500 francs) are every year open for competition—this money being intended, not for tuition, which is free, but for the maintenance of the child, either as a boarder in the school or in his family.

This important step is one of the most truly democratic innovations which we have had to record for a long time in France, and much may be hoped from its unifying effect upon the different sections of society.

The results I have been sketching out have been contributed to, I am happy to say, by the zealous efforts of private individuals who have taken the initiative, and of educational societies, which have been busy in enlightening public opinion and in supporting Parliament and the Government towards the accomplishment of the above-mentioned reforms. Among those societies which have deserved the gratitude of all friends of popular education, several of the foremost—for instance, the *Ligue de l'Enseignement*, the *Société pour l'Enseignement Élémentaire*, the *Union de la Jeunesse*, the *Société des Écoles Infantines*, the *Société pour l'Enseignement Professionnel des Femmes*—have sent to our gallery interesting exhibits. There is also an extensive display of text-books and works on education and art, sent by the Paris publishers' club (*Cercle de la Librairie*), and in which as many as thirty-four of our leading educational publishers are represented.

[After briefly alluding to the liberal and democratic spirit which was also noticeable in the recent reforms relative to secondary and higher education in France, M. Buisson concluded by expressing his thanks to the Bureau of Education in the name of the French Minister of Public Instruction, for the wide and courteous hospitality which it had given to the French educational exhibit in its gallery at the Exposition.]

## OUR COUNTRY SCHOOLS.

BY MISS A. TOLMAN SMITH,

*United States Bureau of Education.*

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The visit to this country of the British royal commissioners on technical instruction is a recent event. One of their number, Mr. William Mather, specially charged to inquire into technical education in the United States, in his official report has expressed himself as follows with reference to our rural schools:

The district schools in the rural parts of the counties are conducted on the basis of the city schools, excepting that the recognized school period is twenty weeks in the year instead of forty. These schools have attracted some special attention in America on account of the general intelligence and aptitude for the industrial arts displayed by the scholars on entering upon employment in the cities. In the New England States especially (Massachusetts, Maine, New Hampshire, Vermont, Rhode Island, and Connecticut), the absolute necessity for children over ten years of age to assist on the farm in the summer months has rendered it imperative to blend school and farm work in such a way that the parents may have assistance while the children's teaching is not sacrificed. The stony and somewhat sterile lands of New England require intense activity, industry, and skill on the part of the farmer to make a living. Ashired labor is very dear, he depends on his own household for help. Every kind of work has to be done at home. Blacksmith's, wheelwright's, machinist's, carpenter's, and hydraulic work become as familiar to the farmer, in a rough and ready way, as plowing, tilling, sowing, and reaping. All handicrafts, in a greater or less degree, are acquired. The farmer's boy is thus provided with an industrial training of the best kind in and around his home. His wits are sharpened, his perceptions developed. There is a large field for the immediate application of knowledge acquired at school on the one hand; on the other, the school exercises and lessons are more readily understood by a boy or girl having in daily life to deal directly with natural forces and laws. These county or district schools, associated as they are with agricultural and mechanical occupations, produce better results, as a whole, among the artisan classes than the city schools, the attendance at which is for the entire school year of forty weeks. My attention has been drawn to this fact by many employers and educationists, and it has been confirmed by my own observations. It suggests the importance of introducing into the elementary public schools of cities some industrial training. "Our brightest boys come from the country" is a phrase which has become very familiar to me in America.

The results that impressed Mr. Mather so favorably must not, it is true, be attributed wholly to the schools. They are due rather to a combination of circumstances scarcely to be found outside of the States that he names. Among these circumstances must be counted, in addition to the schools, limited area, dense population, facility of intercourse, and the abundance of agencies for stimulating the mind, as libraries, newspapers, local societies, &c.; nor will it do to overlook the conditions of the population with respect to age, sex, antecedents, and race, conditions that were very fully treated of in a circular of information published by the Bureau of Education (No. 3, 1884).

Against the conception of the intellectual and industrial aptness of the country lads of certain parts of the United States so flatteringly set forth by Mr. Mather, I am tempted to place the picture of a family circle in the midst of which I summered two years ago, a picture that may

easily be reproduced in other districts. It was in a farming country, and in the house of a small landed proprietor, who inherited little more than his estate and his ancestral pride. Upon the whole adult portion of the family had settled helpless despair. The older sons sauntered into the house at supper time, ate their evening meal in sullen silence, and betook themselves to the chimney corner and their pipes. The daughters busied themselves with household work during the day, and at evening yawned for a while in the best room, out of consideration, as it appeared, for their boarder, their usual custom having been to go to bed as soon as the chores were done up. They could all read a little, but too little to make the exercise pleasant or profitable. The only events that served to break up the dreary monotony of their lives were horse-fair and training days.

The region round about had been destitute of schools when these sons and daughters were children, which must be regarded as one of the causes of their depressed lives. But even here I had opportunity of proving how the common school may revive and reinvigorate the decaying energies of human nature. The youngest son of the household belonged to the period that had given to this district the free school, with all the sentiments that are back of and in the free school. Against the protest of parents and the indignation of brothers and sisters he had taken his place on its roll, mastered its lessons, passed the examination for admission to a public high school in a distant town, and at the time of my sojourn with the family was attending the same, paying the small fee charged to a non-resident of the town from the proceeds of a little patch of land that his father had made over to him. The mother of this family was one of those silent, stony women in whom the capacity for hope or fear seems to have been obliterated; but I did, once or twice, catch her standing at the window watching that boy as he mounted his horse and started on his seven-mile ride to school, with tears of loving pride welling up in her eyes. The moral of that scene is indelibly fixed in my mind: Where the school is, there is hope.

Whether, then, we regard general results, or particular instances, the mere recognition of the free school as an essential condition of progress is seen to be so great an advantage that we must hesitate to expose the failures and shortcomings of the poorest of these institutions, for fear of helping to set things back toward the "chaos and old night" of the ante-school era. It must, however, be remembered that the school lives by improvement, so that from the moment it is established, it becomes necessary to consider how it may be bettered.

If we examine minutely into the condition of the common schools in the various States of the Union, we shall be struck with the evidence of common causes of weakness or mischievous tendencies. Presumably, however, the schools of certain States are better than those of others. If relatively more money is expended in the one case than in the other, if the schools have been longer established, if they stand higher in public esteem, if they have better housing, better teachers, longer sessions, and are more fully supplied with the material appliances of education, then undoubtedly they produce better results. Yet in the annual reports of all school officers there is a similarity of complaints and criticisms that would be misleading if we did not remember that the ideal advances with the advancing institution.

So far from being on a dead level, our country schools exhibit varying degrees of excellence. Methods have been adopted, plans worked out, results achieved in some districts, the knowledge of which is exactly what is required to give direction to the efforts in other districts.

While, then, as a rule, it may be best for the educators of a particular district to concern themselves with what remains to be accomplished, rather than what has been accomplished, when assembled together for conference and mutual encouragement, their attention may well be directed to the conditions of excellence that have already been secured in one or another section.

#### INSPECTION.

Inspection, which has come last in the order of development, I place first in this consideration, since I am persuaded that in a system formed in accordance with conclusions derived from the most satisfactory experience, it would be a fundamental condition.

By inspection I mean the service that consists in a constant attention to the work of instruction going on in the schools, and to the condition of school buildings, appliances, etc., with the definite object of correcting errors, removing hinderances, and maintaining steady progress. The incumbents of the office should be qualified by scholarship, experience, and those natural dispositions that command the respect of adults and the confidence of children. They should be well paid for the service and should have sufficient authority to carry out the measures they deem expedient.

The school laws of a number of the States provide for such an oversight of the country schools, and it has been put into operation and may be judged by its practical effects in a number of counties, townships, or groups of towns uniting voluntarily for this purpose. Examples are not wanting of the failure of this agency, where it has been established, to effect any material improvement in the schools, but in such cases it is almost invariably found that the salary is so small as to preclude the possibility of effective service.

Let us now take a glance at some of the encouraging facts and opinions that meet us in the Reports of this Department.

In New Jersey county superintendents have secured uniform text-books in 198 of the 361 districts of the State. For those who have had any personal experience of the text-book problem, comment is unnecessary. Hon. J. W. Dickinson, Secretary of the Massachusetts Board, writes: "It is now known that in all countries the schools are good in proportion as their superintendence is good, and poor as their superintendence is inefficient. \* \* \* How can our rural communities be supplied with this essential element without adding too much weight to the school burden already resting heavily upon them? This is the vital question that is now pressing itself upon these communities for an answer." In two instances, as I see from Reports before me, two adjoining towns of Massachusetts have elected one superintendent to serve in both, adjusting between themselves his salary and services. The plan has worked admirably.

In Illinois, according to the latest Report, there are twenty-six city or village superintendents who spend their entire time in supervision; forty-three who spend two-thirds of their time; sixty-nine who spend one-third of their time, and one hundred and five who spend one hour a day.

In California, although the average pay of county superintendents is above \$1,000, individual salaries vary greatly, some of them being ridiculously small. The State superintendent, who has had abundant opportunity of satisfying himself as to the merits of the service, urges



the matter upon the attention of the people in his late Report as follows:

In every county the superintendent of the schools should receive a decent and comfortable support, so that he may be contented and able to give his whole time to his duties. The people can impose a local tax on themselves for additional school facilities, and surely none can be so valuable as a good superintendent. But I prefer to invite the attention of the Legislature to this important matter, and leave the details of accomplishing this great reform to their wisdom.

Hon. Le Roy D. Brown, Commissioner of Common Schools, Ohio. writes:

In a few townships in Ohio, boards of education have been wise enough to employ superintendents. Where this has been done the schools have been graded, uniform rules and regulations for the government of the schools in each township have been adopted, complaints concerning text-books and inefficient teachers have disappeared, and in every respect the schools have improved. In the larger townships in which supervision has been adopted, the superintendents have either devoted their entire time to supervision or have been made the teachers of township high schools. In the smaller townships the superintendents have taught the central school of the township, and have, by teachers' meetings and occasional tours of inspection when their own schools were not in session, seen that the rules of the Board were enforced. At the close of the school year the township clerks have received the reports of the superintendents, who had consolidated the reports of the several teachers under their direction, and in cases of this kind the reports have been uniformly correct.

The mode of operation is shown in detail in the following extract from the Report of one of the township superintendents:

The entire time of the superintendent was spent in the discharge of the various duties assigned him. The oversight of the school-room work occupied a larger portion of time than any other. Visits to the different schools were made as often and as regularly as time and circumstances would permit, the average being about two visits every three weeks to each. As to the manner of the oversight of the work in these schools, I think it does not differ materially from supervision elsewhere, except as it was modified by the different condition of things. The aid that was thus offered to the different teachers was, for the most part, kindly received; the exceptions, it is needless to say, were not found among the earnest and progressive.

Within the year three examinations were held. The questions were prepared by the superintendent and given to the teachers, each school having the same lists and being required to do the work at the same time. The papers were examined by the teachers, and then handed to the superintendent for inspection. The results of the examinations, as well as the papers, were then shown to all the schools, thus, by a comparison of work, bringing them into friendly competition and cultivating a spirit of emulation.

The teachers of the township met regularly every three weeks throughout the year for the purpose of discussing the principles and methods of education and to consider the practical working of our plans. At the same time the course of reading prescribed by the Ohio Teachers' Reading Circle was carried on in such a manner as to give variety to the other exercises without interfering with them. The number of such meetings held within the year was eleven, with an average attendance of eight—an attendance too small for the number of teachers, from thirteen to fifteen being employed in the township; yet the difficulties of distance and bad weather serve, to some extent, as excuses. Besides the regular teachers' meetings, three educational meetings were held, with a manifold object in view—first, to bring the schools together, cultivate a spirit of harmony, and induce a feeling of relationship; second, to exhibit the methods of different teachers before all, as shown in actual class work; third, to secure the attendance of the patrons of the schools, and thus enlist their sympathies and co-operation in the school work. Further objects need not here be recounted.

I could add greatly to this testimony of fact and experience from reports before me of the results of similar work in certain counties of Maine, New York, New Jersey, Pennsylvania, Maryland, Virginia, Alabama, Michigan, Minnesota, Indiana, and Wisconsin; but I have already extended this topic beyond the limits of time and patience. I pass to a second consideration:

## THE GRADING OF COUNTRY SCHOOLS.

Union of districts, abolition of small schools, grading, are conditions that come naturally in the line of adequate local supervision. They come indeed sometimes without it, in which case they generally become the cause of it, so closely are the parts of an ideal system related. To realize how far the country at large is from any such ideal, it is only necessary to count the number of schools enrolling two, five, six, nine, ten pupils, with sessions of ninety days, sixty-five days, forty days, in a year, and affording teachers a miserable pittance, \$98, \$67, a year, and part of that taken up in "boarding round."

But I promised at the outset to confine myself to the optimistic view of our schools, so I turn to a pleasing picture of what may be accomplished by combination.

The Connecticut Board of Education reports that:

In the towns where the district system has been given up, there has been generally a very decided improvement in the schools. Some towns have made an objection to this change on the ground that, although it might work well for the central districts, it would be an injury to the others. But they have found that this has not taken place. The school at the center has indeed been improved, and scholars have attended it who, under the other system, would have been excluded. In some cases as many as one-quarter of the whole number in attendance has been from outside, and so the whole town has had the benefit of the improvement. But the other schools, instead of being harmed, have been helped, for they have been relieved from the older scholars who once absorbed the greatest part of the teacher's time and attention, and so the teacher could the better care for the younger pupils.

By a little computation it may be seen that the money expended for all the schools of Connecticut, when divided by the number of children in attendance, is equal to the *per capita* cost of educating the children of New Haven, or about \$22. The cost of educating the children in the one hundred and fifty-eight districts that had each less than eight pupils in attendance the past year, was \$30 *per capita*. In some districts the price ran even so high as \$50 to \$95 per scholar, and instruction very poor at that. This is a problem that may be worked out with equally striking results in every State of the Union. It is particularly recommended to those anxious economists who fancy that the city-graded schools represent the extravagant side of our common-school system.

It will be observed that the grading of schools in these towns of Connecticut was brought about by the overthrow of the district system; fortunately, however, it is a desideratum that, like roast pig, does not absolutely require revolutions or conflagrations. The principle of the system is in a graded course of study for country schools. When this has been once adopted the rest may reasonably be expected to follow. None know so well as superintendents how much enthusiasm has been expended upon this simple expedient, and how much opposition it has encountered. Why it should be opposed is as inexplicable as that Hindoo laborers should ever have preferred to carry wheelbarrows on their shoulders. Happily human perseverance is stronger even than human obstinacy. Wheelbarrows are at last trundled along the banks of the Ganges, and it is just as certain that in time system will be a feature of our country schools.

The essential thing seems to be to get the parents interested in the matter; from them to the legislature is only a step. In California the step has been taken and the law now requires county boards of education to prepare and publish outline courses of study for the county schools, and the teachers to use the same. In other States the measure seems only to have been introduced in individual districts, here and

there, but the number of these steadily increases. Moreover, reports reach us of districts in which the measure has been in operation long enough to enable one or more classes to complete the prescribed course, pass an examination in the same, and receive the stipulated diploma or certificate. From twenty different reports of this kind I select the following examples.

Hon. A. A. Bailey, County Superintendent, Contra Costa County, California, writes as follows:

Under the Caminetti Act the Board of Education has prepared and sent to each school sets of examination questions for the highest four grades in all the studies required by the law. These questions were used simultaneously in October and in May, the papers of the pupils marked by the teachers, and returned to this office for final review. Promotions were made at the close of the May examination, and a catalogue published, showing the grade of every pupil in the county. While this has entailed a vast amount of extra work, it has done more to properly classify the schools than anything heretofore attempted.

Diplomas of graduation were granted to twenty-three applicants who passed the examination held for that purpose.

Superintendent Bruce, of Camden County, New Jersey, says:

During the four years from 1877 to 1881 eighteen districts had graduates. In most every district there is a great desire to have pupils complete the course and obtain a diploma. It gives a standing to the school and to the teacher. I can say that more and better work—double the work—is done in the allotted school year than was done in 1872, and for a much lower rate of compensation.

Hon. D. L. Kiehle, State Superintendent of Public Instruction for Minnesota, makes the following statement in his report for 1883-'84:

Eighteen months ago there were few persons in the country who believed that a course of study could be used to advantage in country schools; but one was prepared and placed in the hands of teachers and school officers; local teachers' meetings were held to explain and urge its use; an educational department was conducted in one of the country papers for the same purpose, and the results have been so satisfactory that teachers, at least, now almost unanimously favor the plan. Owing to short terms, poor teachers, or other obstacles, the use of the course in some schools is, as yet, scarcely more than nominal; but it is apparent that nothing has anywhere been lost by attempting to introduce it, and that even its partial introduction has been beneficial, while in about fifty per cent. of the schools—those where it has been most faithfully tried—its use has saved time, driven out listlessness and stagnation, secured better teaching, especially in the primary grades, and increased the regularity of attendance. Its effect upon attendance is shown in the fact that the average daily attendance, as compared with the total enrollment, was five per cent. higher for the summer term of 1884 than for the corresponding term two years before. That this will be still further increased, at least five per cent. within a year, seems altogether likely. In endeavoring to introduce and enforce the use of a course of study several things have been done that are, perhaps, worthy of mention.

Each year a manual and guide for teachers and pupils has been issued, containing a course of study, with directions and suggestions as to its use. Five hundred copies were printed the first time, 1,500 a few months later, and now an edition of 2,500 is in press. These are distributed to all school officers and teachers, and to pupils of the grammar grade. Circulars have been issued from time to time. Last spring 4,000 were distributed to teachers, school-officers, and parents, upon the use of a course of study in country schools. The hektograph has been freely used in preparing circular letters to teachers. The cost of printing manuals and circulars, amounting in the aggregate to more than \$300, has been paid by the insertion in them of advertisements.

Monthly written examinations have been recommended, and examinations are required at least as often as once in each term of two months, twice in each term of three months, and three times in each term of four or five months.

Effort, in many cases successful, has been made to have other school work—such as specimens of penmanship, maps, written exercises prepared in connection with language, reading, history, and geography recitations—preserved and put on exhibition in each school-room. Hereafter, quantities of this work will be exhibited at our teachers' institutes and our fairs; and it is believed that, if proper care is exercised in preventing waste of time on that which is not useful and the giving of undue attention to hobbies, the plan cannot fail to be very beneficial to our schools. Our plan

of examinations contemplates the occasional use of questions furnished by the county superintendent, and the holding by him of an annual written examination in each township for pupils of the grammar grade. The papers of all those taking part in the township examinations will be marked by the superintendent, and a certificate presented to each pupil, showing his grade and his rank in the class of the township.

One of the most important outcomes of the measure is the establishing of intimate relations between the elementary country schools and public schools of higher grade. It is proposed, in some cases, to accept the final examination in the course for the country schools as the equivalent of the examination for admission to the high schools; in others, to make it a prerequisite for admission to the State normal schools; and in others to accept it as an equivalent for the examination for a teachers' third grade certificate, provided the holder passes the additional examination required in the theory and methods of teaching.

#### IMPROVED SCHOOL-HOUSES.

To one who is looking upon the bright side of our school history, nothing is more noticeable than the improvement in school-houses, and the increased interest in this matter within three or four years. If we keep on, the village school will soon be the most picturesque object in every landscape. But the questions that are constantly received at the Bureau of Education with reference to school-houses have to do, not with their picturesque elements, but with their substantial properties—form, dimension, cost, etc. The following description of a school-house recently built in Connecticut, meets exactly the conditions set forth in a large proportion of these queries, and will therefore, I judge, be of general interest.

The outside dimensions are 20 by 30; 11-foot posts. It is designed to seat twenty-four scholars. There will be floor room enough for six to eight more, but the room is not intended for that.

There are two blackboards or black walls, one on each end, 12 feet long, 3 feet wide. The contract for building in good and complete style was \$600, cellar and all. The lot costs \$50, seats \$50, outbuildings \$50, and other minor expenses about \$50, making total cost about \$800. It is certainly a cheap and pretty country school-house, quite a contrast to the old-fashioned red school-house.

It is built of the best material and is in every way first class. The school-room is 19½ by 19½, plastered two coats, wainscoted up 3 feet. The boys' and girls' entries are separate, each 9 by 7 feet, and ceiled with spruce. The closet between these is to store maps, or for a library. The outbuildings are fifty feet in rear of the school-house.<sup>1</sup>

#### THE TEACHING FORCE.

And now, in conclusion, I find myself irresistibly drawn to a topic upon which only an optimist of the Mark Tapley school could dwell with cheerful satisfaction, viz, the qualifications of teachers. Under this head I had gathered what seemed an imposing array of evidences of progress. Thus, the State laws making normal-school diplomas, or certificates obtained by examination, prerequisites for service in the schools; the increasing number of teachers who obtain long-term and life certificates; the increasing number of teachers who have had normal training; above all, the close scrutiny of the facts relating to the subject and the unflinching presentation of the same by supervising officers—all of these I had noted, when I bethought myself of the average wages of teachers as set forth in the Annual Report of the United

<sup>1</sup> From Report of Hon. Charles D. Hine, Secretary of Connecticut Board of Education, 1884.

States Commissioner of Education. I examined the summary, and turning then to the statement of particulars in the Appendix, figured up how much these averages would be decreased if all city salaries were omitted. With these significant figures before me, I was forced to admit that the evidences of progress alluded to count for naught, only so far as they show a movement toward the ideal suggested in the words of Dr. Philip Lindsley in an address before the University of Nashville in 1826: "Until school-keeping be made an honorable and a lucrative profession, suitable teachers will never be forthcoming in this free country."

For this ideal may we work, remembering still,

*It is better to strive for the good than to rail at the ill.*

## THE PUBLIC SCHOOLS OF THE PACIFIC COAST.

BY CHARLES S. YOUNG,

*State Superintendent of Public Instruction, Nevada.*

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The modern free-school system is about three and one-half centuries old. When it was adopted for his nation by the King of Saxony, the well-known educational systems of the ancient world, China, India, Greece, Rome, and the Empires of Mohammed and Charlemagne, had lost prestige and power. Each system successively had supplied the demands of the period in which it flourished; each had merits especially valuable to the people adopting it; but the glory of each had dimmed and the civilization of the sixteenth century demanded a new school system. Necessity knows no law, and as in nations, so in the different sections of the same nation, the educational facilities vary in kind and efficiency. The schools of the South are not the schools of the Middle States; the schools of New England are not the schools of the Pacific coast. As differ the people, their occupations, and the natural scenery surrounding each, so differ the avenues to an education. As it represents the many cities and States of one Union, so this body of educators represents not one system, but many systems in one.

There is within the Department of the Interior a Bureau of Education whose Commissioner, assisted by twenty clerks, supplies 55,000,000 of people with circulars of information; but in the nation practically there is no educational center. The West Point Military Academy and the Annapolis Naval Academy are national schools, but we have no normal schools as the head of a system—no Oxford, or Berlin, or Leipzig, or Munich. Since the administration of Washington the Government has appropriated for educational purposes \$47,000,000 and over 96,000,000 acres of land. There is enlisted and already in the field a band of 300,000 teachers making the crusade against that ignorance which is represented by an army of 6,000,000 of our people; yet from its political eminence the Government at Washington looks on simply as an interested spectator. Springing directly from the people, local in its system of taxation, local in its government, the school is inevitable as are its patrons.

That we may have clearly before us the educational outlook on the Pacific coast, its topography and its people first must be considered. Separated from the "Great East" by a wall higher than that which surrounded China or ancient Babylon; separated by an impenetrable barrier of porphyry and granite stretching from the British possessions on the north to our sister republic on the south, it is not strange that there exists socially and educationally this Western Empire. In the purity of its mountain streams, in the fertility of its valleys, nature has anticipated this civilization. In the same month of the same year that was signed the treaty of Guadalupe Hidalgo, on the American River was discovered the precious metal that made real the dreams of the

Spanish voyager, and attracted to this Eldorado the peoples of South America, Europe, and China. As was the great historic scene at Appomattox to the education of the "Sunny South," so was the treaty of Guadalupe Hidalgo to the development of the "Golden West."

On these Argonautic expeditions westward there were represented all peoples, from the veriest Chinese serf to the most intellectual Caucasian sovereign. The following table will show the native and foreign population of some of the Pacific Coast States compared with that of the United States and with Ohio and Virginia:

State or Territory.	Native.	Foreign.	Native.	Foreign.
			<i>Per cent.</i>	<i>Per cent.</i>
United States .....	43, 475, 840	6, 679, 943	86½	13½
Ohio .....	2, 803, 119	394, 943	88	12
Virginia.....	1, 497, 861	14, 696	99	1
Oregon.....	144, 265	30, 503	82½	17½
Washington Territory .....	59, 313	15, 803	76	24
California.....	571, 820	292, 874	66	34
Arizona.....	24, 391	16, 049	60	40
Nevada .....	36, 613	25, 653	59	41

While the foreign population in Ohio is 12 per cent. and in Virginia 1 per cent., in California it is 34 per cent., in Arizona 40 per cent., and in Nevada 41 per cent. Here and there, as at Santa Clara and Los Angeles, may be found the old Spanish schools under the dominion of the Church, but Spanish children form no considerable element in the public schools. The Indians are on the Government reservations, while the Chinese are content to receive a Chinese education and to live in their peculiar manner apart from the American civilization. There are 12,000 Chinese children of school age in the one city of San Francisco, but not until very recently has it been decided that any Chinese child, even though born in California, could be enrolled as a public school pupil. The Spaniard, the Indian, and the Chinese do not form, as some think, the chief element in our school population; on the contrary, they have scarcely a representation in the schools. But in attendance there are representatives of families the most energetic and progressive of each one of the Celtic, Anglo-Saxon, and Teutonic peoples. Since the first school, which was commenced thirty years ago by Thomas Douglas, a graduate of Yale College, in the "nut-brown" school-house of San Francisco, the problem of making for the Coast a school system that should meet the varied wants of this new civilization has been given for solution to such educators as John Swett, A. J. Moulder, and James Denman. As to the correctness of the solution the educational results are ample proof.

Less dense in population is the West, and in consequence the expense *per capita* of educating the children here is much greater than in the East. To the square mile in New Jersey there are 151.7 persons, in New York 106.7, in Ohio 78.5; in California there are to the square mile an average of 5.5 persons, in Oregon 1.8, in Nevada .6, in Arizona .4. Nye, one of the 14 counties of Nevada, contains 20,436 square miles, an area greater than that of Vermont, Massachusetts, and Rhode Island. Nye County has but 69 school children, while those three New England States have over 500,000 school children. Alpine County, California, is nearly as large as is the State of Rhode Island; yet in the former there are but four schools, with an average attendance per school of

12½ pupils. The cost of educating this number is as much as if there were an attendance of 50 pupils. As many hours of the teacher's time are employed, as large a salary is paid the teacher, and the other expenses are the same as in a larger school. From the State school fund each one of these four districts receives annually not less than \$400, or \$32 per child in attendance. To every district of 10 census children the State contributes from the State school fund \$400; to every district of 20 or more census children, \$500. Such State aid is in addition to the amount received from local taxation. Thus the State assumes the responsibility of educating the children; thus it is provided that every district, without local taxation, annually may have six months of school under the tuition of the very best paid teachers. Generous, indeed, is California towards her impecunious school districts. In this feature she leads all of the other States. So earnest are the people that even away out on the frontier the child of the gold-hunting pioneer may enrich his mind from golden opportunities for an education.

There is no other section of the United States whose population is so changing as is that of the Pacific coast. The spirit of the Argonauts of '49 is everywhere manifest. In the mining sections especially the fluctuations are such that provision must be made for the organization of districts to supply the immediate educational wants of immigrants, and for withholding the school moneys upon their departure, which departure often is as unceremonious as is the arrival. These anomalous exigencies have been provided for wisely and generously. Were the school funds unavailable, always available in the cause of education would be the golden shekels of the intelligent miner. Subscriptions of hundreds of dollars for educational purposes in a small mining town have been secured in a single day. The temple where dwells the God of our Fathers may be slow in building, but not so the temple where dwells the Goddess of Learning. In every inhabited camp, canyon, and mountain dale there is a school, and not infrequently a school so situated has for the presiding genius a graduate of the Oswego Normal School, of Wellesley, or of Heidelberg.

In some of the States there are school libraries. In California ten per cent. of the State school fund annually apportioned to each district, unless ten per cent. exceed \$50, in which event the sum of \$50, is expended in the purchase of books for a library. In Arizona ten per cent. of the Territorial school fund apportioned to each district constitutes a library fund, which is apportioned by the county superintendent as the other school moneys are apportioned. In the cities and larger towns there are other free libraries, to which the children and the people generally have access. Not as in the older States, where library books have been collecting for more than a century, is the rising generation favored; but in this civilization, cosmopolitan in character, for this people, who have traveled more than the same number of people living anywhere on the globe, the increase in the amount of good literature within the 37 years since the discovery of the gold fields is even more surprising than the increase in the population.

The number of teachers in California is 4,082, in Oregon 1,412, in Nevada 230. The average monthly salary paid male teachers in Nevada is \$100, in California \$81½, in Montana \$80, in Oregon \$46½. The average monthly salary paid female teachers in Nevada is \$68.67, in California \$65.37, in Montana \$62, in Oregon \$35.45. Of the 4,082 teachers of California, 472 have been educated in the State Normal School at San José; 150 of the 600 teachers of San Francisco in the city training school under the supervision of John Swett. Fully 1,000, or 25 per cent.



of the teachers of California, have received normal training; and it is estimated that an equally large percentage of the teachers of Oregon and Nevada have also had special preparation for teaching. Last year in Montana there was but one county that did not hold an institute. The teachers of California receive pay for each day of their attendance on the institute, and last year nearly every teacher (in all 3,385) was a member of some county teachers' institute. In that State there are published two journals of education, the *Pacific School Journal* and the *California Teacher*. The large salaries paid in the schools of the Coast command the very best talent in the profession. To such an extent do Eastern teachers deluge the offices of State and county superintendents with applications for positions that it has been found necessary to keep on hand some such printed circular as follows: "Your favor of the — received. Know of no vacancies at present in the State. Will place your application on file, but can offer no encouragement." The same spirit shown by the people in the other occupations is shown in that of teaching—energetic and progressive, eager to accomplish the greatest possible good in the least possible time.

The children of the Coast mature younger than they do in Puritan New England. Possibly the former are less studious than are the latter, but certainly the former are more precocious. They know less of Dante, Macaulay, and Longfellow, but more about business, virtue, and vice. The moral test is applied to the child before he passes the Sunday-school age or leaves the parental roof. If virtue continue through adolescence, in maturity it becomes impregnable. There may seem to be fewer moral children in such places, but the ethnologist will find his ideal character maturing in the mining sections of the West. In the open air of temptation, and not in the orthodox hot-house, character grows and strengthens. As a historic fact, it is known that the Spartan principle of training the child to virtue with its eyes open on vice develops true manhood and true womanhood. From the intelligent parent the child learns to shun vice because of its consequences, and never should it have cause to embrace vice by reason of its novelty. Though contrary to the prevalent belief, yet it is true that the children of the West are more easily disciplined than are the children of the East. In the visits to schools in every part of this broad Union, north, south, east, and west, nowhere else have I seen such perfect discipline among pupils as that among those in the mining sections of California and Nevada. That mind which imagines "hoodlumism" in the schools of the Coast to be rampant requires an imagination as extravagant as that which believes all the "blood-and-thunder" stories that have been written about "Buffalo Bill" or "Kit Carson."

Each one of the Coast States has a State school superintendent and a county superintendent of schools. In comparison with the salary of the other county officers, however, the county superintendent is poorly paid. In fact, between the salary of the professional politician and the professional teacher, as elsewhere in the United States, a comparison can scarcely be instituted. In California as high as \$15,000 annually is paid to one county sheriff; in Nevada, \$5,000 annually to one county sheriff. In California the average annual salary of the county superintendent of schools is \$1,000, in Oregon \$370, in Nevada \$330; in Montana the maximum salary is \$1,000, the same being graded in proportion to the number of census children down to a mere pittance. Except in some of the counties of California, county school supervision on the Coast is a failure—a failure not because of defect in the principle, but because of adverse legislation respecting the salaries and the super-

visory powers of the superintendent. The average superintendent is educated, but not an educator; he is a lawyer, a doctor, or a clergyman, but not a teacher; he may be well versed in *his* profession, but he knows nothing about teaching. In the meager salary paid the whole explanation of this deplorable fact is to be found. A principal of a city school receives from \$1,500 to \$3,000 per annum, and such talent may have for a superior officer a superintendent receiving a salary of from \$300 to \$600 per annum. California's system of supervision, however, except in this feature of salaries, has much to commend it. In the county board of examination, whose duty, among other things, is to grant certificates to teachers, there are five members, two of whom, besides the superintendent, must be professional teachers. No superintendent receiving a salary of \$1,500 or more is permitted to teach in any public school, but must devote his time to supervision. In San Francisco, over the 600 teachers employed there are 48 supervisors, one supervisor on an average for every 12½ teachers. In the county of San Francisco the supervision is most excellent; in a few of the other populous counties of that State it is doing for the schools just what in a few years we hope it will be doing for the schools in every county of each State in our section. The city schools throughout the entire West are well supervised, and progressive in their methods of teaching. The many good features which they possess, however, resemble too closely those of hundreds of other schools throughout the United States to require extended description.

In Alaska there is a population of about 2,000 whites, 10,000 Creoles, and 20,000 Indians. On the Fur Seal Islands are found schools, numbering in all about eighteen, with an attendance of 1,000 children. There are industrial schools for the Indians and Creoles, but not so much as one school for the white children. A few weeks ago, in conversation with Governor J. H. Kinkead, of that Territory, it was learned that the Government had made an appropriation of \$25,000 for educational purposes, and that there will soon be in that sparsely settled Territory the beginning of a school system. That the arrangements may be perfected, as well as that in other respects a more efficient government may be secured, the governor is now in Washington in conference with the Administration. The few mission schools now there under the emissaries of the Church will soon be succeeded by the public free school.

In nearly every Western State there is now a munificent State school fund—in California \$2,000,000, in Nevada \$1,000,000. Often ill directed in educational matters have been the people, but dearer to the human heart is the public school than ever was the Temple of Diana or the Holy Sepulcher at Mecca. On the Coast are landscapes of beauty and cascades of grandeur; trees 80 feet in circumference and more than 300 feet high; geysers sending forth immense volumes of steam two or three hundred feet in the air; a Yosemite whose surrounding granite walls rise vertically from the valley more than 4,000 feet; through igneous rocks runs the Suto Tunnel, more than four miles in length; in the heart of the metropolis stands the six-storied Palace Hotel, the admiration of all architects; following the vein of the precious metals through the quartz and porphyry of the Comstock, large mining shafts are sunk to the depth of 3,300 feet; but, in the estimation of the people, infinitely greater than all else in nature and art is our free-school system, for the free school is the temple where dwells the oracle that foretells to all who consult her the future grandeur of that western social and educational empire.

## STICK OR NO STICK.

BY EDWIN CHADWICK, A. B.,

*Chairman of the Education Committee of the Society of Arts, London.*

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I perceive from educational returns, and from discussions at educational meetings, and from continued cases before magistrates of charges against teachers of assaults upon school children, that the question to be put of "stick or no stick" is in continued agitation as a question of school discipline in England on which I should be glad to submit some experience for the consideration of our related educationists in the States, as involving a question of primary importance in education.

Some years ago I met the late Lord Fitzhardinge in society, when I complimented him on being an advanced educationist. "What do you mean?" he said, "I have nothing to do with schools." "No," I answered, "but you have, I hear, set an example in your education of horses that may serve for the education of the human. You have forbidden the use of the stick." "That is so," he replied; "if I see a groom beat either horse or dog I dismiss him. I must say, however, that in some twentieth case we meet with a depraved brute who is only to be subdued by physical force on a conflict; but in allowing the use of the stick nineteen out of twenty horses are spoiled."

We had in Poor-Law administration a convocation of head school-teachers, at which the question of "stick or no stick" was considered, when a conclusion was arrived at in accordance with Lord Fitzhardinge's doctrine. It was pleaded for the use of the stick that some twentieth case was one of extreme depravity, which could only be subdued by strong force; but for the rest the stick should be taken from the hands of the pupil-teachers, and only reserved in the cupboard for very special occasions.

A friend, Mr. James Blackburn, of Bysshe Court, a squire, who keeps a stud of horses and devotes himself very much to their training, displays an advance upon Lord Fitzhardinge's practice in the education of horses. He declares that the twentieth case spoken of by his lordship is in itself the result of bad early training. Mr. Blackburn looks carefully to the education of the colts in the infantile stage. He forbids his grooms not only to beat them, but to swear at them, or to speak to them in other than kind and gentle language. They are taught to attend and to act upon gentle speech. It is pleasant to see them come up to him, and follow him in the field, and put their heads over his shoulder. The carriage whip is only used for guidance or to remove a fly. Others, I am told, follow a like course with entire success as to horses.

In the best of our district half-time schools they have advanced with like success to entire disuse of the stick as in the education of horses. Mr. Hillyer, of the Central District Half-time School at Harwell, who during the last twenty years has had twenty thousand children of the lowest type pass through his hands, says that he has not used the stick

twenty times during that time. Other teachers in our half-time schools, although they receive very hardened subjects at advanced ages, strive with equal success to dispense with the use of the stick.

There is one point on which I think it highly important that the education of children should be brought up to the good education of colts, namely, in the use of the most kindly and gentle language to them. On visiting a common school you will hear the teacher "rend the common air with angry and horrid speech" to them, which is in itself bad education. This in itself makes it worth while to engage ladies as teachers for this the most impressionable and formative period of life. Experienced inspectors have marked the great difference which it makes, and have expressed strong opinions of its importance. For the relief of such teachers Mrs. Fielden, of Todmorden, has invented a sort of castanet, which is very successful for the direction of the chief movements of the school.

I should mention that in the high schools for horses conducted under the rule of kindness, it is found by our squires that teachers of superior quality—kindly, patient, gentle speaking, and judicious men—are necessary; and that the requisite qualities are only obtainable at higher salaries than are given to the teachers of the human in the rural districts. The grooms have more than double the salaries of pupil-teachers of the schools, and to the head teacher in the school of a stud of some forty horses, such a salary as three hundred pounds per annum is given, nearly double the salary regarded as adequate for the head teacher of a rural school, and more than three times the average pay of a curate.

By some of my correspondents it is pleaded that some element of fear should be preserved. To this it is answered that for the fear of the infliction of *pain* by the stick, the fear of the privation of a pleasure may be effectually substituted in some of our best district half-time schools. In one half-time school, where the exercises on a ship's mast were pursued with great energy and delight by the boys on their liberation from the book lessons, the master would only let good boys that had pleased him go on the main yard-arm to loose and furl sails, and it was his special favorite only that he allowed to be "mast-headed." In other schools, if any boy is inattentive he is sent out into the yard, where he finds his own company weigh heavy upon him, and the privation is more severe than a flogging, so that the offense is not repeated. In one school on Saturday afternoon there is a special gymnastic exercise, with song and music and dance, in which the girls take great delight, to which those whose attendance during the week has been remiss are not admitted, and the privation is found to be very effective in maintaining regularity of attention to the book lessons, such as are continued to be given.

It must be admitted that the disuse of the stick, or of the cane, or the "tawse," is a deviation from very old and yet accredited practice. Dame Paston\* writes to inquire for a tutor by whom her son may be well "belashed," and when she has got a tutor she writes to him of her son: "If he hath not done well nor will not amend truly, belash him till he will mend." As to her daughter, it appears she was beaten once in the week and sometimes twice a day, and had her head broken in two or three places. Lady Jane Grey told Ascham that she was "sharply treated, cruelly thrashed and punished—in other waies I will

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\* Paston Letters, temp. Edward IV.

not name," and thought herself in hell when she was with her school-master.

The stick was the accredited instrument of rule of the head of the household of our ancestors, or the husband. There is a homily (I believe of Bishop Latimer) that I have seen, where the husband is exhorted to exercise his rule with moderation toward his wife, and not use a stick "thicker than his thumb." Now, a "wife-beater" is condemned throughout the realm, no matter whatsoever may have been the provocation. My belief is that the time is coming when the habitual "child-beater," whether teacher or parent, will be no less reprobated.

In a memoir by the Hon. Amelia Murray, maid-of-honor to Her Majesty, she says, speaking of His Majesty George III, "that he adhered unflinchingly to what he considered the path of duty," and that he placed his sons "under tutors who engaged that the rod of Scripture could mean only bodily punishment. The Princess Sophia told me that she had seen her two eldest brothers (that is to say, His Majesty George IV and His Majesty William IV), when they were boys of thirteen and fourteen, held by the arms to be flogged like dogs with a long whip." "Was it wonderful," says Miss Murray, "that the results proved anything but satisfactory?" Asking a young Etonian recently whether the use of the birch still continued, "Yes," he said, "it still flourishes; we had a duke horsed the other day, but we don't mind it." Then of what good is it?

There is, however, a very large distinction of bodily condition to be observed between boys of the Eton class, who are unmoved by the infliction of a punishment which "they do not mind," and who get their lessons how and very much when they please, and children of the class now brought into the Board schools—children of the lowest physical type, frequently ill-fed, and bodily as well as mentally depressed, and incapable of bearing long hours of detention. With them a stripe which the others do not heed is a festering wound and a long and serious injury, which mothers frequently show to magistrates and which excites their compassion.

Nevertheless, it is to be admitted that much may be obtained by the rule of terror. My colleague in Poor-Law administration, Sir Francis Kead, recounted to me the results of the rule of terror on wild horses in the pampas, and how much was effected by it; nevertheless, it requires constant, incessant, and severe energy and great force, and attains only inferior results with men as well as with animals, the subject having to be constantly guarded against as a treacherous enemy, instead of being, as under the rule of kindness, regarded as an agreeable and trusted companion.

Where a school has been changed from a long-time to a well-organized half-time school, with appliances for physical training, the non-attendances have been reduced to one-tenth the previous number. They are reduced largely through the decrease of absences from sickness, occasioned by detention during long hours amid filthy-skinned and filthy-clothed children, and also by lessons little adapted to their mental receptivity, by the amelioration of all of which, irritation and the provocation of the pupil-teachers and the head-teachers to the use of the stick is in the half-time schools abated, and school headaches diminished in the case of teachers as well as that of pupils.

Complete success may be assured by commencing in the most formative period of life—the infantile stage. The kindergarten, or the kitchen garden system, as introduced in the United States, I consider to be one

of the greatest educational improvements of our time, which we must strive to get introduced in England. Another advance will be in providing that no lessons shall be introduced into any school that have not been tried on children of the classes to be taught, and have sustained attention by their own interest, as demonstrated by one of our foremost educational improvers, Mr. Horace Grant, whose memoir I herewith submit.

On the whole, it will be found after sufficient experience that the stick, and the "tawse," and the rule of terror will have to be abandoned for the more efficient rule of kindness in the treatment of children in every stage of school life.

## MORALS AND MANNERS AT SCHOOL.

BY D. L. MANSFIELD,

*Superintendent of Schools, Dummerston, Vt.*

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The school laws of Vermont require, in addition to the common studies, instruction also in good behavior. Recognizing that requirement of the law, the text-book committees of the several towns in the county, when met together in council in 1878, adopted Gow's "Good Morals and Gentle Manners" as a suitable text-book on the subject of good behavior. Joseph Steen, a venerable bookseller in Brattleboro', Vt., concluded that so good a book on a subject so necessary to be taught in the schools at the present day would have a good demand, and sent for a suitable number of books for introduction. After the books remained on the counter several weeks, exposed for sale and examination, he was forced to return the same to the publishers because there was no sale for such books. Mr. Steen, in a few words of comment, said to the writer that "most parents nowadays do not think their children need to be taught manners at school. Children are all very good." Ask teachers and school officers of experience, who keep their eyes and ears open to the evidence of good morals and manners in the schools or elsewhere, whether it be true or not that most boys and girls show a disposition to become truly polite. What say the families or persons of refinement who live in close proximity to the district schoolhouse? Does the air ever resound in your ears with the evidence of unclean language and profane utterances emanating from juvenile lips? In my school-boy days I used to hear about the roughness and incivility of village and city boys; but, so far as I am informed, the village and the city juveniles are much more refined and civil than the common rustic school-boys are. And the average Irish day-laborer will answer you civilly when questioned, while the ordinary American "chap" thinks you beneath his notice. Most school-boys are rough in their treatment of each other. Woe to the stranger boy who goes in among them, unless he is able to fight his way.

I cite a case from personal knowledge: A peaceable school lad of my acquaintance, whose circumstances caused him to be sent to a school where about thirty Indian boys and girls were being educated on an Indian reservation in the Far West, said he received much worse ill-treatment from the boys here in a district school during one term than he ever experienced before. In fact, white boys are worse than savages in the treatment of their schoolmates.

Not long ago a bright little boy, five years old, was asked whether he attended the district school which was kept near his home. He said that he did not, but he knew what the children learned at school. "They learned to *sweared*." Sure enough, when he went to school for the first time the following summer, he was not long in acquiring a supply of profane words. In a few days after beginning school the father heard his boy

swear for the first time. He was exceedingly pained, for he did not use profane language himself, and to hear a child of his swear thus early in life was mortifying to his pride. The bad habit of his boy must be broken up. Reproofs and threatenings of punishment were unavailing. After the child was reproved he was careful not to swear in his father's presence. Still he continued the habit of swearing when he thought his father was not near enough to hear what was said. He was determined that his child must not swear at all. Various punishments were resorted to, such as shutting him up, putting him in a barrel down cellar, whipping, &c., but all in vain. At last a happy expedient occurred to him. He remembered that his boy always disliked very much to have him touch his face with a lather brush, which he had sometimes playfully done when shaving himself. The child's dislike to it put him almost in a state of frenzy whenever his face was lathered with a brush. Therefore, when the father heard the boy utter his next oath, he not only lathered the boy's face, but thoroughly swabbed out his mouth with the brush. The remedy was effectual, and no more swearing has been done by the boy to the father's knowledge. Moral: If every parent would be thus persistent in breaking up the very bad habit of children's swearing, morals in children at school would be less impure, and the school a better place of instruction.



## RELIGIOUS AND MORAL TRAINING IN THE SCHOOLS OF ONTARIO.

BY J. E. WELLS, M. A.,

*Editor of the Canada School Journal.*

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The question of moral training in the schools is pre-eminently the most important educational question of the day. It transcends every other by reason of its closer bearing, not only upon the highest interests of the individual pupils themselves, but upon those of the whole community or State. An uncomfortable suspicion seems to be taking hold upon the public mind that the schools are not doing all they ought to do in elevating the national character. The opinion is often expressed, with no doubt partial truth, that when unaccompanied by sufficiently powerful moral influences, increase of intelligence and mental acumen means simply increased capacity for evil. An impression is, in certain quarters at least, gaining ground that free schools and universal education are failing to prove a panacea for moral evil to the extent that was hoped for by their enthusiastic promoters a generation or two back. Ignorance, it is being shown by facts too clear to be denied, at least that kind of ignorance which can be driven out by the study of the "three R's," is not the mother of all vice and crime, and some more potent agent than the truant officer must be called in to stay the course of youthful depravity, if the next generation is to be raised to a much higher plane in regard to sobriety, honesty, truth, and purity, than any of its predecessors.

In this, however, as in other matters, there is a tendency in the public mind to generalize too hastily. The fallacies of assigning a wrong cause, and failing to make account of changed conditions, are very easy to commit. In comparing the achievements of the schools with the ideal standards of attainments that may have been set up for them, we are very liable to forget to give due weight to all the adverse influences at work. Many of these influences are new and unforeseen. The influx of population from all quarters of the globe into these western lands complicates every problem—political, social, or moral. In order to do justice to the schools as an agency for the improvement of national character, it is necessary to compare the state of youthful morals actually existing under the present school systems with that which there is every reason to believe must have existed to-day but for the restraining and elevating influences exerted by those schools. Tried by such a standard, it will be found that free schools, if they have not accomplished miracles, are at least every day accomplishing wonders for the moral as well as intellectual elevation of the masses.

In endeavoring to form some estimate of what is being done in the way of moral and religious training by the public schools of Ontario, it will be convenient to speak of that training under the two heads of direct, and indirect, or incidental.

By direct moral and religious training I mean that part of the work of the schools which aims directly and consciously to improve the moral character of the young. And here the important part performed by the Sunday-schools cannot be passed over. It would be difficult to overestimate the value of the work done by the modern Sunday-school. In order to get some adequate conception of this, it is necessary to take into account not only the positive impressions produced by the teaching and other direct agencies employed, but the moral effects of the habits formed, the associations created, the gentle but powerful restraints exercised, the temptations and dangers escaped. Notwithstanding all its hallowed influences and golden opportunities, it is sadly true that to the idle and vicious the day of rest is the day of temptation. One has but to imagine how the time would be employed by thousands of the children who now gather in the Sabbath-schools and spend hours of the day in reading the interesting books and papers received there, were there no such institution. In this important respect of furnishing occupation, forming good habits, and preventing the formation of bad ones, the Sabbath-school is the indispensable supplement of the day school.

It may, no doubt, be safely assumed that from one-half to two-thirds of all the public school population of the Provinces are members of some Sabbath-school or Bible-class. These they attend more or less regularly from Sunday to Sunday. Here the great truths of the Christian religion are pressed upon mind and heart and conscience. All the beneficent agencies which the Christian culture and activity of the day have been able to devise are enlisted in this good work. Earnest and, in many cases, able and skillful teachers explain, illustrate, and enforce the doctrines and the duties of religion, natural and revealed. The Bible is studied by the young as never before. The influences of art, music, and poetry are pressed into the service of illustration. The most attractive moral and religious books are freely circulated. History, biography, narrative, and fiction are laid under contribution for the instruction of the Sunday-school pupils. The resources of the ablest artists and editors and of the most prolific presses are taxed to supply illuminated texts and mottoes, instructive pictures, and bright, captivating periodicals. In a word, every agency which Christian philanthropy has been able to devise has been brought into requisition to interest and impress the susceptible minds of the children, and to enlist them on the side of morality and virtue. Of course, Ontario has no monopoly of this good work. In all this she is only doing what is being as well or better done elsewhere. Nevertheless, the fact remains that in her Sabbath-schools she possesses one of the most powerful agencies which Christian civilization has devised for rescuing the young from the paths of evil, training them in the way in which they should go, awakening them to a sense of their duties and responsibilities, and familiarizing their impressible minds with the great truths taught in the Bible in reference to the life that now is and that which is to come.

Another, but perhaps less effective, means of bringing religious truth to bear in the formation of the characters of the children in the public schools, is the use of Scripture readings and devotional exercises in the school itself. The propriety of this was recognized and careful provision made for it when the school system of the Provinces was first organized on its present basis forty years ago. The Rev. Egerton Ryerson, D. D., the father of the Ontario free-school system and for many years the energetic Superintendent of Education, regarded this as a matter of prime importance. He made it, in fact, so far a matter of conscience

that when in 1850 the Government of the day, in its desire to banish all sectarian influences and preferences from the schools, proposed an enactment forbidding the teaching of any religious dogmas, in terms which seemed to Dr. Ryerson adapted to prevent the use of the Bible in the schools, he promptly declared that he would not administer such a law, and tendered his resignation. The result of his arguments and protests was the removal of the objectionable clause and the restoration of the original provision. In no case was the Bible reading, or any form of religious observance, made compulsory. The matter was simply left at the discretion of the local authorities; that is, it was a matter to be arranged between the trustees and the teachers. As no trustees would care to insist upon devotional exercises being conducted by any master who objected to undertaking such duties, the final decision would practically in each case rest with the teacher.

It is evident, however, that in those school districts—happily, I believe, by far the larger part of the whole number—in which parents and trustees attach special importance to the moral and religious element in education, the teacher's views and qualifications in this respect would be taken into account in making an engagement. The result is that, as a matter of fact, it has been, I believe, ascertained that about five-sixths of all the public schools in the Province are regularly opened or closed with the reading of the Bible, and, in many cases, other devotional exercises. The fact that this worship is voluntary on the part of the teacher affords the best assurance that it will, ordinarily, be reverent and impressive.

Another provision of the Ontario school law, as it has existed for many years, should also be noted in this connection. With a view to enlisting the voluntary co-operation of the clergymen of the different denominations in the work of religious instruction, opportunity is given at stated weekly intervals for such clergymen to visit the schools and address or instruct the children of the adherents of their own churches, and any others who may choose to attend. This arrangement for religious instruction has not, however, borne much fruit. The ministers have, as a rule, failed to avail themselves of the opportunity to the extent that would be, at first thought, anticipated. The reason, however, is not far to seek. There is no need to infer any lack of zeal or inclination on the part of the clergymen themselves. A sufficient explanation of the comparative failure of the scheme is afforded in the fact that the time set apart for these exercises was after the close of the regular school work. Any one who remembers the eagerness with which the average child, wearied with the work and restraint of the school routine, looks forward to the hour of release, will readily understand the difficulty under which the clergyman would labor in inviting the pupils to remain for an extra half hour of religious instruction. The children are naturally impatient and in a mood very unfavorable to serious and profitable attention. Unless the clergyman were possessed of exceptional tact and ability, he would fail to arouse any interest, and would not care to repeat the experiment very often.

Since the accession to office of the present Minister of Education, Hon. G. W. Ross, certain changes have been made in the act and regulations respecting both these provisions for religious education in the schools. It has been very strongly urged by a number of clergymen and others that the use of the Bible in our public schools should be no longer optional with trustees or teachers, but should be made obligatory in all cases. Regarding the Sacred Scriptures as the only sure foundation of national morals, advocates of this view contend earnestly that they

should be enthroned in every school-room and have a recognized place in the daily routine.

It is not my purpose to discuss here the soundness of this proposition, or to set over against it the arguments of those who believe it both more in accord with the spirit of the New Testament and of religious liberty, and better adapted to accomplish the moral ends aimed at, than the voluntary principle should be maintained. In deference to the wishes and convictions of those who believe that in a Christian State the Bible should have a place in every school, it has been decided that a collection of extracts from the Old and New Testaments should be placed in the hands of all teachers for daily readings in the schools. These selections are intended to include such passages as are most suitable for moral and devotional uses, and at the same time free from occasions of sectarian controversy. The scheme of lessons prepared is understood to have the approval of leading clergymen of all the Protestant denominations. In view of the diversities of opinion among the members of the various churches, it is prescribed that the Scripture lesson for the day shall be read by the teacher without note or comment.

As now amended, the regulations provide that the clergymen of any school district may select any one of their number, or delegate each in turn, to represent the whole in giving religious instruction in the schools. In the event of this being done, arrangements are to be made for having the exercise take place within the regular school hours, and as a part of the routine of the day. In order, however, to guard against any infringement upon freedom of conscience, it is provided that any pupil shall, at the request of his parents or guardians, be excused from attendance during such instruction, and also during the daily reading of the Scriptures. Whether these changes will prove more effective in promoting Christian morality and enlisting the co-operation of the Christian ministry, remains to be seen.

It is, of course, regarded as one of the duties of every teacher to instruct his pupils in right conduct, and to strive to cultivate and strengthen the moral as well as the intellectual faculties. In the absence of any prescribed text-book or routine, the extent to which this is done must depend entirely upon the character and aptitude of the individual teacher. While the beneficial results of any formal and stated lectures, or other exercises with a view to moral training, would be, to say the least, doubtful, there can be no doubt that the teacher who is really impressed with the importance of the matter, and possessed of average ability and tact, will find a thousand occasions for incidental instruction which may be turned to excellent account. There is good reason to believe that very many of the teachers in the Province are earnest Christian men and women, on the watch for opportunities to make salutary impressions upon the minds and hearts of their pupils. No doubt a good work is every day being accomplished in this way which cannot be set down in any school returns or embodied in any statistics. Those teachers have their reward in the approbation of conscience, and often in seeing the improved behavior of their pupils. Of this I may say a word again.

In addition, however, to this incidental moral instruction, which must always be the chief reliance, it is questionable whether some simple text-book of practical morality should not have a place in the school curriculum. The science of morals may certainly be reduced to simple principles, as easy of comprehension by the child as those of any other science, and such a study might be made the means of not only inculcating the supreme importance of the right and wrong as qualities of

every action, but also of inducing the habit of moral reflection, which certainly needs cultivation quite as much as the power of thinking, in any other form of exercise. At present, so far as I am aware, no such manual or exercise has any place on the regular school curriculum. It is true, Dr. Ryerson recognized the need of such instruction, and shortly before retiring from the superintendency himself prepared a manual for the purpose. He was unsuccessful, however, in shunning the abounding snags of sect and dogma, which make the stream of Christian morals of so difficult navigation. His little work was subjected to a cross-fire of criticism from different quarters, which quickly destroyed all hope of its usefulness. It may be that some future hand-book of practical Christian ethics may have better success.

Under the head of indirect agencies for the moral training of the young I would place first the discipline of the school room in its whole effect on the formation of bodily and mental habits. These habits or their results will, in very many cases, remain through life. They really form one of the most effective agencies in the shaping of character. The influence of the school in this respect is of greater or less importance, according as it merely coincides with and supplements the home training, or, as is too often the case, supplies the lack of such training.

It has been well observed that the essence of moral training consists in its effect upon the will. To be compelled to keep the hands and face clean and the clothing neat, to be present at a stated place punctually at a fixed hour, to attend to this, that, and the other duty at the prescribed moment, to preserve silence, and otherwise respect the rights of others, to sacrifice inclination to the mandates of school law, and to yield prompt, unhesitating obedience to constituted authority—these, and similar requirements of every well-governed school, are not only conditions essential to enable the work of the school room to be carried on, they are also most important factors in the production of character. They teach practically that subordination of impulse to will, that prompt subjection of inclination to duty, which are indispensable to success and usefulness in every sphere of active life.

As, however, all this is also common to all well-regulated schools everywhere, I need only say here that there seems good reason to hope that in enforcing reasonable, healthful discipline, and in striking the golden mean between excessive severity and injurious laxity, the average Ontario teacher will compare favorably with those of any other country. Still I have no doubt there is much room here, as elsewhere, for improvement, by the introduction of wiser methods, and the higher development of those intellectual and moral qualities in the teacher which are the best, if not the only proper forces for upholding law and authority in the school.

Another indirect influence of very great value as a part of the moral training imparted in the schools, is the outgrowth of the tastes there formed or fostered. After making all reasonable qualifications, it is still unquestionably true that a fondness for science, or art, or mathematics, or literature, in a word, for any form of mental activity, is one of the best counteractives to vicious propensities. The law of impenetrability holds in moral as well as in physical spheres. Every moral reformer must have found that there is very little use in warning against evil tendencies with negatives. Defensive tactics here are of little avail. There must be aggressive action. The expulsive power of new occupations, enjoyments, and affections must be used to dispossess the enemy and secure the stronghold. Whenever the work of the school-room has so far awakened the dormant energies of the mind that some

sense of pleasure is experienced in any form of intellectual activity, it has been so far successful, not only as an educational, but as a moral agency. A standard has been raised against the common enemy. Let, for instance, a taste for reading be developed, and an avenue is at once opened up to a new and higher plane of enjoyment than any which lies in the low level of sense. Much of the literature of the day is trashy enough, and too much of that which finds its way into the hands of the young is not only negatively, but positively injurious; yet it can hardly be doubted that it is better that a young man or woman should be fond of reading the silliest and most sentimental of stories than unable to read at all with any sense of enjoyment. In the one case there is a comparatively innocent, though certainly poor source of occupation always available for idle hours, and the reader has some resource within himself; while in the other, voluntary or enforced idleness becomes the mother of temptation to low indulgence, if not to positive vice or crime.

It is from this point of view to be deplored that the average school has hitherto done so little to form and stimulate the taste for good literature, and that so many even bright pupils leave the schools and too often the colleges with a satisfactory, perhaps a high standing in classes, who yet know nothing of the pleasure of inwardly digesting a thoughtful book. There are, happily, signs of a general and salutary awakening in regard to the place of English literature in our schools and the proper methods of teaching and studying it. The boy or girl who has once tasted the delights of a good book, or of a little vigorous, independent thinking, can never fall quite so low as might have been otherwise possible.

Another incidental, but most prolific source of influence, either for good or for evil, in connection with our public school system, is that of the associations into which the children are of necessity brought. Whether the effect of this is on the whole salutary or otherwise must depend on the prevailing tone of the children themselves. This varies greatly in different localities. It is probable that, after all, the influence of schoolmates and of the general atmosphere of the school room and the play-ground has more to do with the molding of the child's character than the direct teachings of the class-room. It is unnecessary to add that the prevailing tone of the school in this particular is imparted at the homes of the children. As one mangy sheep infects a whole flock, so will often one unruly or vicious child contaminate a whole school and lower its general character.

It is doubtful if the prevailing customs and regulations in Ontario clothe the teacher with so much discretionary power as he should have in order to enable him to purge the school promptly of the incorrigible and depraved. Yet we have, I believe, much to be thankful for upon this score. In spite of many painful exceptions, it is doubtful if any country in the world is blessed with a larger proportion of virtuous and happy homes, and as the child almost invariably reflects the character of the parents and the home influences, so the moral tone of the children in our public schools is at least up to the average of that of any other land. Probably, owing to the greater homogeneity of our population, and, I might add, to the large sprinkling in it of those who still retain and transmit, in a happily modified form, the methods and traditions of Scottish and New England puritanism, it is probable that the average moral level of the public school children is somewhat higher than that in most parts of the United States.

The last of the indirect agencies in the moral training of the schools to which I shall refer, is that which is the outcome of the teacher's per-

sonal character, aside from any direct and conscious effort he may make in that direction. This is, beyond all question, a matter of the very first importance. No teacher is worthy the name or the profession who does not unconsciously make himself, to a greater or less degree, the pupil's model, his standard of right and wrong, his ideal man or woman. This fact devolves upon every teacher a new and solemn weight of responsibility; but it is an unavoidable result of the relations between him and his pupils. He is their authority on all doubtful and difficult matters. His decisions on all points, whether involving questions of fact and truth, or of right and wrong, are final.

Hence it is that public opinion sets up so high and rigid a standard of character, or at least of conduct, for the teacher. A thousand little peccadillos that would be readily tolerated in one of another profession, would be regarded as unpardonable in him. The lawyer, or doctor, or man of business, may take his glass even to occasional excess, and his associates will scarcely think the worse of him. But let the report be whispered abroad that the school-master has been seen coming out of a saloon, or has taken a drop too much at an evening party, and the whole community is shocked. The fate of such a man is sealed, and he might as well hand in his resignation at once. Nothing is more common than smoking on the public streets, but I may venture to say that there are few districts in Ontario in which it would be safe for a public school teacher to be seen on the street with a cigar in his mouth.

This exceptional severity in the standard of deportment set up and insisted on for teachers, however inconsistent or illogical in itself, serves to show how fully parents and guardians appreciate the peculiarly intimate relation between teacher and pupil. In this respect public opinion is undoubtedly wise and right. The eyes of the school children are ever upon their teacher, and the extent of his moral influence over them, his power of unconsciously molding their habits of thought and feeling, and even of speech, is measured by the judgments they pass upon his consistency. And the child's perception is very keen, and his conclusion very often near the mark. The man or the woman who can stand the scrutiny and sustain a lofty reputation for knowledge and truth and goodness amongst the school children, has acquired a power for good over them which, judiciously used, is almost unlimited.

I am happy to be able to assert, without fear of contradiction, that the character of the great majority of our provincial teachers stands high. There are amongst them, as before observed, many earnest Christian men and women, whose influence is a perpetual blessing. And there are in their ranks very few indeed whose reputations are not at least respectable. In fact it could scarcely be otherwise. The teacher is constantly under that jealous surveillance of parents to which I have just now referred. Not only so, but all the avenues to the profession are from the outset guarded so strictly that it would be very difficult for the positively unworthy to find entrance. The attendance at schools, the various certificates of character required, the non-professional and professional examinations, the attendance at normal schools, the vigilance of trustees—all together constitute such an ordeal as can rarely be passed by a really vicious or unworthy man.

Such, then, are some of the considerations which lead to the belief that the moral training imparted in the public schools of Ontario is, on the whole, good and wholesome. While there are undoubtedly many defects to be remedied, while there is much room for improvement in methods of teaching, and especially much need in many instances of

better scholarship and more maturity of character in teachers, yet the schools are, beyond all controversy, doing an excellent, a noble work for the country and for posterity. In seeking to establish this fact I have thought I could better accomplish the object of this paper than by attempting comparisons with other provinces or countries. Such comparisons are always more or less unreliable as well as invidious. Rather let us continue to work in generous rivalry, without halting in our progress to measure our success by artificial standards, or to seek credit for a degree of excellence which is still far in the future.



## REASONS WHY NATURAL HISTORY, INCLUDING BOTANY, SHOULD BE TAUGHT IN EVERY COMMON SCHOOL.

BY PROF. WILLIAM HUDSON,  
*Trinity University, Tehuacana, Texas.*

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1. The great majority of young people have great inquisitiveness, which prompts them to *see* things, especially the things which are rare and curious. Every intelligent observer knows that every object in God's great Book of Nature, from the simple *amœba radiosa*, the tailless batrachians, the protozoans around a leaf of duck-weed, the complicated digestive apparatus of the gnats or mosquitos (*culex pipiens*), the circulatory and respiratory apparatus of a crawfish, to the four compartments of the stomach of the artiodactyls which chew the cud, are so curious as to excite our wonder. Afterwards, when the youth's natural inquisitiveness becomes so highly excited that his mind is thoroughly inspired by the spirit of inquiry, and a holothurian, or sea-cucumber, is presented for his examination, his inquisitiveness becomes so intensely excited that it becomes expanded a hundred-fold, and his perception, reason, and judgment are drawn out in due proportion. From this point he begins to acquire knowledge by himself, and the material for instruction afforded him teaches him the way to scientific knowledge.

2. It is well known that a child begins very early to look at plants, as well as animals, in a promiscuous manner. He superficially notices their forms and colors, but does not know anything of their characteristic likenesses and distinguishing differences, because he has not been taught anything about their prominent forms and habits. The faculties of his mind being aroused to action and caused to expand by the close study of the common scholastic branches well taught in a free school, he is likely to experience a hungering and thirsting after general knowledge, especially after a knowledge of the objects around him which he sees in the gardens, fields, pastures, meadows, woods, ponds, streams, and, in some places, the sea-coast, which he sometimes visits. Now he needs the aid and encouragement of a kind and intelligent teacher who has wisely learned to govern himself.

3. As a very common illustration, suppose that this youth, twelve years of age, in one of his rambles with an associate, finds two plants so singular in their appearance as to attract his thoughtful attention, as well as that of his associate. One of the plants has a fleshy spike, around which the berries grow inclosed in a sheath, somewhat like a calla lily which he has in his garden; and the other is a plant of the mushroom family, which his companion informs him is, when properly cooked, "good to eat." Some varieties of mushrooms are esculent, but not this one. It has a beautiful crimson cap dotted with white, and is very poisonous, being the fly mushroom (*agaricus muscarius*). Also the

other plant which he has is poisonous. It is the Indian turnip, a plant of the *arum* family.

This boy and his associate, in returning homeward, meet two of the teachers of the free school which they attend, and they respectfully ask these teachers to acquaint them with the names and qualities of the two plants. One of these teachers informs the boys that "one of the plants is a kind of 'toad-stool,' and is poisonous."

If the common and superior sense of these teachers had induced them to become more creditably intelligent, they would have been enabled to inform the boys that the other plant was an Indian turnip, or dragon's root, whose botanic name is *arum triphyllum*, or *arisæma triphyllum*, and that it was sometimes used as a remedy by the medical faculty in flatulence, colic, and bronchitis, and locally in ringworm and sore mouth.

4. Many of the teachers of free schools, as well as a few teachers who are familiar with Latin and Greek, when they behold in Nature beautiful wild-flowers, shrubs, and plants, as well as insects and wild animals, are not able to distinguish one from the other by their correct names. They are so ignorant of the subject that they are unable to rightly inform the farmers' boys, whom they are paid to wisely instruct, what insects are injurious to vegetation and what ones are not. This is a lamentable lack of the right kind of scholarship, which would not occur if elementary zoology, entomology, or natural history and botany were correctly taught in the public schools.

5. There is great probability that the vast majority of children and young persons throughout the whole of the United States are apt to learn, and are strongly desirous to intelligently see and know; and if favored with the opportunity and instructed by a person generally intelligent, they will soon be in possession of a great acquisition of useful knowledge in natural science.

6. By rightly training children to make a just comparison of the prominent forms and habits of animals and plants, by which naturalists group them into classes, orders, families, species, etc., they will acquire habits of careful observation which will be of inestimable value to them when engaged in the active concerns of life. They will thereby acquire patient, thoughtful, careful, and precise habits. These valuable habits are certain to be the happy result of intelligently noticing the hundreds of interesting things presented to their observation, and they will be duly cautious against arriving at rash or hasty conclusions.

7. Such good habits will strongly incline many children so trained to self-acquisition in this kind of knowledge, and they will naturally beget an almost insatiable desire for higher knowledge, especially for a thorough knowledge of the Latin language, which may be declared to be the living language of naturalists and of all the truly scientific men of the world. They will be incited to study this language, because they frequently see the Latin names of the insects, animals, and plants in the books on botany and natural history which they study.

8. The study of natural history and botany in the common schools will have a tendency to prompt students in the higher schools to become more practically thorough in said branches of scholastic learning; will incite both classes of students to dislike petty vices of all kinds, their time being spent so well and continuously as to have neither time nor taste for any kind of petty, spiteful mischief or licentious indulgences.

9. The acquired habits of such well-trained children and young persons in intelligently observing Nature will give them such a self-acquisition in knowledge as will greatly aid their progress in other subjects and teach them the real value of time. Also, in the course of time, it

may entirely change the effects of the hereditary mental nature of some children, who are born into the world with a hatred to learning and natural science. Such are they who attend school or college for the sake of the name, and not for the benefits accruing therefrom. Likewise the habit of trying to read Nature aright, and going far and near to examine her wonderful works, will have the tendency to encourage the healthy exercise of a moderate degree of walking, and to convince many of the ridiculousness of excitedly walking and running a mile to catch an unwilling mule or horse for the sake of riding a quarter of a mile, as I have known many boys in Texas to do.

Finally, such good habits as these now discussed will have the invaluable tendency of inciting children and young persons to cultivate an humble and teachable disposition, knowing, as they certainly will know, that infinite wisdom is displayed in everything which is found in God's great Book of Nature, whether large or indescribably small.

To crown the whole of the preceding reasons, it must not be overlooked that he who has acquired correct habits of intelligent observation is better qualified to give correct, or more nearly exact, testimony on any subject which he has noticed, than he who has not acquired such valuable habits.

# UNIFORM PROMOTION EXAMINATIONS IN THE PUBLIC SCHOOLS OF ONTARIO.

BY DONALD J. MCKINNON,

*Public School Inspector, County of Peel, Ontario, Canada.*

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In writing this paper, it is my aim to set forth concisely, for the information of the Congress, the system of public-school promotion examinations which obtains in this Province, and to indicate some of the advantages derived therefrom. Where there are differences of opinion on matters of detail, I shall endeavor impartially to cite the arguments adduced on either side, rather than to give my individual views.

## 1. *How far are these examinations "uniform"?*

The "programme," or "course of study," issued under the authority of the Education Department, is the same for all the six thousand public schools of Ontario, and forms a common basis for promotion examinations; but the practical interpretation and working out of this course is left in the hands of the local authorities—the teacher, trustees, and inspector. Moreover, the local authorities possess, within certain well-defined and narrow limits, discretionary powers with respect to the text-books used in their schools; so that we have not in use throughout the Province an absolutely uniform series of text-books, that all but essential prerequisite to the holding of uniform examinations of any kind. Such being the case, it is only to be expected that the standard for promotion from one "class," or "grade," to another should somewhat vary with the varying circumstances of the several counties or inspectoral districts; and it has hence been found impracticable to secure uniformity of examinations for promotion over a larger area than is afforded by one, or at most two or three neighboring inspectorates.

## 2. *The authority under which they have been instituted.*

The laws of the Province require the teacher to classify his school in accordance with the programme, and to furnish the inspector with "any information which it may be in his power to give respecting the operations of his school, or in any wise affecting its interests or character." The inspector is required "to make examination and inquiry, in such manner as he shall think proper, into all matters affecting the condition and operations of the school;" and among other subjects of examination specifically enumerated in the regulations, are "organization and promotions." The institution and conduct of these examinations come, therefore, within the scope of the inspector's discretionary powers.

## 3. *When was the system inaugurated in the Province?*

Promotion examinations are the outgrowth of "competitive examinations," which were at one time somewhat popular in certain parts of the Province. The transition from the one to the other has been gradual, and in some districts, as I shall subsequently show, the competitive element has not yet been entirely eliminated; but uniform examinations,

for promotion purposes only, were instituted in some counties at least eight years ago, and the system now obtains in the majority of the rural inspectorates, as well as in all the cities and larger towns.

4. *How often are these examinations held, and what is the time occupied?*

They are held twice in the year, usually in the rural districts in March and October, and in the cities and towns in June and December. The time occupied is two days.

5. *Classes examined.*

The senior first class, the average age of pupils in which is about 8 years; the second class, average age,  $9\frac{1}{2}$  years; the third class,  $11\frac{1}{2}$  years; and the fourth class, 14 years. These figures apply to the rural districts; in the cities and towns, where the schools are graded and the attendance of pupils is more regular, the work of the first four classes is usually completed at the age of 13 years. The provincial examination for admission to the high schools is, in most counties, utilized as the examination for promotion from the fourth class to the fifth.

6. *Subjects of examination.*

Reading, writing, spelling, and arithmetic in all classes; geography and literature additional in the second class; and, in the third and fourth classes, the same, with grammar, composition, history, and drawing (maps and easy designs) still further additional.

7. *The preparation of the examination papers.*

This work is done in one of the following ways:

(a) By the inspector directly. This mode may be very satisfactory for a time, but few men can prepare papers on the same subjects year after year and avoid the error of monotonous self-repetition in ideas, if not in words.

(b) By three or four experienced teachers chosen by the inspector, each of whom prepares an independent series of papers from which the inspector compiles one eclectic series. The same teachers never prepare the papers for two successive examinations, so that freshness and variety are insured; while what may be termed the editorial work of the inspector is a guarantee against too sudden changes in the standard.

(c) By a committee of the county teachers' association, the work of selection and revision being generally performed by the inspector and the head master of the county model school. This method is much the same in its practical working as that last mentioned, but has the advantage of relieving the inspector of a large share of responsibility, which is transferred to the broader shoulders of the association. It is, perhaps, another recommendation of this plan that it best accords with the genius of our representative institutions.

8. *The presiding examiner.*

This is either the teacher of the school, a neighboring teacher with whom he voluntarily exchanges, or one appointed by the inspector or by the committee of the association.

9. *The proceedings at the examination.*

The presiding examiner, having received by mail a sealed package containing a question paper in each subject for each candidate, opens this package for the first time on the morning of the first day of the examination, in the presence of the candidates and of the trustees of

the school. The question papers are from time to time distributed in accordance with the time-table accompanying them, and every candidate is required to hand in his answer paper in each subject punctually at the expiration of the time allotted. The presiding examiner also awards marks for reading, and for the work done during the past three months in writing and drawing.

10. *Reading and valuation of the answer papers.*

When the teacher presides in his own school, he also generally reads the answer papers of his pupils, and, either independently or in consultation with one or more neighboring teachers, determines upon their fitness or unfitness for promotion. Where, however, teachers exchange schools, as noted in the preceding paragraph, the answer papers are generally sent to the inspector, by whom they are laid before a committee of the most experienced teachers, selected either by himself or by the county association. The advocates of the latter method urge that the younger teachers lack the experience and maturity of judgment requisite for the work; that a teacher may be tempted to undue leniency towards his pupils generally, or even to partiality and favoritism in particular cases; that even though he may discharge the duty with the utmost efficiency and fairness, imputations may be cast by interested parties upon the justice of his decisions; that perfect uniformity in classification throughout the county can be secured only through the agency of a general examining board; that the inspector can in this way more correctly inform himself as to the relative standing of the schools under his supervision; and that, if a tabulated statement of results be published, the work and worth of the diligent and skillful teacher will be shown forth, and indolence and incompetency will be exposed.

On the other side it is contended that the laws of the Province require the teacher to classify his own school, and that the functions of the inspector are merely supervisory; that the man who is qualified to teach is surely competent to examine; that when confidence is reposed in a teacher he awakens to a sense of his responsibility, and takes pride in the faithful discharge of duty; that the dignity of the profession is thus enhanced; that perfect uniformity in classification is unattainable and unessential; that the main object of these examinations should be to test the pupils, not their teachers; that the best informed and most thoughtful pupil is not always endowed with the pen of the ready writer, and may therefore at a written examination fall far behind his quicker, though perhaps more superficial, school-mate; that the previous term's record, the age, physical strength, talents, and temperament of the individual pupil should all be considered in determining upon the expediency of his promotion, and that the teacher alone can fairly estimate the value of these factors in each particular case; that much of the best teacher's best work fails to show itself in "percentages"; that the introduction of the competitive element into these examinations tends to stimulate "cram," to dwarf true education, and to implant and cultivate in the minds of those who should be as brethren an unhealthy spirit of rivalry and jealousy; and, finally, that the whole system of examination by a central board is unnecessarily complicated, cumbrous, and costly.

11. *The advantages of these examinations.*

(a) *To the pupil.*—His knowledge that he must not only go over the ground prescribed in the programme, but understand every lesson—master it so that he may, weeks afterward, pass an examination upon

it—is an incentive to thoroughness, self-reliance, and regular attendance. His knowledge that other pupils of the same grade throughout the county are to write upon the same papers at the same time, stimulates his ambition to prove that what others can do he can do also. If a change of teacher occurs, he has no fear of a general upheaval and re-arrangement in which he may lose his standing. If he moves to another school section, he finds himself in the same class and studying from the same text-books as before.

(b) *To the teacher.*—If inexperienced, he is usually afflicted with a superabundance of either diffidence or self confidence; in the one case the assistance afforded by these examinations is welcome; in the other, it is necessary. If he is beset by unreasonable parents clamoring for the advancement of their children, irrespective of fitness, he can often point to the results of these examinations as conclusive. If his teaching has become one-sided, if he has fallen from his former vigor, if his teaching has lost its freshness and originality and has begun to run in mechanical grooves, nothing is better fitted to aid him in discovering his own weaknesses and backslidings than such a periodical opportunity of measuring his corn in another's bushel as these half-yearly examinations afford.

(c) *To the inspector.*—The organization of the schools under his charge is much more uniform, and he can therefore more readily form his judgment as to their relative standing and progress. He has less frequent occasion to interfere with the teacher's classification—always an unpleasant duty. His time being less taken up with matters of organization, he is left more free to inquire into the teacher's methods, and to advise with him on other matters affecting the interests of his school. By a judicious supervision of the preparation of question papers he can, to a considerable extent, give direction to the teaching in his county or inspectorate.

## 12. *Public appreciation of these examinations.*

I cannot speak definitely with respect to other counties than my own, but I believe that the system, wherever introduced, has given very general if not universal satisfaction. In the county of Peel we have held sixteen half-yearly examinations, conducted on the more simple of the two plans outlined (in 10) above—that of endeavoring to assist the teacher in his work of classification, instead of attempting to relieve him of it; and I am safe in saying that not one of my 74 school boards, not one of my 96 teachers, would for a moment think of returning to the old, irregular, go-as-you-please system.

## THE INFLUENCE AND THE EFFECTS OF A SYSTEM OF UNIFORM AND SIMULTANEOUS EXAMINATIONS ON SCHOOLS AND TEACHERS.

BY WILLIAM CARLYLE,

*Inspector of Public Schools in the County of Oxford, Ontario, Canada.*

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A reference to the condition of education in Ontario previous to the introduction of these examinations is necessary in order to indicate their influence upon the schools.

Previous to 1871 teachers' certificates were obtained from two sources, the provincial normal school and the local county boards. Only those issued by the normal school were provincial and valid during life. Certificates from the local boards were limited for use to the county in which they were issued, to one township, or even to one school section, and were renewable annually or oftener on re-examination. The provincial certificates were few in number, but the influence exerted by the normal school through means of its graduates was great, the trained teachers being "the salt of the earth," educationally speaking. The public schools were, as a rule, taught by teachers holding county board certificates. The county boards were constituted of the township superintendents, who were appointed as superintendents by the township councils from motives that prevailed with these councils; being a minister of any recognized religious persuasion, a lawyer, or a doctor, was unquestionable evidence of the fitness of any gentleman for the position of local school superintendent; municipalities influenced by the presence of electors possessing culture and appreciation of the intellectual needs of the people, favored and secured the appointment of gentlemen worthy of the position. To the local boards of examiners selected on the haphazard principle was intrusted the licensing of teachers. The superintendents, according to their intelligence and the demands of their districts, adopted standards of qualifications, prepared questions, and valued answers. Unqualified examiners applied defective and injudicious tests. The standards adopted for certificates varied in every county. The boards were uniform in one feature—candidates were sent out to teach with the injunction to return soon for re-examination, lest while teaching others they should lose the literary attainments they themselves had acquired. At rare intervals a school reached such a state of efficiency as to be able to prepare pupils to meet the requirements of the local board for certificates. But the profession was not recruited from the schools; it was filled with refugees from all trades and professions. Broken-down tradesmen, unsuccessful professional men, every-wise unsuccessful college graduates, old soldiers, and cranks received teachers' certificates, and ministered to the moral and the intellectual wants of the youth of the country.

In 1871 a new order of things was introduced. County and city inspectors were appointed to take the place of the local school superin-



tendents. The qualifications of these new officers were prescribed by Act of Parliament. They were required to hold provincial certificates of the highest grade, and to be experienced teachers. New county boards of examiners, with the inspectors as *ex-officio* chairmen, were constituted. The members of these boards also were required to possess qualifications that would insure efficient service on their part; but not even to these boards thus constituted was intrusted the determining for their respective municipalities the standard for teachers' certificates. The Education Department assumed charge of this important branch of educational work by instituting the uniform examinations as outlined in the former part of this paper.

1. As an immediate effect, the status of teachers throughout the Province was uniformly raised. All candidates for teachers' certificates were subjected to a uniform provincial test. The new standard was high, but not higher than the interests of the country demanded. It was also both respectable and authoritative. It proceeded from the Department, sustained by the authority of the Government, instead of from a local board of examiners of unknown qualifications.

As might have been anticipated, few localities, if any, were prepared for the change. Possessors of old county board certificates of the highest grade, who had the temerity or were under the necessity of appearing before the new boards, failed to take the lowest grade of new certificates. The slaughter was immense. The country was suddenly awakened to a due sense of the character of its teachers as a class of public servants. The profession was sifted. The incapable were shelved, or sent to their studies and kept at them until they could pass the new ordeal. This decimated the ranks of the profession, but created a demand for the services of the successful minority. Salaries went up, and multitudes entered school to prepare for teaching.

2. The status of the school was elevated. The public schools soon responded to the influence of an improved class of teachers. The more efficient began to prepare students for the new examination, and succeeded. This feature of school work attached importance to the schools and their masters. Rate payers realized that good schools were a necessity, if for no other purpose than to supply qualified teachers.

High schools organized for the purpose of furnishing facilities for the study of the ancient classics, higher mathematics, and higher English, had failed in the fulfillment of their mission more signally than public schools had in theirs. Those in successful operation had met the demand that rested upon them to prepare young men for college and for entering the learned professions. But such students were not numerous, and the schools worthy of their patronage were also few.

Of many of them it could be said that they accomplished only public school work, and that less efficiently than the public schools did. They were more generously aided with public funds than public schools, and were the resort only of children of the "respectable" class of families in their immediate neighborhood, who sought nothing and received nothing further from them than a smattering of English.

In 1873 the "entrance examination" was introduced to effect one purpose. It effected two. It was designed to prevent pupils gaining admission to the high schools before they had acquired a specific knowledge of English. This it accomplished for all high schools in the Province, at one stroke, and placed them in a position to devote their energies to the work they were originally designed to do. But this examination served another important purpose. The entrance examination to the high school became an objective point for public schools to aim

at. The course of study prescribed for public schools extends much further than preparation for the high school; but no clearly defined test had ever been applied to ascertain whether they had fulfilled the measure of their expected usefulness. The standard for entrance would be a limit to reach every half year; and if not the highest limit they could attain to, it would be a regular, a constant, and a practical limit, and a convenient point in a pupil's career at which, if desirable, to leave the public for the high school.

The entrance examination brought high and public schools situated in the same locality face to face on the question of the attitude they should maintain to one another. It taught high schools their complete dependence on the public schools for pupils, and hence for their existence. It taught public schools that they could be of valuable service in doing thoroughly their prescribed work up to the limit of entrance, and then leaving their pupils to the tuition of the high schools. Both classes of schools saw the unreasonableness of rivalry and antagonism, and each settled down to its own special work.

The influence of the entrance examination on public schools is not limited, however, to those situated in the same locality with high schools. The best village and rural schools become ambitious to try the examination with the town and city schools, upon which the responsibility of supplying pupils for high schools more immediately devolved. They not only succeeded in the competition, but frequently outstripped their urban rivals. The reputation of passing entrance pupils has become an enviable one. It now reaches and animates the remotest and the weakest rural schools. The county high schools draw pupils alike from city, town, village, and rural schools. Any rate payer, irrespective of the locality of his residence, feels justified in expecting his public school to prepare his boys and girls for the high school, whether they are designed to enter it or not.

The non-professional examination has influenced high schools in a far greater measure than the entrance has the public schools. It has also had its effect on the public schools. Vigorous rural schools, remote from high schools, are not content with passing their pupils merely at the entrance examination; they aim still higher. The intermediate III class, and even grade A of II class, are successfully reached by farmers' sons and daughters, without having to leave home and attend some other institution than their own public school.

The high schools prepare students for all classes, from the intermediate and III class to grade A of I class. As an illustration of the increased efficiency of these schools, the normal schools give instruction now only in the subjects embraced in the course for professional training. For a long period after its establishment the Toronto Normal School was compelled to undertake both the literary course and the training of students, a necessity laid upon it through the inefficiency of public and high schools.

The departmental examination papers have become "a cloud by day and a pillar of fire by night" to high school masters. The subjects these papers cover became the subjects of special attention in the schools. The papers are studied as to matter and style, that a course of instruction and a style of teaching may be pursued that will the more directly prepare for examination. As detailed reports of the examinations from the different high schools are laid before the Department, and as the answer papers are forwarded there for valuation, or at least revision, revealing the master's scholarship through the work of his students, and also his style of teaching, every master feels the

Eye of the Department is upon him; and the authors of the examination papers being his inspectors, or gentlemen whose papers are approved by his inspectors, as well as the valuers of the answers, the success or failure of his students is an expression of approval or disapproval of his work more potential for or against his interests than all other influences combined.

3. By means of these examinations the Education Department has acquired complete supremacy in the control and direction of the schools. It assumes all the responsibility for the selecting of mental diet to be placed before the youth of the Province. Whatever subject it examines the pupils in, that subject will be taught by the masters and studied by the pupils. It makes itself responsible to a great extent for the style of teaching that prevails in the schools, its preference in this respect being indicated by the style of the questions it issues and the valuation placed upon the work of the students. It enters every school with the master, assigning *for* him work to the pupils, and testing *with* him or *in spite of* him their preparation of it. It establishes a relationship between itself and every public and high school pupil, which, if wisely exercised, may animate him to effort and lift him to greatness.

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SHORT ACCOUNT OF THE SYSTEM OF EXPERIMENTAL  
SCIENCE INSTRUCTION INTRODUCED BY THE LIVER-  
POOL SCHOOL BOARD IN CONNECTION WITH ITS PUBLIC  
ELEMENTARY SCHOOLS.

BY EDWARD M. HANCE, LL. B., L. C. P.,  
*Clerk to the School Board for Liverpool, England.*

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Very early in its history the Liverpool School Board was greatly impressed with the importance of introducing into the curriculum of its schools some subject, the treatment of which should be specially calculated to promote the training and development of the observing and reasoning faculties of the children.

In theory a school board is, to a great extent, independent in the choice of the subjects to be taught in its schools; but in practice the question of *£. s. d.* has a very material influence in limiting its selection to the subjects in respect of which the Education Department is prepared to make a grant, and which are enumerated in that Department's annual code.

Of the subjects so enumerated the Board, after consultation with some of the leading men of science in the kingdom, came to the conclusion that those which presented the most favorable opportunities for treatment in the desired manner were elementary natural philosophy (under the name of mechanics) for boys, and domestic economy for girls.

Each of these subjects, as defined in the Education Department's code, is divided into three stages, to be taken by the children in three successive years.

That of *Mechanics* embraces the following matters :

*First stage*—Characteristic properties of solids, liquids, and gases; effects of heat on bodies; construction and use of such simple instruments as the thermometer and barometer, pumps (including the air pump), the spirit level, etc.; measurement of space, time, and velocity.

*Second stage*—Force and energy; the laws of motion; gravitation; the transformation and conservation of energy.

*Third stage*—Parallelogram of forces; the mechanical powers: lever, wheel and axle, pulley, inclined plane, wedge, and screw; the hydraulic press.

That of *Domestic Economy* includes simple lessons on the source, nature, and use of the principal materials of food and clothing; the cooking of food; washing; the dwelling (cleaning, warming, ventilation, water supply, etc.); and general laws of health.

In connection with these subjects, the one point upon which the Board's advisers laid the greatest stress was, that the method of instruction should be by *actual demonstration*, and not merely by the use of text-books.

With this view the Board, early in 1877, engaged the services of a gentleman of considerable scientific attainment, Mr. William Hewitt,

B. Sc. (London), to organize and introduce the system of instruction, the commencement of which was made shortly afterwards.

In 1879, when the work had been in operation for a little over two years, I had the honor of reading a paper on the subject at the annual meeting of the Conference of School Board Clerks, held that year at Birmingham. This paper (which is published in the *School Board Chronicle* of Nov. 1, 1879) attracted considerable attention at the time, and had the direct result that the important School Board of Birmingham shortly afterward decided to introduce a similar system of science instruction in connection with their own schools—an example which I have reason to believe will, after an interval of five or six years, be followed by several other of the more important school boards of the kingdom. The system in Birmingham—which, though in its main principles identical with, differs in some of its minor but still important details from that in Liverpool—has been very fully described in a paper read by Dr. Crosskey, F. G. S., a member of that Board, before the Social Science Congress, 1884, and published in *Nature*, Oct. 23, 1884, and also in a paper by Mr. W. J. Harrison, F. G. S., the science demonstrator under that Board, read before the educational conference held at the London Health Exhibition, 1884, and published in *Nature*, Dec. 25, 1884.

In Liverpool during the last six years the work has been very largely developed, and has been extended in several new directions; so that the description of it contained in my previous paper is now very far from complete, and I have therefore thought that it may be of interest if I give a short description of the system as it now stands. This I propose to do under two main headings—first, as it affects the scholars, and secondly, as it is applied to assistant and pupil teachers.

#### I. THE SYSTEM AS APPLIED TO SCHOLARS.

In the public elementary schools of England the instruction in the three elementary subjects, reading, writing, and arithmetic, is, after the stage of infancy, divided into seven stages or standards. These are considered by the Education Department to correspond respectively with the ages seven, eight, nine, ten, eleven, twelve, and thirteen; but, as a matter of fact, it is found that the average age at which they are respectively reached by the scholars is, as nearly as possible in the case of each standard, a year later. This division of the elementary subjects, as a rule, governs the classification of the scholars for all purposes.

Under provisions recently introduced into the Education Department's code, it is not until a child has entered upon the work of Standard V that he or she is permitted to take up *for examination* the study of such subjects as mechanics or domestic economy. But the Board, continuing the arrangement which was in force before the recent alterations in the code, commences the instruction with Standard IV. By this means a series of lessons extending over two years, and corresponding with Standards IV and V, is devoted to the first stage of each subject. The second stage is taken by the children in Standard VI, and the third by those in Standard VII. Each child, therefore, who completes the curriculum in the elementary subjects passes through a progressive four years' course of instruction in elementary science.

The method of instruction is, as far as possible, carried out upon the lines on which so much stress was laid by the Board's advisers—that is to say, by oral lessons fully illustrated by experiments. Mr. Hewitt, or one of his specially appointed assistants, gives the experimental demon-

strations to the children at the school, in the presence, in each case, of the teacher of the class. The latter, in the interval preceding the next demonstration, recapitulates and explains the lesson, illustrating it also in some cases with experiments, for which purpose each school is supplied with a small stock of simple apparatus. A text-book, specially written to accompany the demonstrations, is used by the teacher as an assistance in revising the lessons and in obtaining greater accuracy and precision of language in the statement of the subject, but it is altogether subordinate to the experimental demonstrations. These are given fortnightly in all but the third stage, in which latter a somewhat greater interval elapses between the successive visits of the demonstrators. The schools are so grouped that the same lesson can be given in several of them on the same day—thus reducing to a minimum the time and labor required in preparing the apparatus for the demonstrations.

A central laboratory has been formed, in which a valuable stock of apparatus has been collected, and where that needed for the illustration of each lesson is prepared. This is then transported to the various schools on a hand-cart by a youth employed for the purpose. By this system each school secures, not only the services of specially qualified teachers, but also the use, at the minimum cost and trouble, of a larger and much more expensive stock of apparatus than could possibly be provided in connection with any single school.

The benefits of this system are not strictly confined to the Board's own schools, but are placed on advantageous terms at the disposal of the managers of voluntary schools; though, I regret to say, not more than five or six schools have availed themselves of the opportunity. Including the children from these schools, the approximate number under instruction last year was—boys, 3,400; girls, 2,200; or a total of 5,600. Of these more than one-half were children in Standard IV, and therefore not eligible for examination by Her Majesty's inspector, and of the remainder a considerable number were ineligible for other reasons; so that the total number actually examined from the Board's own schools last year was 1,727, viz: 663 boys and 542 girls in Standard V, and 325 boys and 197 girls in Standard IV. Of the former, 78.3 per cent. of the boys and 68.4 per cent. of the girls, and of the latter, 88.9 per cent. of the boys and 89.3 per cent. of the girls, satisfactorily passed the examination—making a total of 78.4 per cent. of the entire number presented. Of these the children in Standard V were examined in the first, and those in Standard VI in the third stage of their respective subjects—the latter having, before the recent change in the Department's regulations, taken the first stage when in Standard IV.

In estimating the value of these results, it must be borne in mind that the examination by Her Majesty's inspector is made entirely by means of questions to be answered in writing—a method which, in connection with subjects of this nature, presents exceptional difficulty to the children, especially to those in the earlier stages.

On this point Her Majesty's inspector for this district, in his last Triennial Report, made in the year 1882, at a time when Standard IV was still included in the examination, makes the following remarks, which, though having special reference to the children in that standard, are still more or less applicable to the younger children in the next, viz:

A great impulse has been given to scientific teaching by the School Board for Liverpool, who have engaged the services of a science demonstrator and two assistants. Every boys' school under the Board offers mechanics for examination, and every girls' school domestic economy. The classes to be examined in these subjects regu-

larly receive lessons from the science demonstrators, who have the command of a large traveling apparatus to enable them to illustrate their lessons. This plan has made the instruction really valuable, and the Board have done wisely in recognizing the fact that young students learn more readily by the eye than by the ear. It is the duty of the teachers of the different schools to recapitulate and enforce the lessons their classes have received. Last year my colleague and I examined 1,590 boys in mechanics, and of these about sixty per centum passed. This does not appear at first sight a very magnificent result, but an individual examination in this subject presents considerable difficulties to the young boys in Standard IV. The boys in this standard can fairly grasp the necessary principles when lucidly explained to them, but they are not generally capable of arranging the ideas they have gained, and of applying them in a written examination. The instruction they receive does them good, and on passing to the higher standards they fully experience the benefit of it; but to make them submit to an individual examination is to expect too much, and the almost certain failure of a large proportion is discouraging to them and to their teachers.

In this opinion as to the value of the instruction, even when its results could not adequately be decided by the written examination, the Board so strongly concurred, that when Standard IV was excluded from examination they decided to continue the instruction of that standard, notwithstanding the withdrawal of the grant and the consequent increase of expenditure.

That the instruction in the elementary subjects of reading, writing, and arithmetic is not detrimentally affected by the attention devoted to elementary science and other subjects not strictly elementary, but, on the other hand, is, as might have fairly been expected, considerably benefited thereby, is I think conclusively shown by the following statistics, which give the percentage of passes in the three elementary subjects obtained by the children in this Board's schools before and after the introduction of the higher subjects of instruction, viz :

	Per cent.		Per cent.
1873-'74 .....	74.4	1879-'80 .....	88.4
1874-'75 .....	74.5	1880-'81 .....	89.7
1875-'76 .....	74.4	1881-'82 .....	88.5
1876-'77 <sup>1</sup> .....	79.1	1882-'83 .....	89.1
1877-'78 <sup>2</sup> .....	85.6	1883-'84 .....	92.0
1878-'79 .....	87.1		

On the bearing of the science subjects upon the ordinary instruction of the school, the Board made the following remarks in their last Triennial Report, viz :

The Board believe that much of the success of their schools in respect of the elementary subjects is due to the increasing intelligence arising from the systematic instruction of the elder scholars in specific subjects [i. e., mechanics and domestic economy]. This is shown, not only by the steady advance which, since the introduction of that instruction, has year by year been made in the proportion of children passing in the elementary subjects, but also by the fact that, while in reading the proportion of passes in the Board schools is only about 1 per cent. above the average of the country, in arithmetic—the subject which makes the greatest demands upon the intelligence of the scholars—it is nearly 12 per cent. higher. To this superiority in arithmetic is, probably, mainly due the fact that in the Board schools the proportion of children who pass in all three of the elementary subjects is more than 11 per cent. higher than the average of the country.

The effect of the science instruction, elementary though it is, upon the general intelligence of the scholars, can scarcely be better illustrated than by the complaints which, soon after its introduction, were made by several mothers, that the instruction "made their girls too curious"; while the popularity of the lessons among the boys is strongly shown by the fact that, in many instances, boys who were prevented

<sup>1</sup> The year in which class subjects (history, geography, etc.) were introduced.

<sup>2</sup> The year in which science instruction was introduced.

from attending school for the whole of the session during which one of these lessons was to take place, have asked for special permission to attend that lesson. At the close of each demonstration the children crowd round the table, eagerly desiring permission to examine the apparatus, and evince, by their questions, the lively interest they feel in the subject. Sir John Lubbock, who was present at one of these demonstrations (given, by the way, to children in the fourth standard), made the following remarks on the subject in a speech in the House of Commons, April 3, 1882:

I shall never forget the lesson I heard in one of the Liverpool schools. I wished my right honorable friend could have heard that lesson, and seen the eager attention of the children, their vivid interest, and bright faces. It would have pleaded for his amendment with irresistible eloquence.

The theoretical instruction of the girls in the subject of domestic economy has for the last few years been supplemented by a systematic course of training in practical cookery. In seven or eight of the schools, so situated as to render the accommodation available, not only for their own scholars, but also for those of the remaining Board schools, rooms have been specially fitted up for the work, and two teachers have been appointed to give instruction in this subject. The method of instruction adopted is for the teacher at one lesson to explain, and demonstrate by actual practice, the cooking of some special article of food, and for the children, from the notes which they have taken of this lesson, to themselves perform the operation on the next occasion. The materials are purchased by the instructors, and after having been cooked are disposed of at cost price to the scholars or teachers of the school; and the fact that this process, for the whole of the schools under the Board, entailed a loss of less than £3 for the past twelve months, affords a strong proof that the instruction given is not merely very popular with the girls, but is also fairly successful.

No direct scientific instruction is given to children below the fourth standard, but a scheme of object lessons on common things and natural phenomena has been prepared for children in the infant schools, and in new reading books on the subject of geography, which have been prepared specially for the use of this Board, care has been taken to gradually familiarize the children in the earlier standards with the great truths of physical geography, to illustrate which the teachers have been provided wherever possible with some simple apparatus.

It may be observed that in the figures quoted above as illustrating the results of the work, no mention is made of Standard VII. The reason of this is that in the year to which the figures relate the children in that standard had already completed the full course in mechanics prescribed in the Education Department's code, and could not therefore be again examined. In those cases where the number of such children in a school was sufficiently large to justify that course being adopted, classes were formed for that year in the subjects of heat (for boys) and animal physiology (for girls).

A further experiment has recently been commenced, and appears likely to be attended with very favorable results. A special evening class has been formed of boys gathered from various Board schools who, in the course of the ordinary demonstrations at their schools, have shown a special aptitude for the study of science. These are being taken through a course of experimental lessons on magnetism and electricity, and their regularity of attendance and the interest they display in the subject appear to indicate that, if the boys can be enrolled in such evening classes before leaving the day schools to go to work, much may



be done to induce them to carry on the study of such subjects without the interruption which now ordinarily takes place between the time at which a boy leaves school and that at which, if at all, he joins an evening science class.

This portion of the paper should not be closed without reference to the important efforts which the Library and Museum, and Arts Committees of the City Council are making to encourage systematic instruction in science, not only in the Board schools, but in the public elementary schools generally throughout the city. The Rev. H. H. Higgins (chairman of Museum Sub-Committee) and the curator of the museum have selected special sets of beautiful and striking specimens of natural objects, including shells, fossils, sponges, birds, insects, etc.; these are arranged in drawers fitting into neat and specially constructed packing-boxes, numbering altogether say twenty; one of these is sent to each of the associated schools, and is allowed to remain there a month, in order that the teachers may have ample opportunities for giving special instructions thereon to their scholars; it is then sent on to another of the associated schools for a similar period, and so on in succession throughout all the schools. Additional boxes are from time to time added, and the objects in the several boxes also are in some instances changed. The head teachers have been accorded the privilege of obtaining on application from the museum specimens to assist them in giving any special instruction in subjects not covered by the circulating specimens. Arrangements have also been made by which opportunities are afforded to teachers of taking a class of their scholars to the museum for the special study of any particular series of objects. This scheme has now been in operation for nearly twelve months, and so far has been highly appreciated both by teachers and scholars.

## II. THE SYSTEM AS APPLIED TO ASSISTANT AND PUPIL TEACHERS.

As has no doubt been gathered from the foregoing particulars, the principal difficulty in introducing the *experimental* teaching of science in elementary schools arose from the fact that so few ordinary teachers were qualified to take part in it. To overcome this difficulty the Board, at the same time that they introduced the science subjects into the curriculum of their schools, took steps to form their pupil teachers into classes for similar but more advanced instruction. At first this instruction was, in the case of female pupil teachers, confined to the last two out of the four years of their apprenticeship. But as candidates for such appointments have been more and more largely drawn from the scholars who have received the benefit of the Board's science instruction, it has been found possible to commence the classes at an increasingly early period of apprenticeship. Within the past few months the last step in this direction has been taken by the introduction of the subject into the classes in which candidates for pupil teachership receive for a year or two special preparation for their future career. In the case of the male pupil teachers, the science instruction was given more generally from the commencement, and it also has been completed in the same way as that for the female teachers.

But the Board's efforts in this direction have not been limited solely to the scholars and the pupil teachers; they have also been extended to those teachers who, after completing their apprenticeship, have, without going to a training college, been engaged as assistant teachers in the Board schools. Classes have been formed for preparing these teachers by a three years' course for the Education Department's exam-

ination for teaching certificates; and natural science forms an important branch of the instruction given in these classes. Thus there is now a continuous and progressive course of definite experimental scientific instruction in connection with the schools of this Board, which commences with the scholar in the fourth standard, is continued throughout his subsequent school career, is carried forward through his preparation for apprenticeship and through his four years' term as a pupil teacher, and is supplemented by a three years' course of instruction for the certificate examination. The instruction for both male and female teachers includes a preliminary course in elementary chemistry, which is followed, in the case of the females, by successive courses in elementary and advanced physiography, and elementary and advanced animal physiology, and, in the case of the males, in sound, light and heat, magnetism and electricity, and physiography. This curriculum is in both cases supplemented throughout its whole course with instruction in drawing and, in the case of male teachers, in mathematics.

The value of the special training, including that in elementary science, which the pupil teachers under this Board receive, is clearly shown by the following particulars as to the position which they have taken during the past few years in the Queen's scholarship examination. This, which is an examination open to all pupil teachers in England and Wales on the completion of their apprenticeship, is annually attended by about 1,300 males and 2,000 females.

The percentage of those candidates who have been placed in the first class, and the corresponding results attained by those sent in by the Liverpool Board schools, are shown by the following table, viz:

Year.	Males.		Females.	
	England and Wales.	Liverpool Board.	England and Wales.	Liverpool Board.
1882.....	25. 7	58. 8	29. 5	61. 9
1883.....	24. 9	75. 0	30. 0	54. 8
1884.....	25. 7	33. 8	27. 6	60. 0

The classes for assistant teachers have not yet been sufficiently long in operation for any similar test of their effect to be yet available, but there can be little doubt that they will be attended with equally favorable results. In the case of pupil teachers, as in that of scholars, the benefits of the course of instruction established are not exclusively confined to the Board schools, but, so far as the available accommodations will permit, are placed at the disposal of the voluntary schools of the city. And so far as male pupil teachers are concerned, this privilege is very largely taken advantage of.

The effect upon the education of the scholars of the attention which has been paid to the training of the teachers has already been considerable, and is increasing every year. But the beneficial effects of the system are not confined to these results, or even to this one city. Not only are the teachers generally able in their recapitulatory lessons to supplement more efficiently, and to enforce more effectively, the teaching of the science demonstrators than was formerly the case, but from their ranks have been selected, on several occasions, the assistant demonstrators rendered necessary, either by changes in the staff or by an increased area of operations—and some of these have already been promoted to the charge of independent scientific work in other towns.

While the Board felt, at the commencement of the work, that the only method of satisfactorily introducing experimental science instruction into their schools was the employment of a distinct staff of specially qualified instructors, they also believed that more good would be effected if the work could be done in each school by a properly qualified member of the staff. They have always, therefore, looked forward to the time when the ordinary teachers of the schools should be able, under the general direction of the science demonstrator, to undertake and carry on this teaching themselves.

Towards the realization of this hope an important step has recently been taken by the selection, in the case of four or five schools, of assistant teachers who have received their training under the Board, and who are considered by the science instructor to be fully qualified for the purpose, to give the demonstrations in their respective schools under his general superintendence, in consideration of which additional work an appropriate increase has been made in their emoluments. Arrangements are likewise being made, not only to supply these assistant teachers with the necessary apparatus, but for them to attend a course of practical lessons in the construction of simple apparatus. This course is also thrown open to any assistant teachers from the Board schools who may desire to qualify themselves for similar employment and increased remuneration.

The system of experimental science instruction described in this paper has found a very warm and energetic supporter in Mr. William Lant Carpenter, who not only ventilated the question at the meeting of the British Association at Southport in 1883, but has since then read papers on the subject before other important scientific bodies, and has delivered, in several of the large towns of England and Scotland, lectures advocating the system.

If this method of teaching, therefore, should ultimately be adopted by any considerable number of the school boards of the kingdom, it will to a very large extent be due to the untiring exertions of this consistent defender of scientific instruction.

## STUDY OF MUSIC IN NEW HAVEN.

BY B. JEPSON,

*Teacher of Music in the Public Schools of New Haven.*

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I entered the employment of the New Haven Board of Education January 5, 1865, and have consequently finished the twentieth year of service as vocal instructor in the New Haven public schools. If my experience may prove valuable to others, I shall only be too glad to give a brief outline at this time.

In my young manhood I became thoroughly imbued with the idea that childhood was the time and the public schools the place in which to commence a musical education. I also felt that the "poll parrot" practice of rote singing, which then prevailed throughout the length and breadth of the land, should be made to give way to something better, and that much of the time spent in singing "Yankee Doodle" and "Billy Boy" might better be utilized in elementary drill. I believed also that the study of music could be so arranged and adapted to school work, as to place it on a par with other branches in reference to manner of recitations, marking, discipline, credits, etc. Some years elapsed before I was in a position to put my theories into practice. In the meantime I had elaborated a system of elementary instruction covering the six or eight years of school life, the same consisting of a multitude of easy steps, suitable for every grade from the primary to the high school. This system of instruction has been continuously and almost daily revised and improved during twenty years of actual experience in the school room.

At the beginning of our work we attempted what always has proven and always will prove a failure, viz., *to build from the top down*. In other words it was thought that the study of the science of music was only suitable for the pupils of the high school and the advanced scholars of the grammar grades. Year by year I asked that the work might be extended into lower and still lower grades; but it was only when we reached the *bed rock* of elementary work (viz., grade one) that we began to realize that in music, as in all other studies, the foundation for successful building should be laid at the bottom.

You will gather from my preliminary remarks that I have little to present in favor of music as a "recreation." My mission (if I have any) is, and has been, to teach to public school children the elementary science of music. With those whose only idea of music is, that it may be used to spice the general order of exercises, or to entertain visitors on reception days, I have no argument at this time. If I have achieved a degree of success as a public school music teacher, it has been in the line of regular, systematic, unremitting, elementary drill. I would not discard song singing altogether, but I do urge and insist that in every grade, even the very lowest, at least fifteen minutes per day shall be

spent in some form of elementary drill, which shall be to every child an actual beginning in his musical education.

But, says one, can the very little children be interested from day to day with simple elementary exercises?

It has been my experience that children become interested in anything which they can be made to understand. I do not recollect the school or the visit where there has ever been a lack of genuine enthusiasm, to say nothing of ordinary interest.

The scheme of study which I desire shall take the place of anything new which I might possibly write in reference to methods, is the result of a life-long experience in the elementary department of vocal music, and is the one now in successful operation in the New Haven schools. The underlying principle is the one known as the "movable *do*" theory. So far as I know, the public school teachers of America are practically unanimous in the opinion that the opposite theory of "anchoring" the tonic syllable must be abandoned.

The plan of instruction which divides the responsibility with the regular teacher, and thus secures her interest and co-operation, is presumably the best. By this plan the pupils are naturally brought into sympathy with the work, and yield more readily to discipline than they would to special rules enforced by special teachers. From the beginning of my work until now, the regular teachers have always been required to be present at the recitations in music, and are expected to note carefully the new points; also, to give to the class the necessary drill of fifteen or twenty minutes each day until the next visit of the vocal instructor. In the case of an inexperienced teacher, or of one without musical ability, an exchange of recitations is arranged with some other teacher.

In all grades above the first the children are supplied with music readers; nevertheless, frequent and almost daily opportunities are given in every grade for *sight singing* from the blackboard. My own experience justifies the remark that, all in all, nothing in charts or books can furnish the inspiration for effective work which blackboard practice gives to both teacher and pupil.

By way of examination, a yearly test exercise is placed on the blackboard of each room by the vocal instructor. Being a relative test, the exercise is the same in all rooms of the same grade. Each individual scholar is also given an opportunity to sing at sight a single-part exercise, or otherwise to take part in a duet, trio, or quartet. Last year the number of "star singers" (as they are denominated) reached about 4,500. This year they will probably reach a total of 5,000, being about one-half of the total number in attendance.

A point of great interest to all communities where music has not yet been introduced as a regular branch of study, or where doubts exist as to its practicability, is the fact that in twenty successive annual examinations it has been found that the number of children who are commonly reputed to have "no ear for music" is less than four per cent. of the whole. Of those who are thus classed as "monotones," large numbers become sufficiently familiar with the theory of music to enable them to accompany their classes on the piano and organ.

In connection with the instruction in notation, much attention is given to the manner of breathing, whether in songs, solfeggios, or devotional music. The *quality of tone* is cultivated by the use of various vocalizing syllables and vowels. Perfect *accuracy in time* is obtained in the only rational way yet devised, viz, a motion of the hand. My own plan is to use the right hand, closing all but the index finger.

I would not appear to be egotistic in proclaiming "results," and yet I ought not to hesitate in making known the fact that success has, in a large degree, compensated the labor of twenty years. Perhaps it will be sufficient to say, as the outcome of my work in New Haven, that a number of operas and several of the oratorios have been given by choral societies, composed almost entirely by graduates of the schools. Amongst the latter I might mention Mendelssohn's "Elijah," with Theodore Thomas's orchestra for accompaniment.

It is opportune at this time that I am enabled to quote from a communication evidently designed for publication, and which is all the more satisfactory to me as it comes so unexpectedly. It is from my old friend, Ariel Parish, for sixteen years superintendent of schools in New Haven, and now resident in Denver, Colo.:

DENVER, COLO., *January, 1865.*

In September, 1865, on assuming the duties of superintendent of the public schools in the city of New Haven, Conn., I found Mr. B. Jepson employed as a special teacher of vocal music.

Instruction in this branch was introduced but a few months previous, simply as an experiment, and only a few of the upper rooms in the larger schools were placed under his charge for this purpose. At the outset no books were required for the pupils, but all lessons were written on the blackboard for daily practice.

The success of the experiment was such that gradually lower rooms were included, until vocal music became a branch of instruction in all grades, from the primary department to the high school.

The valuable results of twenty years of careful training of the children through their school life are manifest in Sabbath-schools, religious assemblies, and on public occasions in which music constitutes a part of an entertainment, whether by chorus or individual performance; and it is surprising to observe with what ease and perfection vocal music seems to be spontaneously produced. Musical societies highly creditable to the city have grown up in New Haven. Many individuals have become superior vocalists, with reputations as public singers, securing to them valuable pecuniary compensation. To the multitudes who have received musical training in the schools, without doubt an element of enjoyment has been supplied which has contributed not a little to make them happier through life, and perhaps better citizens than they otherwise would have been.

A prominent characteristic of the instruction in the New Haven schools is, and has been from the beginning, that the *principles* of music are thoroughly instilled into the minds of the children. From the first effort of the primary children in learning to sing the scale, onward until the day when the high school diploma is awarded, music is taught and studied as a science. The results manifest to-day come from the skill, energy, and persevering study of one man through a score of years of uninterrupted effort, viz, a success not excelled in this department of instruction by any other city in the Union.

A. P.

## COUNTY MODEL SCHOOL SYSTEM OF THE PROVINCE OF ONTARIO.

BY I. I. TILLEY,

*Inspector of County Model Schools.*

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Previous to 1877 the work of training students in the theory and practice of teaching was conducted solely in the two provincial normal schools; but as attendance at these institutions was not compulsory, and as certificates were granted by county boards of examiners merely upon examination in literary subjects and in the theory of education, only a minority of those who wished to enter the teaching profession availed themselves of the advantages afforded by the normal schools. It was thought, however, that the time had arrived when all should not only possess the necessary scholastic attainments, but should also receive proper preparatory training and furnish satisfactory evidence of their ability to organize, teach, and govern a school, before receiving a license to undertake the important work of instructing the youth of our country. To have provided the facilities for affording this professional training in additional normal schools would have required a large immediate outlay, and would have involved a very considerable annual expenditure. It was thought desirable, therefore, to adopt some less expensive plan for accomplishing the purpose. Accordingly our present county model school system was established, which is somewhat similar to the system devised many years ago by the late Dr. Ryerson, Chief Superintendent of Education, but not generally introduced into the Province.

Before a student can be permitted to enter upon the course in a model school he must have passed the non-professional examination for a third-class certificate. This examination includes reading, spelling, penmanship, arithmetic, English grammar, geography, history, English literature, composition, algebra, Euclid, drawing, book-keeping, and physics. He may, however, pass the non-professional examination for a second-class, or even for a first-class certificate, before attending a model school. If successful at the close of the term, he receives a third-class certificate, valid for three years and limited to the county in which it is obtained. Having taught at least one year, and having passed the non-professional examination for a second-class certificate, the teacher may, upon the recommendation of the public school inspector under whose supervision he taught, enter a normal school for additional professional training, and if successful at the final examination in that institution, he receives a second-class certificate, valid throughout the Province and to be held during good behavior. First-class certificates are granted upon written examinations in professional and non-professional subjects to those who have already obtained third-class and second-class certificates. In this way only can certificates be obtained. The obtaining of a non-professional certificate does not give the candi-

date any authority to teach. It simply gives him the right to enter upon a course of professional training.

#### REGULATIONS.

Model schools are established in accordance with the following regulations:

1. The county board of examiners for each county or group of counties shall set apart at least one public school for the professional training of third-class teachers, subject to the approval of the Education Department.

2. The requisites for a county model school shall be,

(a) One room in addition to those required for ordinary school purposes.

(b) Such full and complete equipment as is now required for the fourth class in a public school.

(c) A principal holding a first-class provincial certificate, with three assistants holding at least second-class certificates.

(d) A special assistant to relieve the principal during at least half of each day during the model-school term.

3. The teachers-in-training shall attend regularly and punctually during the whole model-school term, and shall be subject to the discipline of the principal, with an appeal in case of dispute to the chairman of the county board of examiners.

4. The principal shall report to the board of examiners at the close of the term the status and progress of each teacher-in-training, as shown by the daily register.

5. The teachers-in-training shall be subjected to an examination in practical teaching at the close of the session, and also to a written examination on papers prepared by the Department.<sup>1</sup>

6. Boards of trustees are authorized by resolution to require a fee of not more than five dollars, to be paid by each teacher-in-training.

7. There shall be one session of thirteen weeks in each model school during the year, beginning on the second Tuesday in September.

8. Each model school shall be inspected at least once during the session by the Departmental inspector.

#### COURSE OF STUDY.

The course of study embraces,

1. Principles of education: School organization, management, and discipline, methods of instruction, and practice in teaching.

2. Physiology and hygiene:

(a) Laws of health, temperance, cleanliness; hours for study, rest, recreation, and sleep.

(b) Heating and ventilation of the school room.

(c) Functions of the brain, eye, stomach, heart, and lungs.

3. Music, drawing, and calisthenics.<sup>2</sup>

4. School law: A knowledge of school law, so far as it relates to the duties of teachers and pupils.

<sup>1</sup> These written examinations are upon the same papers in all the schools, and are held at the same time in accordance with a time table drawn up by the Department. The answers are read, the values determined, and the certificates awarded by the county board of examiners.

<sup>2</sup> These subjects are not compulsory, but if taken up due credit is given for work done in them, in awarding certificates.



5. Review of non-professional work: The teachers-in-training are required to review and supplement their knowledge of the principal subjects of the public-school curriculum, such as composition, spelling, arithmetic, and literature. For this purpose the principal gives a few exercises in these subjects during the term, and by oral and written examinations tests the students' knowledge of matter, as well as of methods of instruction.

#### MANAGEMENT.

##### *First Section of Term—Two Weeks.*

1. Teaching by principal: For the first two weeks of the session the principal teaches in the separate room provided for this purpose those subjects with which he intends the students subsequently to begin. In teaching a class as above, the principal first lays before the students the plan of the lesson, and illustrates this plan by his teaching. He also requires the students to take notes of his methods, and these are discussed in the criticism hour. In this way about ten lectures, combined with illustrative teaching, are given on the best methods of teaching some of the primary subjects. During this time the students are not required to visit the different departments of the school for observation, as it is believed that no one can observe intelligently or with profit until he has some idea of the object to be attained by the teacher.

2. The students having noted and discussed the methods as outlined by the principal, and having observed the practice of these methods are now themselves prepared to begin to teach. They are therefore next required to teach classes in the separate room, under the guidance of the principal, and subject to the criticism of their fellow students after the conclusion of the lesson.

3. Observation: The principal next prepares the students for taking observation in the different rooms set apart for model-school purposes, their attention being specially called to the matter of the lesson, to the method of presenting it, and to the class.

##### *Second Section of Term—Three Weeks.*

1. Observation and class teaching in the separate room: During this section of the term, one-half of each day is occupied by the students in the model school-room—

(I) In observing class teaching by the principal.

(II) In class teaching before the principal and their fellow-students.

(III) In criticisms.

2. Observation in the different divisions: During the second half of the day the students are engaged in observing teaching by the assistants in the different rooms, and in taking notes. These notes are afterwards given to the principal, and discussed in the separate room. The assistant teachers are required to explain to the students the purpose and plan of the lesson before they begin to teach, to call attention to points in the progress of the lesson, and to summarize at the close.

##### *Third Section of Term—Seven Weeks.*

Teaching by students in the divisions: The students having seen the principal teach a number of subjects, having taught the subjects themselves under the direction of the principal, having observed how

classes are taught by the assistants, and having some idea of the matter and method of a lesson, are now able to take charge of classes in the subjects already illustrated. The assistant teachers are required to take notes of the work done by the students, and to report the same to the principal. Students, when assigned to a room, remain a week in one division. The average number of lessons taught by each student during the session is thirty.

*Fourth Section of Term—One Week.*

Review and examination: Students are not required to do any school work during the last week of the term.

**TEXT-BOOKS.**

The following text-books are compulsory:

1. A complete set of the text-books prescribed for use in the first four classes of public schools.
2. Baldwin's Art of School Management.

The following are recommended:

McLellan's Mental Arithmetic, Part I.  
 Normal Music Course, Part I.  
 Hughes' Drill and Calisthenics.  
 Whitney's Elementary Lessons in English (teacher's edition).  
 Ayres' Orthoepist (revised Canadian edition).

**RECEIPTS.**

A grant of one hundred and fifty dollars is given by the county council to each model school in the county, and an equal amount is given by the Government. The fees paid by the students average one hundred dollars to each school. The amount received by each board of trustees is therefore about four hundred dollars per annum, and this sum is amply sufficient to provide a special assistant to relieve the principal from his ordinary school duties, and to meet contingent expenses.

**NUMBER OF SCHOOLS AND OF STUDENTS.**

Fifty-one model schools have been established in the Province, and the average number of students that attend each school is twenty.

**TIME OCCUPIED BY THE STUDENTS IN TEACHING.**

Taking twenty as the average number of students in a model school and allowing one half-hour lesson per day to each student, we have ten hours per day for teaching by the students in the whole school. Taking four divisions as the number used for model school purposes, with a senior and a junior section in each division, we have eight classes for ten hours of teaching by the students, or an average of one hour and a quarter for each class during each day for seven weeks. When the number of students exceeds twenty, more than four divisions are used, if possible. The students are distributed among the different rooms, and while one teaches the others observe and take notes.

**GENERAL REMARKS.**

When our present county model schools were first established, fears were entertained by many that the regular work and discipline of the

schools in which they were established would be disturbed by them. These fears were realized to some extent, and after an experience of two or three years the trustees in a few cases refused to allow their schools to be used any longer for model school purposes. But in at least eighty per cent. of the schools the work went on smoothly from the first and was a decided success. When the principals of the public schools in which model schools were established first took charge of this extra work, they had to teach a division of pupils from 9 A. M. till 4 P. M.; and as no special assistant was provided for their relief, they were obliged to deliver their lectures to the students before and after the regular school hours. During the day the students were assigned to the different divisions, and employed their time in observing teaching and in teaching classes. The students being thus placed under the guidance of the assistants during the day and being allowed to teach from the beginning of the term, almost necessarily retarded the progress of the pupils and caused more or less friction. By means of the relief afforded by the special assistant all the work is now done during school hours, and the students being mostly under the instruction of the principal and having been drilled in the theory and practice of teaching during the first half of the term, are enabled to do very fair work in the divisions when they take charge of classes during the second half of the term. The schools that were closed have been reopened, and complaint is now rarely made that the model school work interferes with the ordinary routine of the school or with the work of the pupils. On the contrary, many principals claim that the general standing of the school is improved by the establishment of the model school.

Our model school system during a period of eight years has steadily grown in public favor, and its utility and efficiency have been well established. It furnishes to all young teachers a fair amount of professional training near their own homes at a less cost to them than if it were furnished in a few large centers, and at a cost to the Province of certainly not more than one-third of what would have been required if provision had been made for furnishing this training in provincial normal schools. For these reasons I think that our model schools, which were established as an experiment at first, may now be considered as an important and permanent part of our educational system.



## SECTION B—SECONDARY INSTRUCTION.

### LOWER COLLEGIATE, LOWER TECHNICAL, AND TRADE SCHOOLS.

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## A SOUTHERN GRADED SCHOOL.

BY REV. A. D. MAYO, D. D.

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I cannot forget my first day's experience in what I recognized as a genuine type of the new southern graded public school. It was in one of the little cities of the State of North Carolina, a community of perhaps five thousand people, two-thirds of whom were white. This school was for white children, and, at the time I speak of, had been established not more than six months.

Previous to this, the educational affairs of the place had gone on after the usual method in this class of southern towns. There had been an academy for boys and a seminary for girls, both relying a good deal on boarding pupils, the latter established in a large building with spacious grounds around it. There were probably a dozen little groups of children gathered in private houses for instruction, and a considerable number of young people were being educated away from home at a cost of from \$200 to \$500 a year.

At the time of which I speak, however, the two academies had broken down, and were satisfactory to nobody. The little private schools were even less satisfactory. The public school was in operation, for both races, on State funds some three months in the year, and was what this sort of school is apt to be. In short, the community was paying, at home and abroad, money enough to secure a good elementary schooling for the 800 children of school age. But everything was at odds. The religious sects had rival notions, obstinate individuals of influence indulged themselves in impracticable theories, while the children were beating their way up to American citizenship, at the most momentous era in the world's history, like a scattered fleet making a harbor in a storm, at least one-fourth their number coming up in absolute ignorance of all that belongs thereto in a land like ours.

At this juncture a few leading people resolved to "take the bull by the horns," and to persuade the community to establish a thorough system of graded public instruction. There is no part of the world where a dozen clear-headed, influential, right-minded people can do so much good in a community of 5,000 inhabitants as in a southern American town. By ways familiar to southern life, this phalanx of solid men and sensible women "captured" the little city, and persuaded the white people to try the experiment of the graded school. Unfortunately the colored folks, having bad advisers and insisting on having their own way with their portion of the general fund, continued keeping up the short-lived public school of the county, eking out their means with church donations, the school itself being little better than a children's mob. Later they came into the general system under the city superintendency, and their school, as far as could be, was the same as that I am about to describe for the white children.

While waiting for legislative permission to impose a local tax, the people raised a sufficient sum by subscription to make the new school free for a year, up to its secondary, or academical, grade. In due time a local tax of perhaps two mills on the dollar, added to the State fund, supplied the means for the running expenses. The city purchased the establishment of the girls' seminary, which with proper repairs made an excellent school-house, surrounded by handsome grounds, for the 500 white children.

An excellent superintendent was chosen from among that remarkable body of young graded-school masters which the State of Tennessee has given to the South; his salary, perhaps \$1,200 for the first year or two, was paid by the Peabody Fund; and he was placed at the head, "with power to act." The South still holds fast by its old traditions of competent leadership, invaluable in organizing a graded school. The superintendent was permitted to nominate his ten assistants, and given all needful authority for their training and direction. He brought one college graduate as his "chief of staff," to take charge of the academical classes; the remaining teachers were women, of whom perhaps two were experts from abroad, the rest being the most hopeful of the teachers already at work in the place. In this way he avoided collision with half a dozen competent lady teachers, while giving them more reliable employment than before.

I suppose the salaries of the women ranged from \$300 to \$400 for the nine months of school, while the young man may have received from \$600 to \$800. Thus the entire running expense, including incidentals, hardly exceeded \$6,000, an average of \$10 per annum for each pupil. When the colored schools came into line, the whole system could, by economical handling, be made to school 800 children nine months in the year, up to the academical grades, for less than \$8,000.

The original outlay for buildings is a variable quantity. In many southern towns there are buildings that can be had for public school purposes with only the expense of repairs and suitable furnishing; in other places valuable school properties can be bought at nominal prices; sometimes good school-houses, built by northern churches, are turned over to the authorities. The southern graded school, except in the larger cities and occasionally in towns, is not yet established in its final quarters. Its teachers are poorly paid; its superintendents working on nominal wages, and overwhelmed with labor and responsibility. But the genius of the American common school does not demand a palatial school-house filled with apparatus, or a schedule of high salaries, or even a group of accomplished graduates of superior institutions as teachers. All these are the body, but the soul is a resolute, united community, determined to do its duty by the children, and a faithful, open-minded, improvable corps of teachers, bent on doing their best, at all hazards to themselves. And nowhere, in this or in any country, is this fundamental condition of success more thoroughly realized than in hundreds of these new graded schools in our Southern States. I find the "best blood", and, what always makes good blood, the best mind, heart, tact, and executive force of the Young South, engaged in the inspiring work of building up the southern people's schools. And I wish thousands of our over-critical, well-paid teachers from the North, sometimes in danger from a too indulgent constituency, could go with me on my visitations to these new graded schools of the South-land, and learn anew that precious art of service consecrated to the children, which built up the common school of New England half a century ago,



and will always build up, whenever young American manhood and womanhood are invoked for self-sacrificing labor in any good cause.

The first thing that attracted my attention, on arriving in this little city, was the pride and enthusiasm of the people concerning their new graded school. I had seen a condition of public feeling like it only during the progress of a revival of religion, a working up in temperance, or in a period of overpowering interest in time of war. Every man I saw had a good word for the school; the village newspaper printed long columns of its work; the county folk thronged its rooms, so that it had become necessary to shut out the public, except on certain half-days, on account of the interruption of over-visiting; crowds of people would collect opposite the main entrance, on the dismissal, to watch the long, soldier-like lines of boys and girls march down the broad walk, file out the great gate, and, at a word, break up with a shout for home.

At the beginning the trustees were incredulous about the attendance, and failed to supply seating enough; but the children came pouring in, week after week, till almost every able-bodied youngster was on hand. Wild stories were told about sick children that dodged out the back door at home, and ran away to school. Indeed, there had occurred several cases of children being whipped to make them stay at home. Evidently, the Young South was "up and coming"; and I have had occasion to note that this enthusiasm does not die out, but, while the school is kept up as it begins, the children are eager to attend.

So here was the first beautiful result of the new movement. *For the first time the great majority of these people were united in the general work of uplifting the community.* Personal and family pride, sectarian bigotry, social and political distinctions, had fallen to the secondary place, where they belong, and all hearts and minds were brought into accord for the children. And as the children always respond to a generous demonstration in their behalf, going to school became the fashion. Even great, gawky boys put their pride in their pockets and submitted to be classed with smart little girls, who rejoiced to play tug to the great sleepy hulks by their side and tow them out into the deep water of the "three R's."

I soon discovered one secret of this wonderful public interest in the new graded school: it was evidently the complete discipline, or rather the harmonious living and working together of the children and youth of a whole town, in an orderly and persistent pursuit of all things true, beautiful, and good. To me it was inexpressibly affecting to think how all these people, after a whole generation of horrid civil war, the dissolution of society, and nameless conflicts and exasperations, embittered by the wreck of fortunes and the loss of their bravest and best, had now for the first time beheld with their own eyes this spectacle of peace, harmony, and joy, in this union of their little ones. It was a daily object lesson on the theme of the angels' song, "Peace on earth, good will to men." No wonder that old battle scarred faces melted into laughter and tears as they looked upon this new vision that dawned upon the sadness of their age; that the village grumbler for once lost his audience; and that the candidate for office who did not "face the music" on education found himself, before he knew it, in a political vacuum. Even the parson, who had preached against "secular education," either looked on and recognized a new revival of Christian love, or hid his sermon and bided the time, which never will come, when the specious thing will be revealed as the last clever device of the Evil One.

It was also a marvel to scores of harassed mothers to mark the change in manners and home morals of their obstreperous boys and "trifling" girls, and they would steal in, at every opportunity, to feast their eyes on their children sitting so peacefully, marching to music, playing without roughness, and generally filling the ideal of a good child. One eminent gentleman demonstrated to me in advance (how easy such demonstration is!) that the graded school would break up in a riot. "Southern children were accustomed to so much freedom that they would never submit to the government that prevailed in the northern public school." I found him a happy convert, after six months' observation as a trustee in a graded school of 800 children, where there had been no punishment to attract public attention, where not one of the new benches had been hacked with a jack-knife, or one "work of art" in chalk, "grinned horribly a ghastly smile" from door, fence, or post. The explanation was, that children, every-where, like grown folk, behave well when they are pleasantly occupied, and naturally prefer order and pleasant society to the "rough and tumble" of barbarism. In the graded school they were every day making new friends; finding out each other's good points; learning to mind their own business in a crowd; in short, rehearsing the great drama of American life, in which "all sorts and conditions" of people are trained to live peacefully in a freedom environed by an inclosure of just and equal law. Instinctively these young Americans fell into line on the appearance of the leader of men, whom they recognized in their superintendent, and almost without knowing why, gave cheerful obedience to public law when they would have made a dame's school-room uninhabitable, kept a private academy in a breeze, or headed a rebellion on the college campus. The most mischievous or wicked youth has a sense of the majesty of a rule and discipline that represents the sovereign people's will, and behaves accordingly in the only place where a child feels that command, in the people's common school.

It became evident to me that this superintendent understood the southern child's temperament, and by mixing reasonable personal freedom while at work with a liberal supply of gymnastics and military order in movements, together with little distinctions for merit, had fast hold of the majority, and held in wholesome check, with hope of reform, the criminal class which is always represented in a community of children. The man who can look on this spectacle, now seen in hundreds of southern graded schools, and declare the system "irreligious", has evidently never learned that three parts of all true religion are the very moral training he there beholds, and the other part that law of love which nowhere more beautifully shines forth than in a well-ordered school-room, taught and governed by one whose daily life is the incarnation of devout trust in Almighty God and unselfish loving service to the little children whose "angels behold the face of the Father in Heaven."

But the more observing people of the community were even more attracted to the new graded school by its novel and beautiful methods of instruction, than by its admirable discipline. There was no end of wonder at the way in which little children, from six to eight years of age, were taught, by natural methods, to read and spell and write and draw; to talk with the pencil in simple sentences, laying the corner stone of training in language; to begin arithmetic, not by "figuring" up in the air, but by connecting the elementary operations with familiar objects; to study geography from the school-room outward, combining physical and political geography with the history of the family,

town, county, state, and nation; to observe the outward world and learn daily lessons from earth and sky, river and forest; to study the fly, instead of impaling him on a pin; to come into kindly relations with all creatures, even the mule, the champion dunce of them all; to sing by note and learn to walk erect; all these things being taken up in a way so natural and inspiring that the dullest fellow was waked up to life somewhere, and the brightest child was kept from over-strain by the charming variety.

It did not require more than one visit by a sagacious business man to perceive that these natural methods in school were a part of that mighty movement of the human mind which, within half a century, has revolutionized modern industry, harnessed man to the sublime forces of nature, and made every instructed youth, to-day, in comparison with his grandfather, the supernatural human being of whom the Scripture prophesies: "*Thou hast made him a little lower than the angels and hast crowned him with glory and honor. \* \* \* thou hast put all things under his feet.*" This bright man of affairs sees, at a glance, that here is the key to that union of mental and industrial training of which so much is said and so little to the point; that a generation thoroughly trained by such methods will leave school, at fifteen, with a mental habit that will put the brain into the fingers and enable these children to use their mighty inheritance of labor-saving machinery, to become the intelligent workers who will develop this marvelous South-land. And after seeing this, such men will no longer be heard doubting the policy of schooling the seven millions of freedmen, whose prolonged ignorance will bring a whole brood of worse than Egyptian plagues upon these States; or the "low-down" white man, who still abides in the great highland center of the South, keeping it a lonesome wilderness, while it should be the great mine of wealth for every State grouped around its foothills. All this will be read out by the few men in the community who "put things together," and see the end in the beginning; and the thoughtful women will also understand that this thorough school training of the girls of the laboring people is *their* only hope for a generation of servants, housekeepers, and workwomen who will be able to handle a modern house, and bring out the home life of the South in all the comfort, convenience, health, and beauty of which it is capable, in a land so evidently designed by Providence for the Eden of the New World.

It will be seen, also, that the new graded school solves the whole problem of the academical and higher education in the community where it exists. The radical weakness of the upper story of southern education is that, like Mohammed's coffin, it is suspended between heaven and earth, with no adequate foundation of elementary training. The academy in this place, for girls or boys, had been a collection of young people, mostly past fifteen, who had come to it from town and country with no real preparation for the advantages it offered, with only two or three years, at most, in which to acquire a respectable knowledge of the higher English branches, with French, and perhaps Latin, the girls spending an hour or two a day at the piano and subject to the allurements of the "Department of Art." As few of the pupils had any thorough training in the three R's, the task of the intelligent and faithful teacher was as near hopeless as can be imagined. The southern school public is becoming thoroughly impatient with that class of academical humbugs who hang a big sign over the school-house door and promise a "complete education" in a course of three years, to a youth who comes to their "college" untaught in the elements, and filled with that conceit of ignorance which is the real teacher's most deadly foe.

It is impossible to get this sound elementary schooling of any class out of the swarm of little home, private, and parochial schools on which so many of the children must now depend. The only hope for the academy and college is the elementary graded school for city and country, which shall send forth the majority of children before fifteen competent to begin the work of life, and the few prepared for the higher training of the superior seminary. Where no good academy exists, this work can be done by building up higher classes, under the direction of superior teachers, a moderate tuition fee being exacted if expedient; or, if a good academy is already established, it can easily be adjusted to the graded school, to receive its graduates. In this way college and academy, in time, will be able to dispense with the "preparatory department," which is the bane of education in the South, and place their work on a permanent basis to meet the increasing demands of the people.

I also observed that the new graded school had considerable patronage from families who sent their children from the rural districts, or even removed to town and bought property to make practicable the schooling of the young folks. Especially I found there a class of bright girls from the outlying families who proposed to teach. The most hopeful side of southern education is this bringing in of great numbers of the finest young women to the work of teaching the children. These good girls often have no chance for schooling at home, and the distant academy is either too expensive, or unadapted to the training of teachers according to the gospel of the New Education. But in this school they can be well taught at moderate cost; can see the best methods of organization, instruction, and discipline, and be trained by the superintendent, in a teacher's class, to go back and build up the district school at home in the right way. I have small hope of southern country school-keeping until a center can be established in every county, which can thus be a model, and send out fit teachers for all the schools. This work is done for the colored people in the same way, their school being graded and handled in like manner, under the same superintendent, with a fair proportion of colored trustees on the general board of direction.

But all this beautiful result of the new graded school, I could see, depended on the superintendent, the man or woman who is at the head, and who must finally be held responsible for success or defeat. It is coming to be understood that nowhere, in any country, does so much depend upon the head of a school as in the establishment of the southern people's new system of instruction. Every community is brought up to the point of taxing itself for the graded school through opposition and distrust, and begins the new experiment in the face of criticism. And often the people most strenuous in their opposition are opponents because they know nothing of the system, and accept the opinions of men opposed to popular education or interested in rival schools. Indeed, nine-tenths of the incredulity of intelligent and right-minded people on such matters is owing to the stupid and mischievous fumbling in the school room to which they were subjected in their youth. Now, if the people look upon their new school as a convenient institution to pension off some respectable imbecility of a played-out pedagogue, or each of the trustees is more concerned to make a position for an impecunious lady relative than to educate the children, it is easy to see that the new venture will speedily come to wreck.

Even a scholarly man or woman, of the old-time college or academical type, though well up in the classics, may be utterly at a loss when

placed at the head of the entire school population of a southern community. If he is a broad minded person, conscientious and teachable, he will inform himself of the best ways of doing this difficult work and come to his undertaking with some real fitness, and in a progressive temper that insures success. But if "he knows it all" from the first, and holds in contempt all wisdom beyond his Alma Mater, he will certainly make within a year a muddle that will disgust the better class, and "the last state" of that town "will be worse than the first." Superintendency of the graded school is a profession, and only the man or woman competent for the work should undertake it. Sometimes a superior young woman of the place, who has qualified herself by study, reading, observation, and practice, is passed by, and a man who knows nothing of this special work is placed at the head.

But the fit superintendent of such a system as I describe has a greater opportunity to help the whole people than any man of any profession; he becomes the guide, philosopher, counselor, and friend of the children and youth of all classes and both races; he trains his own teachers, and is supplying others for the whole region round about; he is the adviser of the foremost young men and women in their plans for self-improvement; he plans the course of lectures, the new public library, and directs the amusements of the young into higher and more refined channels; he is the best teacher, perhaps the superintendent, in the Sunday school, and quietly reconstructs its methods of operation; he teaches, perhaps manages, the county or State institute, uses the press, and in all suitable ways directs public opinion on matters within his broad domain. In short, the superintendent, or "professor," as the people call him, becomes the functionary of all educational work for a large community, the person whom the people can least afford to spare, and to whom they should give a great reward. They do give that reward in everything but money, and in that about as much as they give the clergy. Of course it is hard for the superintendent to bear this overwhelming burden for the wages of a book-keeper or a skilled mechanic. But the man who goes on doing it is growing, all the time, into a nobler manhood, and is "laying up treasure" in the heaven of the children's and parents' dearest love. And many a proud and ambitious young man, earning twice the money, or haughty young woman, high up in the fashion, even with no social companionship with this faithful public servant, is, all the time, learning from this sweet, toilsome, patient laborer the grandest of all lessons,—that the crown of the loftiest manhood or womanhood is just this divine spirit of sacrifice which inspired the Great Teacher who "went about doing good."

Time would fail for an attempt to picture the complex, subtle, and far-reaching influence of the graded school, as I describe it, on the locality, city, or county, State and nation. First appears its pecuniary advantage in a southern town or city. It brings to the place, for the education of their children, substantial families, and, in scores of towns, the rise of the price of real estate in two years exceeds the whole expense of the system. In due time it makes its influence felt in every sphere of industry; for while sham education does breed laziness, shiftlessness, and youthful conceit, culminating in the frightful distemper of "big head," true schooling makes the young people more valuable and faithful in every department of work. Every progressive clergyman regards such a school as the true annex to his church; for the church of any name that relies on an ignorant and narrow discipleship is like the idiot who, in a storm at sea, lashed himself for protection to the anchor, and went to the bottomless deep without a bubble as a headstone over

his grave. Social life is all the time growing more genial, catholic, and refined, the "lower orders" disappear, and a wondrous change comes over the entire community. The public life of the town takes on a new element,—public spirit; and the little, detestable, local partisan politician, who lives by the defamation of his betters, retires in favor of the man whom office seeks for the people's good.

In a generation or two a change comes over that city, or rural domain, like the loveliness of the young spring transforming the wintry world. That community rises to the most enviable form of influence in the State. Its young men and maidens go forth to kindle the fire, and publish its good name to all abroad. Out of such neighborhoods is born the true glory of a commonwealth; and from the current of uplifting influences, whose headspring is the people's graded school, shall flow the blessed inundation of truth, and virtue, and industry, and beauty, to fertilize the nation, to bring the children of all States into patriotic accord, to make our legal and formal union that solid compact of clear heads, busy and valiant hands, and consecrated hearts, against which the united powers of the world shall not prevail; for a nation so nurtured shall become, in God's own time, the graded school of freedom, with a mission from Heaven to all the sons and daughters of mankind.

## SECONDARY EDUCATION IN ONTARIO: AN EXPLANATION OF THE LEADING FEATURES OF ITS HIGH-SCHOOL SYSTEM.

BY D. C. McHENRY, M. A.,

*Principal of the Collegiate Institute, Coburg, Ontario.*

The secondary education of Ontario cannot be fully understood apart from a consideration of that on which it is based—the elementary, and that to which it leads—the superior; for our educational operations are reduced to a system, consisting of the public school, the high school, and the University.

In this paper, however, I shall not attempt an elaborate description of this part of our educational work, but shall endeavor so to present its essential characteristics and prominent features, that persons unacquainted with our system may be able to include Ontario in those comparative examinations that are largely to occupy the attention of this section.

### I. INTRODUCTORY RETROSPECT.

The order generally observed in establishing schools in new countries was reversed in Ontario, grammar schools being opened fully a decade in advance of common schools. Nearly a century has elapsed since the first steps were taken towards providing instruction for the youth of our land; and, as above remarked, education other than elementary first received attention.

In 1797 public land to the extent of half a million acres was set apart for the support of a university and four grammar schools—one for each provincial district.<sup>1</sup> Unfortunately, little or no revenue was realized from this endowment, and at this point the movement rested for several years.

While public efforts seemed as yet to bear no fruit, it is interesting to know that classical schools were being established, chiefly through private enterprise. Of these one was opened at Cataragui (Kingston), by the Rev. Dr. Stuart, in 1785; one in Newark (Niagara), by the Rev. Mr. Addison, in 1792; one at the same place, in 1794, by Rev. Mr. Burns, and in 1796, by Mr. Richard Cockrel; one at York (Toronto), in 1802, by Dr. Baldwin; and one at Cornwall, by Dr. Strachan, in 1804. Dr. Strachan afterwards took charge of the school at York (Toronto).

In 1806 the question was revived, and Acts were passed establishing a grammar school in each of the eight districts into which Upper Canada was then divided, £100 per annum being secured to each head master.

It was in 1816 that the Legislature first passed an Act relating to elementary instruction, and appropriated £6,000 to aid newly-established common schools.

<sup>1</sup> At first the Province was divided into four districts; afterwards into eight. Subsequently the term county was substituted for that of district, of which there are now 45, and 5 outlying districts, 50 in all.—J. G. H.

Beyond this point growth was slow, but the progress was fairly substantial. During the twelve years after the first eight grammar schools were opened only one additional grammar school was established. In 1831 we find eleven, and the grant increased to £1,400.

Thus far these secondary schools were sustained solely by government aid and fees. In 1839 the principle involved in permissive local municipal grants was introduced, and £100 was offered by the Legislature to each district grammar school, on condition that by local effort an equal amount was raised.<sup>1</sup>

During the next ten years the principal events were the appointment (in 1844) of Dr. Ryerson as chief superintendent of education and the introduction of important modifications, mainly through his instrumentality, especially those relating to local supervision and general inspection, qualifications, appointment, and protection of head masters and assistants.

In every progressive educational movement prejudices arise among those who regard with suspicion all efforts in the field of secondary education. One of the greatest obstacles to progress at this early period was the lack of local support, arising from this unreasonable prejudice.

What is known as the Education Department, then consisting of the chief superintendent and an advisory Council of Instruction, was already assuming definite form, and in 1855 existing grammar schools were brought more immediately under its control. Regulations were prescribed for their government, courses of study were revised and enlarged, and, in fact, the leading permanent features of our grammar schools were at this time introduced.

Even thus early, the value of trained teachers received recognition; the necessity of providing for this training was admitted, and accordingly in 1858 a model grammar school was established at Toronto. This institution was closed in 1863.<sup>2</sup>

In 1860 Dr. Ryerson made a tour of the Province, to consult local school authorities and the public generally on educational questions. This was repeated at different times, and in each case resulted in important legislation.<sup>3</sup>

In 1871 the term "high school" was substituted for "grammar school," the title "collegiate institute" being applied to certain schools maintaining a higher status, particularly in classical work.

Until 1876 the government grant had been distributed on the basis of average attendance. The plan of "payment by results" was now

<sup>1</sup> In 1871 what had been permissive was first made obligatory, after a good deal of opposition and discussion.—J. G. H.

<sup>2</sup> It was closed in the hope that Upper Canada College, Toronto, would thereby be the better enabled to perform the twofold duty of providing a good classical and commercial education for boys, and at the same time of affording facilities for training high school teachers. The latter was not done; but it has been proposed (in 1885) to supply this omission by designating certain of the county high schools for collegiate institutes to perform this important duty.—J. G. H.

<sup>3</sup> The most important legislation in relation to grammar schools (now high schools and collegiate institutes) took place in 1866.

In this connection, it is important to note the fact that in 1809 and subsequent years it was easy to procure legislation for the benefit of grammar schools; but in 1863 (and a few years previously) it was most difficult to induce the Legislature to consider these schools of (at least) equal importance to the elementary schools. The latter were considered of prime importance. The writer of this note speaks from personal experience. He was deputed by the Chief Superintendent of Education to represent the Department at Quebec, in 1866, in seeking to obtain legislation on behalf of the grammar schools. Had it not been for the tact and judgment of Hon. Wm. Macdougall, C. B., then Provincial Secretary, it would have been impossible, for various reasons, to have got the Remedial Grammar School Bill through the House of Assembly. Happily it was passed, much to the satisfaction of all parties concerned.—J. G. H.



adopted; and recently this has been displaced by a method based on the amount paid for teachers' salaries.

Not to continue this retrospect, enough has been given to throw some light on the origin of our high schools, the rate and mode of their growth, and the fundamental principles of the system. Let us now consider in greater detail—

## II. THE LEADING FEATURES OF OUR HIGH SCHOOL SYSTEM.

### 1. *Relative Position.*

From what has been said you will understand that, unlike the schools known as high schools in certain of the American States, our high schools stand directly above the common or elementary schools, forming the one stepping stone from the public school to the University. At the same time two "forms" or "classes" of the public school course overlap upon the high school course, while the latter nominally includes the first year's university work. It does not follow, however, that this repetition of work is really carried out; for practically pupils leave the public school at the end of the *fourth* form, the remaining two being reserved for the high school; and, except in our largest schools, no "university work" is attempted. This grade of schools therefore occupies a secondary position in our system.

### 2. *How Established.*

The opening of a new high school rests primarily with the people, as represented in their municipal councils. On furnishing certain guarantees and satisfying the Government of the need for such a school, the county council is allowed to appoint three trustees and the town council three, these constituting a board of management, whose powers and duties are duly specified. In case of cities and towns separated from their counties, this power is vested in the city or town council.

Every county or union of counties is supposed to have at least one high school. In most counties there are several, and their number is annually increasing. The leading restriction is one which prescribes that no school can be established unless the high school fund of the Province is sufficient to guarantee a certain minimum grant without interfering with grants to schools already established.

### 3. *How Supported.*

The cost of school site, building, furnishing, repairing, warming, etc., must be met by the locality. The initiative resting with the board of trustees, the council have power to raise the necessary amount by local assessment. Once established, the school's revenue consists of a grant from Government, a grant from the municipality (which must be at least equal to that from government aid), and, in about half our schools, a further sum received as tuition fees.

A general idea of the way in which this support is distributed among those who are responsible may be obtained by noticing the following items from the Report of 1883:

Number of schools, 104; pupils, 12,473; legislative grant, \$84,304; municipal grants, \$196,435; pupils' fees, \$29,269.

The local municipalities, it will be seen, contribute a large proportion of the amount expended on our high schools.

### 4. *How the Government Grant is Distributed.*

For many years the government grant to each high school was determined solely on the basis of average attendance. This was found to be

unsatisfactory, since an undue share of the grant was being absorbed by the city schools, which possessed facilities for drafting into their high schools large numbers of pupils from the public schools. In 1876, therefore, the plan of "payment by results" was introduced. According to this method other factors than attendance went to determine the amount received by any school. A part was distributed (1) in payment of a minimum fixed allowance to each school, in order that to weaker schools a certain degree of stability might be given. A part was distributed (2) on average attendance; a part (3) on the results of inspection; and a part (4) on the results of an examination which took place midway in the course, dividing pupils into "upper school" and "lower school." The sum of \$72,400 would be distributed under these four heads in about the following proportion: under (1), \$42,000; under (2), \$5,000; under (3), \$10,000; and under (4), \$14,000. The effect of this mode of dividing the grant was in some respects satisfactory, new life being infused into the whole system. It was found, however, that what ought to have assumed the form of vigorous, healthy competition among our schools, in too many cases degenerated into an unhealthy cramming for this common examination. Besides the unseemly rivalries that appeared, it placed to an unfair degree the financial burden upon head masters and teachers generally. This result was soon apparent, and by degrees the plan was changed, until now almost the only test applied in distributing the grant is the far-reaching one of *amount paid in teachers' salaries*. It is probable, however, that there will soon be added to this the old criterion of attendance, and that of general equipment—buildings, library, laboratory, etc. It has been found exceedingly difficult to secure such a basis of distribution as is satisfactory to the several grades of schools, conducive to the best development of teaching power, and at the same time likely to call out local liberality and enterprise. Some schools would continue to flourish if the government grant were withdrawn. Others, depending almost entirely on legislative aid, would not long survive its withdrawal. The general principal acted on is, that those schools are most liberally aided which are best sustained by local effort.

The cost of supporting high schools is not burdensome, when looked at from the standpoint of the individual tax-payer. Take, for instance, the case of a person whose assessment is \$1,000. In most towns his school-tax would not exceed \$4, and of this sum about one-fourth would go to the high school. As to the cost per pupil for keeping up our system, the average is \$27.56 for the whole Province. It costs \$6.42 per pupil to educate our children in the public schools of the country, including our smallest rural schools. The cost of our secondary education may therefore be regarded as reasonably low, both to the individual and to the State, whether compared with our own public schools or with the high schools of other countries.

##### 5. *How our High Schools are Controlled.*

(a) The *local* control is vested in a Board of Trustees appointed by the municipal council. In certain cases the selection rests with both town or village council and county council. These trustees are appointed for three years, two retiring every year. They possess all the powers usually vested in such corporations, so far as are found necessary for carrying out the purposes of the laws relating to high schools. This board has to deal with all matters pertaining to the support and management of the high school, including the erecting, repairing, and fur-

nishing of suitable buildings; the making application to the municipal council for such sums as may be required for high school purposes; the imposing and collecting of fees; the appointing and removing of teachers and other officers; and the carrying out the departmental regulations relating to courses of instruction.

(b) *Governmental* control is exercised, in general, by means of departmental regulations, which prescribe in detail the duties of all in any way connected with the school; by annual and semi-annual reports; and, directly, by a system of inspection. This supervision is entrusted to two officers of the Department, who visit each school at least once a year, devote one or two days to the examination of the classes, and report in detail to the Minister on the condition and operations of the school. The Government is represented also in the person of the town or county inspector, who presides at the principal examinations and is responsible to the department for the proper conduct of such examinations.

From this it will be seen that the control of these schools is very properly divided between the Government and the municipality; and that it is fairly commensurate with their respective financial obligations.

### 6. *High School Buildings.*

In most cases the high school is conducted apart from the public school. In our cities and many of our larger towns excellent buildings have been erected. Some places, through local enterprise, have provided very superior edifices. Doubtless high schools are becoming increasingly popular, but in some localities there is yet such indifference to the claims of higher education as to render somewhat difficult and often unpleasant the duty devolving on trustees of providing suitable high school accommodation. The main source of encouragement in such cases is in the larger government grant given to schools in good buildings, and in the fact that prejudice is rapidly disappearing, being now confined to a few old fossils who still linger in every community. The general tendency, however, is towards placing our high schools in buildings that will be a source of pride to the place.

### 7. *Grades of Schools.*

As already remarked, our secondary schools are of two grades, high schools proper and collegiate institutes. The conditions on which a high school might become an institute were, until recently, (1) four masters fully employed in teaching subjects of the prescribed curriculum; (2) daily average of not fewer than sixty male classical pupils. To schools thus equipped a special annual grant of \$750 was made. The object aimed at was "to encourage the establishment of superior classical schools."<sup>1</sup> Of 104 schools, 16 are now institutes. The special grant has been reduced to \$250 and the conditions modified as follows:

(1) Suitable school buildings, out-buildings, grounds, and appliances for physical training.

(2) Library containing standard books of reference bearing on the subjects of the programme.

<sup>1</sup>Not only this, but to dot the Province with local colleges, as feeders of the universities, of a grade not inferior to Upper Canada College. See the Paper on the "University System of Ontario" (page 233).—J. G. H.

(3) Laboratory, with all necessary chemicals and apparatus for teaching the subjects of elementary science.

(4) Four masters at least, each of whom shall be specially qualified to give instruction in one of the following departments: Classics, mathematics, natural science, and modern languages, including English.

(5) The other members of the teaching staff must possess such qualifications as will secure thorough instruction in all the subjects in the curriculum of studies for the time being sanctioned by the Education Department for collegiate institutes.

It is proposed to require also a daily average of 100 for the first half year, and 80 for the second.

Unquestionably our collegiate institutes have been to some extent instrumental in keeping alive the study of the classical languages in our country. The tendency of late years has been towards superseding these branches of culture by those of a more practical type; and it must be admitted, as a matter of fact, that the classical test did for years act as a breast-work against the tide of modern lines of instruction. High schools employ from two to six teachers; institutes, from four to seventeen.

### 8. Teachers.

To be legally qualified, a head master must be a graduate in arts of some university within the British dominions, and satisfy the Department of his knowledge of the science and art of teaching, and of the management and discipline of schools.

To be legally qualified as an assistant, a teacher must be a graduate, as above, or hold a provincial certificate of the first or second class. There is no *specified* difference between the qualifications of teachers in high schools and those in institutes; but the difference is clearly implied in the general tenor of the conditions given above.

The practice in our best schools is in favor of departmental work in preference to general or form teaching. It is found that greater efficiency is secured when one teacher gives exclusive attention to mathematics, another to classics, etc., than when all the subjects of a given form are assigned to one teacher. In small schools, of course, the departmental method cannot be carried out.

The remuneration of high school teachers, though improving, is far from what it should be. Head masters receive in high schools from \$700 to \$1,200; principals of institutes, from \$1,200 to \$2,250; average for all head masters, \$1,034. Assistants receive from \$400 to \$1,200.

Head masters are classified as follows, as regards their universities: Toronto University, 53; Victoria, 18; Queen's (Kingston), 12; Trinity (Toronto), 4; Albert, 4; Aberdeen, 2; Queen's (Ireland), 2; Dublin, 1; McGill, 1; Cambridge, 1; Glasgow, 1.

Assistants who are graduates would be divided principally among the first three universities, and, I presume, in about the same proportion as the head masters.

Specialists are employed in many schools to teach music, drawing, painting, phonography, etc.

Doubtless our high school system is imperfect in many respects; but in one particular it must be regarded as seriously defective. I refer to the unaccountable anomaly of our having no course of professional training for high school teachers. For over twenty years, while insisting on such a course for even the humblest public school teacher, we have been without any corresponding provision for our high school teachers! I am pleased to be able to say that a plan is nearly matured

which will secure for every one desirous of teaching in a high school a suitable course of professional training.<sup>1</sup>

When that is accomplished, our teachers will compare favorably in efficiency with those elsewhere employed in secondary education.<sup>1</sup>

### 9. *Pupils.*

Provision is made for conducting a self-sustaining preparatory class in connection with our high schools; but very few such classes exist, and our pupils come to us, as a rule, directly from the public schools. In the latter there are six forms or classes. On completing the fourth, pupils are ready for the high school. An entrance examination is held twice a year, in July and December, for the admission of candidates. The papers are prepared at the Education Department, and are uniform for the Province. The Board of Examiners consists of the head master of the high school, the public school inspector, and, in schools *not* in cities and towns separated from the county, the chairmen of high school and public school boards are included.<sup>2</sup> Their report is subject to the approval of the Central Departmental Board of Examiners. The standard for admission is now considerably higher than formerly. Of 9,607 candidates in 1883, 4,371 were admitted.

The schools are open to both sexes, and in most cases they receive instruction together. The plan of employing two sets of teachers for teaching the same subjects has been very properly superseded by the more economical and effectual method of classifying and teaching pupils altogether independently of sex, taking ability and attainments as the sole basis.

About sixty per cent. of our schools are free. In the others a fee, varying from \$2 to \$24 per annum, is charged. The present tendency is in favor of a small minimum fee, to be made obligatory in all schools, the trustees having power to exempt from fees pupils whose parents may be unable to pay. It is claimed for this plan that pupils who pay a fee are more regular in attendance, more diligent in study, and more appreciative of their privileges, than those who attend free schools.

The pupils of our high schools may be classified as follows: (1) Boys and girls, residents, who have been regularly promoted from the public schools, and who are taking the high school course, not in view of any particular examination, but in order to acquire a good general education, as furnished in our secondary schools. (2) Pupils who are being fitted for taking situations in some department of commercial life. (3) Pupils who are definitely preparing to matriculate at a university or to enter directly one of the professions. (4) Young men and women preparing for the work of teaching.

<sup>1</sup> Since this Paper was written the Provincial Legislature has enacted as follows:

"The Education Department shall have power—

"(5) To set apart, subject to such regulations as may be made in that behalf, not more than five high schools or collegiate institutes for the purpose of providing such instruction in the theory and practice of teaching as may be deemed necessary for promoting the efficiency of assistant masters of high schools and collegiate institutes, and of teachers holding a first-class non-professional public school certificate." (See Note 2, p. 186.)

<sup>2</sup> In the Act recently passed, the examining board is constituted as follows:

"The Board of Examiners for the admission of pupils to each high school shall consist of the public school inspector for the county, city, town, or district in which the high school is situated, the head master of the high school, and the chairmen of the high, public, and [R. C.] separate school boards respectively." (Section 39, Act of 1885.)—J. G. H.

An inspection of our course of study will show that ample provision is made for these four classes of students.

### 10. *Course of Instruction.*

The subjects of our course are of two classes: I. *Obligatory*—including English grammar, English literature, composition, reading, dictation, history, geography, arithmetic, book-keeping, drill, and calisthenics. II. *Optional*—including algebra, Euclid, natural philosophy, chemistry, botany, physiology, hygiene, principles of agriculture, Latin, Greek, French, German, music, and drawing.<sup>1</sup> Every high school must provide instruction in all the subjects of the first class. The Board of Trustees may select from the second class such subjects as the circumstances of the school may require.

The range of instruction in these subjects may be said, in a word, to cover the entire ground from the fourth form in the public school (including a review of certain elementary portions) through the first year's work at the university. Some of our well-equipped institutes undertake this advanced (senior matriculation) work, but comparatively few schools can attempt it.

The non-professional work of all grades of public school teachers is now done in our high schools. The model and normal schools confine their attention to professional work. The examinations on this literary work are not a part of our high school machinery, but are in charge of a local board of examiners and the central committee at the Department.

The *text-books* used are prescribed and authorized by the Minister of Education, and are uniform for the Province.

### 11. *High School Graduation.*

From what has been said it will be seen that the entrance examination is the only one now held in connection with our high schools. The examinations for teachers—second and third class—occur about midway in the school course; that for first class, nearer the end. The ordinary university matriculation examination, and those for law, medicine, etc., include but a part of the high school course.

It has been felt that, inasmuch as a large proportion of our students are not directly interested in any of the examinations referred to, there ought to be a *final* examination for them, leading to *graduation* on the completion of the course. This would have the effect of inducing a large attendance of this class of pupils. It would place a definite object before many who are now employed in an aimless course, and would give corresponding definiteness to the work of teachers. Many whose abilities and circumstances warrant their continuing at the high school for a year or two longer would be led to complete the course and graduate, instead of dropping out when about half way through.

It is proposed to utilize the university matriculation examinations for the purposes of this high school graduation scheme. Diplomas are to

<sup>1</sup> The High School Act also provides that—

“(1) It shall be lawful for the Lieutenant-Governor in Council to prescribe a course of elementary military instruction for high school pupils and to appropriate out of any money granted for the purpose a sum not exceeding fifty dollars per annum to any school employing a competent drill instructor, and in which school a class of not less than five pupils has been taught for a period of at least six months.

“(2) Such classes and instruction shall be subject to such inspection and oversight as the Lieutenant-Governor in Council may direct.” (Section 54.)—J.G. H.

be issued under the authority of the Minister of Education, and presented at some suitable public meeting—the exercises partaking of the nature of commencement exercises in higher institutions of learning.

The honor thus bestowed will be *more than nominal*, as the diploma will be a passport to any arts university; will be available at teachers' examinations; will be accepted by the medical, the dental, and the pharmaceutical colleges; and, probably, also by the Law Society.

The benefits likely to accrue from such a scheme are all but universally admitted, as the proposal meets with general acceptance by all our leading educationists.

## 12. *Literary Associations, etc.*

Valuable auxiliaries to the ordinary work of the class-room are supplied in the flourishing literary associations connected with many of our high schools and collegiate institutes. The exercises of these societies aim at personal improvement, particularly in music, elocution, and composition. In addition to these some institutes have a regular course of lectures for the students on subjects of a suitable character. These lectures are generally placed at the close of the week's work, and come once or twice a month. The speakers are usually resident ministers, or others competent to interest and instruct.

Much improvement is noticeable in regard to *high school libraries*, many schools being supplied with the best standard works of reference. In some places there are reading rooms where students have access to the leading periodicals. The Minister of Education has issued a very excellent catalogue of books suitable for high school libraries.

At the annual convention of teachers for the Province our high school masters meet in a separate section and discuss various matters pertaining to their work. For many years their suggestions have had much to do in shaping the school legislation of the country. These teachers generally participate also in our county conventions, thereby bringing themselves into friendly relations to our public school teachers.

## 13. *High School Statistics, 1883.*<sup>1</sup>

The number of high schools in Ontario is 104, of which 16 are ranked as collegiate institutes. During the past thirty years there has been an increase of 40 schools. Number of pupils, 11,843—males, 6,056, females, 5,787.

*Receipts.*—Legislative grant, \$84,990; municipal grants, \$208,160; fees, \$30,066. Total, \$378,889.

*Expenditures.*—Salaries, \$266,316; building, rent, repairs, \$20,012; fuel, books, contingencies, \$60,482; maps, prize-books, apparatus, \$2,135. Total, \$348,947. Thirty years ago this total was only \$47,033, an increase of \$301,914.

The cost per pupil, based on total expenditure, is \$29.47. Number of pupils admitted during the year, 4,371. Lowest number attending any high school during the year, 31; highest number, 577; average per school, 55. Free schools, 67; charging fee, 37.

Number of pupils in optional subjects: French, 5,318; German, 961; Latin, 4,439; Greek, 903; algebra, 10,296; geometry, 10,071 (trigonometry, 397; mensuration, 8,003); natural philosophy, 1,298; chemistry, 2,450; physiology, 415; drawing, 3,538.

<sup>1</sup> From the Minister's Report for 1884.

Compared with American secondary schools, we, as yet, bestow less attention on such branches as mental science, civil government, political economy, and elementary science generally, although these subjects are coming into greater prominence.

Schools under united boards (high and public schools), 51; schools opened or closed with religious exercises, 92; number matriculated at some university, 277; entered mercantile life, 768; occupied with agriculture on leaving school, 583; joined any learned profession, 868; total masters and teachers, 347; average head master's salary, \$1,068.

### III. GENERAL REMARKS.

1. To every close observer it is apparent that, while our public schools have deservedly taken a firm hold upon popular regard, our high schools are now almost as generally felt to be a necessity. The senseless prejudice of former years is rapidly disappearing, and the day is not far distant when these schools will be a source of popular pride. They are no longer *select* in the sense of being exclusive. Accessible to every part of the country, they are practically open to all classes, and in charge of intelligent trustees and efficient teachers. The poorest lad in the land can enter a public school, then obtain a high-school education, and finally work his way to the highest point of honor in the University. As lately remarked by our Minister of Education, "the high school is the poor man's school *par excellence*." More than sixty per cent. of them are free to all, and all are virtually free to the poor man's child. It is the high school that educates the poor boy's teacher, thus supplying our public schools with competent instructors. To close or enfeeble our high schools, means to place our public schools where they were years ago, in charge of superannuates from other callings, unsuited for anything but "keeping school."

Those whose children are at the high school need no formal argument to be convinced of its value; those whose children attend the public school, as a rule, think of promotion to the high school as desirable, and cheerfully recognize the claims of secondary schools on them for support; while the more intelligent of those who have no children at either school, see what high schools are doing for the country at large and willingly submit to be taxed for their support.

Local demands and local jealousies sometimes interfere with the exercise of well-intended liberality on the part of trustees, and schools that might be vigorous are kept at a few degrees above starvation point, mainly to gratify illiberal but influential taxpayers. Fortunately, our schools are not completely at the mercy of these individuals, the law very wisely giving large discretionary powers to boards of trustees in regard to the expenditure of money. These trustees, moreover, are not dependent on a popular vote for their position. There is profound wisdom in the remark of John Stuart Mill, "There is an education of which it cannot be pretended that *the public* are competent judges—the education by which great minds are formed." Our high schools would still be in the condition they were in thirty or forty years ago if they had been exposed to the perils of popular whims and prejudice.

There is less danger now than formerly. It has been seen that there are retributive results attendant on a penurious policy. Even these illiberal tax-payers can see that. It is found, under the present mode of distributing government aid, that a well-equipped school is really less burdensome in a community than one kept barely alive; just as a dead-and-alive business of any kind is proportionately more expensive



than one kept up to a good working and competing point. On the whole, our financial outlook is very encouraging.

2. The purpose of our high schools is twofold : to fit pupils for higher educational or professional work ; and to prepare our youth for the ordinary business callings of life. They are not merely a means of feeding colleges, but are fitted to give a superior education in varied branches—literary, scientific, and commercial—to such of our young people as desire this education for its own sake. Added to this intellectual culture, it is not too much to say that in many of our schools there is imparted a good moral training.

Our universities know how dependent they are on these schools for students, and they accordingly vie with each other, not only in acknowledging these obligations, but in doing all they can to increase their efficiency. They send down to us their best teaching talent to mold their coming matriculants, and they measure their success very largely by the number of masters they place in our high schools. This interaction is likewise one of the main sources of our strength.

3. Perhaps nothing is more needed just now in our high schools than a season of rest from periodical changes in our school laws, courses of study, text-books, and minor regulations. Owing to the undue frequency of such changes, our progress has been irregular and somewhat experimental. It is clear that now teachers, trustees, pupils, and parents, all long for *such a period of rest as will allow of a little thorough teaching and real culture.*

Closely allied with this is the too prevalent practice of hurried preparation for university and for other examinations. To do the maximum of work with a minimum of time and expense, is the aim and ambition of many who come to our high schools. In too many instances the circumstances of these students, and in some cases their inclinations in favor of certain lines of work, are allowed to control us. Classes and subjects are passed over *per saltum*, and new students allowed to tumble in at any place. Our course must be more rigid, our progress more systematic and thorough, if we ever are to succeed in producing anything like respectable scholarship.

4. There are elements of unrest inseparable from the teacher's lot, but this might be lessened in our high schools if such salaries were paid as would secure the best teaching talent *and retain it.* The prizes offered in other callings are annually taking from us gifted teachers who should not be allowed to leave us. Raw recruits are cheap, and many trustees, even high school trustees, have yet to learn that in educational work cheapness is synonymous with inferiority—that the best teacher is the cheapest, cost what he may.

In this particular, however, we are improving. The principal appointments are virtually permanent, and legislation, supported by public sentiment, is making it profitable for trustees to proceed in the order, (1) secure the very best teachers ; (2) pay them what they deserve and enough to hold them—instead of, (1) employ the cheapest teacher that can be procured by tender ; (2) change him as soon as possible for a cheaper one, "on the ground of economy."

But I must bring these general remarks to a close. There are many interesting topics connected with our high schools to which I cannot even refer, my object being merely to contribute, for the information of persons supposed to be unacquainted with our school system, a plain statement of its leading features, particularly those relating to the secondary schools of Ontario.

## HOW CAN INSTRUCTION IN PUBLIC HIGH SCHOOLS BE MADE MORE EFFICIENT?

BY CLARENCE W. FEARING,

*Boston, Mass.*

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The high school stands as the capstone of public instruction. As such, its true object should not be forgotten or smothered in the efforts of any class of specialists to control it for their own purposes. Why should the high school, any more than the primary, be made completely subservient to the interests of any private or incorporated institution? Public institutions exist for the public good; and the high school is no exception. Its position indicates that its work is to generalize and perfect the work of the lower schools, and to prepare pupils from every grade and calling of society, as far as public education can, for the highest and best citizenship. To divert it from this grand object is to make it inefficient and extravagant in the eyes of the public who support it. It is the opinion of the writer that the devotion of high school work to special ends, more than any other single cause, produces adverse criticism of the high school as a public institution, and deters a great number who complete the courses of the lower schools from completing, or even beginning, the high school course.

But these remarks are not intended to convey the idea that the high school should pay no attention whatever to special ends; from the nature of its position it must pay some attention to these. It is only maintained that special ends do not constitute the grand object of high school work. The high school does not exist simply for the purpose of preparing pupils for some college, or technical school, or normal school; nor to serve as a substitute for a normal, or a classical, or a commercial school. And yet it may—nay, must—recognize and support these and many other ends, but only as helps to its one great work. Would it not help to make high school instruction more efficient if its real object were kept more prominent? At least it would remove the ridiculous idea that the high school is the place to foster superficial culture, or “rose-water” accomplishments.

What does the high school do towards preparing pupils for active life? As an answer it may be said, “all that it is in a condition to do.” Here and there a school has something that is called a “business course.” The probability is that it ignores that timely remark in a recent report before the Massachusetts Teachers’ Association: “It is the trained mind, not the details of the accountant’s art, that makes the best foundation for a successful career in commercial life.” Can not a similar criticism be made concerning most of the so-called “English courses” and “scientific courses,” so much in vogue at the present day?

It must be confessed that the idea of preparation for active life has not been developed as much as the idea of preparation for higher schools. The great need of the high school of to-day is more efficient preparation

for active life, and that without detracting from the preparation for the higher schools. And here, let it be remembered, the term "efficient preparation" refers to quality rather than to quantity. Indeed, there may be less of Greek that halts, of Latin that lapses, of French that bumbles, and of English that groans, but there must be more of correct methods of thought, of study, and of expression—more of true language; fewer algebraic puzzles and trigonometrical formulæ, but more of mental "muscle" to grapple with the vicissitudes of life; fewer scientific curiosities, but more of observation and of judgment. There should be less overloading the memory indiscriminately, and a greater and more systematic effort to *develop* the memory and along with it observation, comprehension, reflection, judgment, invention, self-reliance, resolution, and other powers of the mind so necessary, not only in practical matters, but also in matters of theory. In a word, in order to prepare pupils more efficiently for active life, the instruction should be subjective as well as objective.

It would seem that the invaluable "object methods" of instruction often fail to achieve the results they should, through being made *too* objective, a failure plainly due to the teacher and not to the methods. And right here is the door to a very great improvement in the efficiency of instruction. Let the teacher himself exercise his own powers more and those of other people less, become more subjective and less objective in his work. Not only should he develop his own individuality, but he should also strive to develop individuality in his pupils; and he should not allow his instruction to be merely an accumulation of information, but, as it were, should grind and bolt and proportion and leaven and bake it, and then, before it is dealt out, should provide that a vigorous appetite be awakened by a seasonable alternation of rest and of exercise. He must remember that his pupils do not live to eat, but eat only to live.

However, the great difficulty is for the teacher to learn to instruct himself and to become subjective in his methods, when he is himself the product (might we not say the victim?) of an objective method. It is only by efforts almost Herculean that he can accomplish this, and so come to feel the thrill of independence in his mental work as a strong man feels the thrill of health in his physical labor. Such a teacher is a real *leader* of youth, an educator, and is not a driver of mental dyspeptics.

The writer believes that for a suitable preparation for active life the teacher who uses subjective methods is indispensable. With the school in the hands of such a teacher, the curriculum would become very much modified, a new order of text-books would be demanded and would be produced, pupils would not be so willing to graduate from the lower schools directly into active life, and the question of the economy of the high school would lose much of its force. And yet it is to be feared that there are not many among high school teachers who have the resolution, or even the disposition to undertake subjective methods.

In this connection it is to be remarked that there should be greater encouragement to recognize high school instruction as a noble and permanent profession. The college stripling whose only qualification is a mass of second-hand information, and whose only object is to raise funds enough to help himself into some other profession, should not be intrusted with the high office of preparing citizens for active life; nor, on the other hand, should the efficient teacher be subject to the whims of local politicians. The teacher also should be held to exemplify practical

morals in the most scrupulous manner, especially with regard to the securing and the leaving of positions.

There is a pernicious practice on the part of parents and of pupils, not to say of teachers, that cannot be condemned too strongly, and the removal of it would promote efficiency very much—the practice of indulging the childish fancies and tastes of pupils with reference to the selection of studies. This is in direct opposition to the plainest teachings of common sense. In the development of the physical system, no one disputes the propriety of bestowing special attention upon the weaker parts; but in the development of the mind, it is only the stronger powers that are encouraged and fostered with care. And what shall we say of the folly of intrusting to an immature, illy-developed judgment the selection of the field of its future success or failure, and of hazarding all upon a temporary impulse or fancy?

There are other important considerations that the lack of time forbids mentioning, but they can all be summarized in the statement of that prime requisite of good citizenship, *Mens sana in corpore sano*, a maxim that should be inscribed upon our walls and worn upon our brows, so that it might be a perpetual reminder to parents and to teachers and to pupils.

## FEMALE EDUCATION IN ONTARIO.

BY REV. ALEXANDER BURNS, D. D., LL. D.,

*Governor and Principal of the Wesleyan Ladies' College, Hamilton, Ontario.*

In Ontario, as in other countries, the higher education of women was not originally considered an essential part of even a complete system of education. Our common schools, high schools, normal schools, and our University are all established on a liberal scale, and are cause of just pride to our Province.<sup>1</sup> To the normal schools women have always been admitted, and a large proportion of the teachers in our public schools have been women—many of them prepared in these normal schools, and a number in the high schools. But beyond furnishing the facilities for preparing to become school teachers the State has done absolutely nothing for the higher education of women.<sup>2</sup>

But while the matter has been thus ignored by the State, private generosity has largely supplied the appliances and facilities to give women an introduction to those higher walks of literature, science, and philosophy, so long monopolized by the sterner sex.

In no country has higher education depended more on private effort, and in no country has it received a more generous support. The first institution opened for higher education was the Upper Canada Academy (now Victoria University, Coburg)—the offering of the Methodists of Canada. It has been followed by several others on the voluntary basis, and Victoria, Queens, Trinity, and others have done work and wielded an influence that would be a credit to the colleges of any country.

So in efforts for the higher education of women. The first ladies' college opened in the Province, the Wesleyan Ladies' College of Hamilton, was under the auspices of the Methodist Church. This also has been followed by others, furnishing ample accommodation to all aspiring after a liberal education. There are at present seven ladies' colleges that have been established by denominational patronage, and have never received any assistance from the State. Of these the Methodist Church has three—the Wesleyan Ladies' College of Hamilton; the Ontario Ladies' College of Whitby; and the Alma College of St.

<sup>1</sup> From the Report of the Minister of Education it will be seen that the number of girls attending the public schools in 1883 was 220,698; Roman Catholic separate schools (not reported, but estimated at), 12,000; high schools, 5,787; normal schools, 213; provincial model schools, 377; total, 239,075, out of 503,482 pupils reported as attending these institutions in 1883. The number of female teachers employed in the same year was: public schools, 4,082; Roman Catholic separate schools, 300; high schools (not reported, but estimated at), 75; provincial normal and model schools, 10; total, 4,467, out of 7,686 teachers of these schools reported as employed in 1883. The number of females receiving or imparting instruction in these various institutions in 1883 was 243,542, out of a gross total of 511,168 so engaged in that year.—J. G. H.

<sup>2</sup> A tardy admission has been granted to women to attend lectures with male students at University College, Toronto, but this involves no extra expense or special grant.

Thomas. The Church of England has two—the Bishop Strachan School at Toronto, and the Hellmuth Ladies' College of London. The Presbyterian Church has two—the Ottawa Ladies' College, and the Brantford Ladies' College. Although these institutions are under denominational auspices, still no sectarian test or subscription is required of their students, and even their faculties represent several denominations. Besides these colleges, each Roman Catholic diocese has one or more convents for the education of women, and, in some of them, the higher branches receive considerable attention.

To give an idea of the work done by these colleges it will be necessary to particularize somewhat; and for this purpose I will take the oldest of them, the Wesleyan Ladies' College of Hamilton. The chief difference between its curriculum and that of the ordinary college for gentlemen, is in the classics—the Latin and Greek. In other respects the course of study is fully equal to the pass work for the ordinary B. A. Indeed, in some departments it is more extensive. Two courses of study have been established, a classical and an English; the latter requires no other language than the English. In the classical course, Latin, French, and German are each carried through the whole course of four years. Mathematics extends through algebra, geometry and trigonometry. Physiology, zoology, botany, chemistry, and geology receive due attention. A very full course in history—ancient, modern, and biblical—is required. The study of English literature is pursued daily through two years. Logic, mental and moral science, and evidences of Christianity are studied, both from lectures and in the ordinary university text-books on these subjects. We are quite safe in saying that the graduate of this college has taken a course which, with the exception of the Latin and Greek, is fully equal to that required by the average British college for pass work. That women appreciate opportunities for higher studies is seen in the fact that this college alone has graduated nearly 200 ladies, and has had in its classes since 1860 over 2,000. The present senior class contains a dozen young ladies whose work consists in studying logic, psychology, moral science, evidences of Christianity, biblical history, and English literature. These are all pursued as in the universities, and by the use of the university text-books. The English literature class is reading critically Chaucer, Shakespeare, Johnson, and Macaulay, after a general study of the subject in Collier and Arnold.

What has been accomplished by the Wesleyan Ladies' College is aimed at, it is believed, in all the others, and several hundred ladies are annually registered in the ladies' colleges of Ontario. Last year the Wesleyan alone had 163.

But few of the undergraduates of these colleges are satisfied with the work of the curriculum. More than ninety per cent. carry side by side with the prescribed course a very liberal course in music and art. A large percentage of the graduates are excellent musicians, able to render with comparative ease the works of Beethoven, Bach, Mendelssohn, Chopin, and Liszt. Many of them are also well advanced in art studies,—drawing, water colors, and oil painting. Indeed, to one acquainted only with the old standard curriculum for men, it must always be a matter of wonder how ladies can manage to carry so much of what are called the "accomplishments" in addition to the ordinary collegiate course. I am thoroughly satisfied that the work completed by the graduate of this college is fully equal to that required for graduation in the best of our colleges for gentlemen. It is also worthy of mention that the lectures and recitations of this college are supple-

mented by experiments in chemistry and physics, by an extensive collection of specimens illustrative of geology, mineralogy, and natural history, and that pupils have free access to globes, maps, charts, and the standard books of reference. The examinations are written and conducted by specialists in the several departments.

From this brief sketch it will be seen that the higher education of women has not been neglected in Ontario. In the ladies' colleges alone, any young lady can obtain an education as extensive and as practical as even the most cultured society need desire. It may be said that the omission of Greek makes a great disparity between the two courses of study. In reply we would call attention to the fact that Greek is rapidly becoming an elective study everywhere. But should ladies ask for the Greek, it could easily be furnished, as most of the ladies' colleges of Ontario have classical graduates in their faculties.

In addition to the facilities furnished by the ladies' colleges, the colleges and universities of the Province, hitherto occupied exclusively by gentlemen, are now opening their doors to admit ladies to all their lectures and recitations, and also to their degrees, on the same conditions as gentlemen. This removes the last difficulty out of the way of ladies having every educational advantage that they can possibly desire.

It seems too late in the day to put obstructions in the way of co education. Not that co-education is best for every girl, or that it is likely ever to become universal, but because it is practically the only hope that multitudes can ever have of securing the higher education. No one that has ever become acquainted with the system under fair trial will hesitate for a moment to admit that girls can hold their own in every part of the curriculum. My own experience extended through thirteen years, and during that time I have seen girls lead their classes in the most unlikely subjects,—in Aristophanes, Æschylus, and Euripides, and the gentlemen in these classes would have been considered fair Greek scholars anywhere. I have seen the same thing in the differential and integral calculus. That matter is settled beyond a doubt. There can be no possible objection to co-education on the ground of intellectual inequality, nor is the girl's health more likely to suffer than her brother's. The closest observation and the most extensive statistics, stretching over half a century in some cases, have abundantly proved this. Oberlin, Antioch, the colleges in the Northwestern States, and Cornell, for a shorter period, attest the same.

Neither does co-education increase the difficulties of discipline. I have no knowledge of any ladies having become less delicate and refined through the presence of gentlemen. I *have* known very noisy meetings brought suddenly to order by the entrance of a few ladies. Manhood is at a low ebb when its better phases respond not to the presence of woman. An appeal to the colleges in which co-education has been fairly tried will dissipate at once all fears touching any of these objections. Prejudice may retard the movement for a time; so may the awkward antics of a few inconsiderate freshmen; but already is the battle fairly and fully won.

Still there will always be a large number of our people who will prefer to have their daughters educated at the ladies' colleges; and there will always be a goodly percentage of girls who will do better in such institutions than in those to whose classes both sexes are admitted. There will always be mothers who will think more of the surroundings of their children while receiving their education,—of good taste, of delicacy of thought and action, of refinement of manners, of those items whose sum total constitutes true lady-like culture, than of the intricacies of syntax

or the subtleties of metaphysics; and who can blame them? But when ladies' colleges furnish all the advantages offered by the other institutions in both syntax and metaphysics, and in addition supply the demands of woman for instruction in music and art, and kindred subjects that lend a charm to home and social life, they will assuredly be preferred for many a day by the leading families of our country.

I would open to women all the colleges of the land,—technical institutions included. The ladies' colleges will still be needed.

These institutions should be encouraged more than they have been, for they have done a work of incalculable value to the country—a work that but for them would not have been done. “Who educates a woman educates a race”; and these colleges have sent into thousands of homes in Canada a pure Christian refinement and a lofty, peaceful patriotism that will tell on the ages yet to be.

The Government should recognize the degrees conferred by these colleges. True, they do not represent as much Greek and Latin as the usual degree, but they represent an equivalent in other subjects, that are of perhaps equal value in the homes of our land. Then if the present curriculum is not satisfactory, let it be made so. The ladies' colleges will not object to a change for the sake of securing a recognition that has been most unreasonably refused hitherto.

The present outlook for the higher education of women is, upon the whole, promising. No lady need leave our Province to secure even a university education and a university degree. Those who wish to couple with a liberal education in arts the accomplishments peculiar to a ladies' college have all that they can desire or use. And it may reasonably be predicted that ere long the Government will give such recognition to the colleges that have pioneered and conducted the grand work of woman's education that a new impetus will be given, new courage infused, and still better equipment will respond to the increasing demands of a more exacting one.

*Note.*—To the foregoing valuable paper by the Rev. Dr. Burns I have added the following, prepared by me for the Education Department, and incorporated as a pamphlet which was sent to the Conference on Education held in London, England, under the presidency of Lord Reay, in August, 1884:

Schools and colleges for the higher education of women in Ontario comprise:

1. The Wesleyan Female College, Hamilton.
2. The Bishop Strachan School, Toronto.
3. The Hellmuth Ladies' College, London.
4. The Ontario Ladies' College, Whitby.
5. The Brantford Ladies' College.
6. The Ottawa Ladies' College.
7. Alma College, St. Thomas.

1. *The Wesleyan Female College* is incorporated by Act of the Provincial Legislature, and was opened in 1861. Although in connection with the Methodist body, its President and members of the Board may belong to other Protestant denominations, from whom many pupils come, and they are at full liberty to attend their own churches. The college has power to confer scholastic distinctions, and its graduates include several from the United States and other countries. Some of these are now missionaries in the Northwest, and also in Japan.

2. *The Bishop Strachan School* was founded by the late Bishop of Toronto, the Rt. Rev. John Strachan, D. D., in connection with the Church of England. It is open to all pupils who may conform to its regulations. It was incorporated by Act of the Provincial Legislature in 1868 (31 Vic., chap. 57), but began work on September 12, 1867. It removed in 1870 to its present building, Wykeham Hall, where the accommodation, both in buildings and grounds, is very suitable for its objects. The course in certain branches is about equivalent to that of the second year at the University, and pupils are prepared for the examinations in the course of study for women at Trinity College. Regular instruction is also given in Christian evidences, Scripture and Church history, and catechism. The Bishop of Toronto is President of the governing Board.



3. *The Hellmuth Ladies' College* is situate near the city of London (Ontario), and was founded by the Right Rev. I. Hellmuth, D. D., the Anglican bishop of the diocese of Huron. It was inaugurated in 1869 by H. R. H. Prince Arthur. H. R. H. the Princess Louise became its patroness on her visit in 1879. It is now affiliated with the Western University, and is under the personal supervision of the Bishop of Huron. It stands in spacious grounds on the banks of the River Thames.

4. *The Ontario Ladies' College* at Whitby was incorporated by Act of the Legislature in 1874, and inaugurated by Lord Dufferin. It is in connection with the Methodist Church. The course of instruction involves the elementary and higher branches up to the standard of matriculation in Victoria College. The buildings are extensive, and are surrounded by grounds of large extent.

5. *The Brantford Young Ladies' College* was established in 1874, and is in connection with the Presbyterian Church in Canada. Its object is the higher education of young women, for which instruction is provided in the literary, music, and fine arts departments.

6. *The Ottawa Ladies' College and Conservatory of Music* was incorporated by Act of the Legislature in 1869, and is in connection with the Presbyterian Church, and the majority of the Board of Management are required to be Presbyterians. This college was founded to meet the views of those who desire to place higher education within the reach of young women.

7. *Alma College* was established at St. Thomas, in connection with the Methodist Church, for the higher education of ladies, and as a separate institution for this purpose in addition to "Alexandra College"—the ladies' branch of Albert College at Belleville.

Besides the ladies' schools mentioned, there are convents in each of the Roman Catholic dioceses of the Province, in which much attention is paid to the higher subjects of education for ladies. They are respectively situate at Toronto, Ottawa, Kingston, Hamilton, and London. Superior private schools for the education of young ladies exist in Toronto and other places in Ontario.—J. G. H.

## AGRICULTURAL EDUCATION IN ONTARIO.

BY J. GEORGE HODGINS, M. A., LL. D.,

*Deputy Minister of Education for Ontario.*<sup>1</sup>

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"Book farming," as it was often derisively called, was for a long time looked upon with contempt in this Province; and unfortunately, too, such an opinion was often held and freely expressed by the more energetic and successful farmers. The cause was not far to seek. It involved a knowledge of "agricultural chemistry" and kindred subjects, the very name of which was enough for such men, who, in the early times in this Province, knew very little beyond what their own experience and good sense taught them, and, therefore, despised "book learning" of any kind.

It was not until some men of mark amongst us, such as the late well known and esteemed Hon. Adam Ferguson, and the late lamented Hon. David Christie, introduced scientific farming into this country with remarkable success, that public opinion, especially amongst the farmers themselves, began to change. The interest, too, excited in the farming community by the success of and competition at the county and provincial agricultural fairs, deepened the conviction—at all events in the minds of the younger generation of farmers and farmers' sons—that there was "something in it" after all, and that "book farming" was not to be despised.

The late Rev. Dr. Ryerson did all in his power to foster this better feeling in the country. In 1847, when the Government House and its spacious grounds in Toronto were under his control (for the purposes of education offices and normal school), he freely placed these grounds at the disposal of the Provincial Agricultural Association every year, for the purposes of their annual fair. In his Report, too, on a "System of Public Elementary Instruction for Upper Canada," published in 1846, he thus referred to the subject of agricultural education, which he included in the subjects of instruction which he proposed to introduce (at as early a date as possible) into the public schools. He said:

(12) *Agriculture*—the most important department of human industry—has not yet been introduced in any form whatever as a branch of elementary education in our schools.

The Legislature has given some pecuniary assistance, and societies have been formed with a view to encourage experiments and promote improvements in Canadian agriculture; but experiments without a knowledge of principles will be of little benefit, and improvements in the practice of agriculture must be very limited until the science of it is studied \* \* \* The agricultural pupil should be made acquainted with the different kinds of soils and their characteristic qualities; the modes of qualifying and improving each; different kinds of manure and other improving substances; the effects of different kinds of soil on different crops; rotation of crops, and the best methods of

<sup>1</sup> Prepared chiefly from material sent to the writer by James Mills, Esq., M. A., President of the Agricultural College, Guelph.

producing and securing them; agricultural implements and the machines which have been invented to save labor; different kinds of stock, the various modes of feeding them, with the economical advantages of each; the method of keeping full and accurate accounts, so that the farmer may be able to ascertain precisely, not only his gross profits and losses, but the profit and loss in each detail of the system, and from each field of his farm. Of course specimens, models, pictures, or drawings should be used in teaching these elements of agriculture, etc.

The Normal School for Upper Canada (Ontario) was established in the autumn of 1847. In the programme of studies then drawn up, it was provided that one of the masters should deliver a course of lectures to the students on "Agricultural Chemistry; comprehending the nature of the substances which enter into the composition of vegetables; the sources from which those substances are derived; the origin and composition of soils; the conditions necessary for producing a luxuriant vegetation, etc., etc." In the early spring of 1848, and in addition to these lectures, a portion of the grounds attached to the normal school (*i. e.*, the present Government House grounds) was set apart for agricultural purposes and for agricultural experiments under the direction of a skilled expert. A report of these experiments was regularly made to the Chief Superintendent of Education, and the students were examined in the subject generally.

In 1849, when the seat of Government was removed from Montreal to Toronto (after the burning of the Parliament House in the former city), the Government House (in which the normal school had been held) with the grounds attached was resumed by the Government. The experiments consequently ceased. But the Governor-General (Lord Elgin) was so impressed with the value of the instruction given to the students in agricultural chemistry that he instituted two prizes for proficiency in that subject. For some years these prizes were continued, and much interest was manifested in the competition for them. A chair of agriculture was subsequently established in the University; but the number of students who attended lectures on the subject was not large.

For some years little was done to promote the study of agriculture except the stimulus derived from agricultural publications and the successful agricultural exhibitions, fairs, and farmers' clubs, which gave a special prominence to the subject.

In 1870 the Chief Superintendent of Education, being desirous to carry out his original intention of making agriculture one of the subjects of study in the public schools, prepared a manual on the subject which he dedicated to the Board of Agriculture.<sup>1</sup> In the dedicatory preface he used the following language, striking and admonitory as it is:

Identified as I am by birth and early education with the agricultural population of this country, I regret to see so many of our agricultural youth leave the noblest of earthly employments and the most independent of social pursuits, for the professions, the counting room, the warehouse, and even for petty clerkships and little shops. \* \* \* As a general rule the sons of farmers, as soon as they begin to be educated, leave the farm; this is a misfortune to the parties themselves, a loss to agriculture, and to the country. \* \* \* Politicians are accustomed to call farmers "the bone and sinew of the land"; and bone and sinew they will remain, and never anything else, without education. It is a supreme law, illustrated by all history, that head rules muscle; and all farmers who educate only their muscles, and not their heads, must occupy the inferior relation of muscle. \* \* \* I know it may be said by some, "Our fathers were not educated, and yet were successful farmers." But these very farmers will bear witness that they would have done and felt much better had they been educated.

<sup>1</sup> In his introductory note Dr. Ryerson intimated that his labor in preparing this work was entirely a gratuitous contribution to the cause.

The first and great staple interest of our country requires young men who will devote to agriculture their talents, their attainments, their fortunes, and their lives; and in no other pursuit is a wider and more inviting field of enterprise open to them.

In that year (1870) the distinguished President of the Agricultural Association for Ontario, Hon. David Christie (Senator of the Dominion), in accepting on behalf of the Association the dedication of the "First Lessons on Agriculture for Canadian Farmers and their Families," said:

My conviction is that the [teaching of agriculture] must begin in our common schools; that is, elementary agricultural and mechanical instruction should form a leading part of the teaching. Dr. Ryerson has published a valuable little work on agriculture, which I hope to see made a text book in all the rural districts. \* \* \* Dr. Ryerson has done good service to the country by compiling the manual, \* \* \* and I hope that he will see to it that the benefit which it is so well calculated to confer shall not be lost to the country. It is a good thing for the cause \* \* \* that we have so able a coadjutor as the Chief Superintendent of Education. I feel convinced that he will soon make agricultural and mechanical instruction a leading feature in our common-school teaching.

During the same year, Hon. John Carling, Commissioner of Agriculture for Ontario, in his Report, thus intimated the intention of the Government to promote elementary and higher education in Agriculture. He said in that Report:

What now appears to be more especially needed in carrying forward this great work is, in addition to the ordinary instruction in common schools, the introduction of elementary instruction in what may be termed the foundation principles of agricultural and mechanical science. \* \* \* One enlightened and energetic Chief Superintendent of Education would, I believe, approve and help forward such a movement.

A special agent was sent \* \* \* some months ago to visit the agricultural colleges of the United States, to ascertain and report upon the best and most successful system there adopted, with a view to the establishment of such an institution in this Province. \* \* \* The local Government has already determined upon introducing agricultural teaching into our common schools, and also to establish an agricultural college in this Province during the ensuing year.

The late lamented William Johnston, Esq., M. A., formerly President of the newly established Agricultural College (now situated at Guelph), thus continues the narrative of the establishment of the college. He says:

During the winter of 1870, the Hon. John Carling, at that time Minister of Agriculture for Ontario, commissioned the Rev. W. F. Clarke, editor of the *Ontario Farmer*, to visit some of the agricultural colleges of the United States and report on them, at the same time drawing up a scheme for the establishment of an agricultural college in Ontario. Mr. Clarke's report forms an appendix to that of the Commissioner of Agriculture for the year 1870. A farm at Mimico, seven miles from Toronto, was first purchased, but, on the advice of many experts, whose reports form an appendix to that of the Commissioner of Agriculture for 1872, that farm was sold and the present one at Guelph purchased in the fall of 1873.

#### AN OUTLINE OF THE PRESENT POSITION OF THE ONTARIO AGRICULTURAL DEPARTMENT.

The Ontario Agricultural College is situated on a farm of 550 acres, a mile south of the city of Guelph, in the county of Wellington. The college building, of magnesian limestone throughout, is 240 feet in length, of an average depth of 42 feet, and is of two stories and a basement. The center portion has an additional story. It contains the usual public lecture rooms, library, reading-room, museum, and at the present time a small laboratory. Connected with it, at the rear, are the dining-rooms, kitchens, laundry, matron's, and servants' apartments. The staff is composed of:

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|-------------------------------------|---------------------------|
| 1. A President.                     | 5. Mathematical Master.   |
| 2. Professor of Agriculture.        | 6. Farm Foreman.          |
| 3. Professor of Science.            | 7. Horticultural Foreman. |
| 4. Professor of Veterinary Science. | 8. Mechanical Foreman.    |

I. *The course of study*, which is of one or two years, includes the following subjects:  
*First year.*—Practical agriculture, veterinary anatomy, veterinary materia medica, physical geography, chemistry, botany, zoology, English, and mathematics.

*Second year.*—Agriculture and horticulture, veterinary pathology, veterinary sur-

gery and practice, agricultural chemistry, economic botany, entomology, meteorology, book-keeping, leveling and surveying, English literature, and political economy. And these are arranged under the departments of

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|-----------------|-----------------------------|
| 1. Agriculture. | 3. Veterinary science.      |
| 2. Science.     | 4. English and mathematics. |

Connected with the course of study in the class-rooms is, outside on the fields and in the yards, barns, stables, and shops,

II. *The course of apprenticeship, which is divided into*

- |                               |                                  |
|-------------------------------|----------------------------------|
| 1. The field department.      | 3. The horticultural department. |
| 2. The live-stock department. | 4. The mechanical department.    |

The terms of admission to the regular course is the educational standard requisite for entrance into the high schools of the Province. The academic year is divided into two sessions, the winter one beginning on the 1st of October and ending on the 31st of March; and the summer session commencing about the 16th of April and closing on the 31st of August. The library is still very small, as are also the laboratory and the museum. The boarding-house, when fully completed, as it will be in a month, will accommodate 140 pupils, and that number has already, I understand, entered. It is directly under the charge of the President, assisted by the mathematical master. The farm is all under cultivation, except four groves of woods, which are purposely left upon it. The farming is that which is generally known as mixed farming. More attention has been paid to the actual farming and stock breeding than has been given to them in any other agricultural college in America. There are herds of the improved shorthorn, Ayrshire, Hereford, Devon, and polled Angus breeds of cattle; flocks of the Cotswold, Border Leicester, Oxford Down, and Southdown breeds of sheep; and of the improved Berkshire and small Suffolk breeds of pigs. The latest implements and machines are used, including a steam thrasher and a steam pulping apparatus. The horticultural operations are subsidiary, but on a sufficiently large scale, the kitchen garden covering six acres, and the flower gardens, lawn, and shrubbery extending over twenty-five more. The mechanical department, which is also subsidiary, has confined itself hitherto to permanent improvements, in the shape of fencing, draining, and building, with repairs and setting up of all implements and machinery. The students labor on a daily yearly average at least five hours a day—that is, the whole day during the summer months, half the day during the spring and autumn months, and a shorter time during the winter ones. Thus, leaving out the evenings, half the day, counting the whole year round, is taken up with the course of apprenticeship, and the other half with the course of study. The students are allowed for skilled labor at a maximum rate of ten cents per hour. The rules and regulations need not be enumerated.

The whole expense is borne directly by the Provincial Legislature, there being no endowment fund. The cost of yearly maintenance is about \$22,000; and at the close of this year the Province will have expended on capital account, in the shape of a farm, buildings, and other permanent improvements, very nearly \$200,000. The proceeds of the farm and stock have hitherto been spent in building up the farm. Fees have only been charged for a short time, students from the Province now paying a tuition fee of \$25 per annum, and from outside the Province, \$50 per annum. The management of the outside is under the charge of the farm superintendent and professor of agriculture, that of the inside under the President, and the financial management of the whole under the bursar. There is no board of trustees or regents, or any other advisory body; but the whole institution, and each and all of the officers, are directly under the charge of the Commissioner of Agriculture, who is directly responsible to the Government, the latter to the Legislature, and that, of course, to the people. In conclusion allow me, in no boastful spirit, to point out that the Ontario Agricultural College excels in its basis any other on the continent of America, and in any part of Europe or Germany, in these five cardinal points—points which we have seen lie at the foundation of the success that has been achieved by any in existence in teaching simply agricultural education:

1. It does not attempt anything but strictly agricultural education.
2. It is not a mechanical or general industrial college.
3. It is not in any sense a literary institution, with a leaning to agricultural subjects.
4. It places as much importance on a course of apprenticeship as it does on a course of study.
5. It makes manual labor a stern reality as well as a name, causing its students to perform the work of a farm of 500 acres.

It is deficient in many of the appliances for teaching, far behind many of the other institutions we have described in its equipment, and inferior to the most of them in the number of its teachers, but its foundation is fairly good, and its progress, whilst already gratifying, is, I may be allowed to say, along the line that experience shows us can alone lead to permanent success.

In his evidence before the Ontario Agricultural Commission (in 1880), the present able President of the Agricultural College at Guelph, James Mills, Esq., M. A., elaborates this statement of his predecessor, Mr. Johnston, and gives the fullest particulars as to the condition and great value of the college. Want of space forbids its insertion here.

The present staff of the college is as follows: James Mills, M. A., President, Professor of English Literature and Political Economy; William Brown, C. E., P. L. S., Professor of Agriculture and Arboriculture; R. B. Hare, B. A., Ph. D., Professor of Chemistry, and Lecturer on Geology and Meteorology; J. P. Playfair McMurrich, B. A., Professor of Biology and Horticulture, and Lecturer on English; F. C. Grenside, V. S., Professor of Veterinary Science; E. L. Hunt, Assistant Resident and Mathematical Master; A. T. Deacon, Bursar. And of the farm, William Brown, C. E., P. L. S., Farm Superintendent; P. J. Woods, Farm Foreman; James Forsyth, Foreman of the Horticultural Department; James McIntosh, Foreman of the Mechanical Department.

The number in attendance at the college is about two hundred. The fees for tuition are: for residents, \$20; for non-residents, \$100. Board and lodging are from \$2.25 to \$2.50 per week.

## TECHNICAL EDUCATION.

BY E. B. WILSON,

*Instructor in Drifton (Pa.) Industrial School for Miners and Mechanics.*

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Technical education is at present engrossing the attention of individuals, corporations, and members of State legislatures. When the attention of the last two is attracted, it may be inferred that skilled workmen are in demand and that the workmen themselves are agitating the question.

The phrase "technical education" at present seems to be enveloped in a cloud of mystery, as its use now signifies practical, as opposed to theoretical, or college training, so that "technology," which formerly signified terms used in the sciences, now carries vaguely with it the meaning of sciences applied to industrial arts. The fact having been long ago recognized that a college graduate without practical experience is no more an engineer than a mechanic without theoretical training is a mechanic, it was decided to institute technical schools, where theory and practice might to some extent go hand in hand. Such schools, however, were designed for those who could afford to devote their whole time to study. It is not the intention of this paper to treat of such schools any more than to classify them, as follows:

(a) Technical schools proper are institutions where the theory and practice of professions are taught; also, those schools where college graduates are taught the practical part of their professions. Such schools are designed for practical professional men who have means and time at command for study.

(b) Secondary technical schools, designed to make skilled and intelligent workmen. We may subdivide this latter class into industrial schools where trades are taught, and industrial schools where studies are pursued by those learning or having trades.

It is in behalf of this latter class of secondary technical schools that your attention is solicited; for here the harvest will be greatest, and it is to be hoped the reapers will be most numerous. The utility of such schools has been demonstrated beyond a doubt, as those instituted over fifty years ago in Germany are still continued. The Drifton Mining School, organized in 1879, by Hon. Eckley B. Cox, has also proved the same fact, although not conducted on so large a scale.

Experience has taught us that study, after a day's manual labor, is injurious, oftentimes oppressive, and never accomplishes as much as study in the daytime. As a scholar once put it, "some evenings I understand everything and the time flies, other evenings I cannot understand one thing and the time drags." Besides this, the limited time will not allow the ambitious pupil to advance speedily enough to compensate him for this extra endeavor; at least, many seem to think so, and therefore become discouraged and give up in disgust. When, however, a part of the day is devoted to study, we approach more

nearly the best of "technical schools." For such schools we have poorer material, educationally not mentally, hence we must begin with a low grade of studies.

In this elementary department the more difficult work of the school is encountered, as here we may expect scholars whose ages will vary from 15 to 35. The younger scholars are more apt than the older, but the older, better comprehending the importance of an education, apply themselves the more diligently, so that as far as age is concerned this difference is about equal. The scholars who will attend such schools, besides being deficient in education, oftentimes come from uneducated parents, and having associated with persons of the same ilk are exceedingly deficient in words, expression, and ideas. With such material, it is very necessary to cultivate from the start their expression and perceptive faculties, by asking questions and having the pupils describe some easy subject orally and by writing. Schools of this class should be designed particularly with reference to the employment of the scholars, so that what they learn may facilitate the understanding of their work. In such classes object lessons, free-hand drawing, and mental exercises should be taught, besides the common-school branches. When such studies have been thoroughly mastered the first class of the industrial school proper may be formed. The time required for a scholar to finish his studies in such schools will depend upon the time allotted for study, the proficiency of the candidate, and object to be attained. With four hours per day devoted to study and exercises very fair progress may be made, even if two of the hours are at night, but just two hours at night are not enough. The studies most essential are, first, arithmetic and algebra, studied by working out numerous practical problems, and doing this as far as possible analytically. Second, geometry and trigonometry; text-books such as "Davies' Legendre" or Loomis's are well suited for such schools, because such books are clear and precise, and aid greatly in developing the reasoning faculties and arriving at correct conclusions in a methodical manner. The teaching of them should not conform to school methods, or be in any way mechanical, but so as to be thoroughly understood; the pupil should be able to demonstrate the theorems, not necessarily in the language of the author, but so that he shows he knows them himself and can explain them to others. These studies are so important that they should be continued throughout the entire course, in some one of their numerous phases. Numerous problems should be given to be worked algebraically, and also drawn to scale.

Then come physics and mechanics. Here again practical problems should enter largely into the studies, to illustrate each principle as far as possible and help to fasten it in the memory. No formulas should be employed the  $x$ ,  $y$ ,  $z$ 's of which are not understood, or the pupil is not able to deduce himself; for time consumed in discussion and calculations of abstruse principles and laws, the derivation and application of which have no clear place in the pupil's mind, is but wasted; moreover such formulas tend rather to mystify than enlighten, by giving the pupil a feeling of insecurity (which is very depressing) and also lack of confidence. A person without confidence in his ability is never fitted to command.

Grammar, composition, and keeping accounts should enter largely into the curriculum. The uses of these are so well known and appreciated that it is needless to mention them.

Drawing is not, as perhaps the majority of people consider, a merely ornamental study, as there is no mechanical industry requiring con-



structive skill which does not to some extent employ the principles of drawing. In an industrial school it should form one of the chief studies; for, as James Nasmyth put it, "one can with a few strokes of the pencil make clear that which any number of words will fail to explain intelligibly." Beginning with free-hand, it should embrace mechanical and perspective drawing, and cease only after a course of construction and designing has been finished. Models, plates, geometrical problems, drawing to scale from actual measurements, and lastly designing, should be the methods employed in teaching.

We claim for drawing that it is applicable to the mechanical arts, develops artistic perception and power of correct expression; it enables the artisan to interpret the work and carry into effect the plans of the designer; it trains the hand and eye, and secures manual accuracy and dispatch; it encourages neatness and carefulness, and broadens perception; it teaches observation, and, in short, meets the requirements which a good mechanic should possess more than any other one study. The object being to produce skilled workmen, drawing should be industrial rather than artistic; still, in free-hand we have discovered artistic skill in the pupils, and would recommend it, since it trains the hand and eye more, probably, than mechanical drawing. It is a curious circumstance that the less intelligent very often are the better scholars in free-hand drawing.

The studies above enumerated are the A B C of mechanical pursuits, therefore they have been mentioned; but the object to be attained by the school or scholars must determine the character of the future studies, and the depth to which the above should be entered into.

The method of teaching will be to some extent dependent upon the teacher's ingenuity and the time for study. Teachers for such schools must be experienced men in practice, as well as possessed of theoretical knowledge; they must take an interest in their work, be able to explain clearly and precisely, and at the same time interest their pupils. The progress made in these, more than in any other schools, will depend upon the teacher's ability to make each subject clear; for the scholars will not have time to devote to books, and so make up what the teacher lacks; besides, it is one thing to understand a subject for one's-self, but an entirely different thing to explain what one knows so that others will understand it.

In Germany the teachers are taken from the different departments of the works, and teach those branches in which they are specially employed. This is a good plan, for it insures practical men being employed; but at present our engineers have enough work and worry without the work of teaching being saddled upon them; besides, I doubt very much if every engineer is capable of teaching, or, even if he be that, that he will find time to devote to the preparation of his lectures and to equipping himself for school-work, especially where the teaching will depend so much on the preliminary remarks which should accompany each exercise. A teacher in any class of schools should always study a lesson before attempting to teach it, no matter how well he supposes he knows it, for he will be questioned severely. Other requirements for such work, besides ability, are pluck, patience, and never tiring in explanation, even when it has to be done individually with each scholar. Apparatus, diagrams, etc., should be employed for illustration, for the mind will grasp ideas better when explained in the above manner. Studies should always when possible be illustrated by practical examples.

Some claim that it is better to work *for*, than *to*, answers, claiming that it gives confidence, and insures the scholars' performance of the work. After four years' experience we can see no grounds for such statements, and prefer to have the scholars work to answers in most cases; for our time is limited, the mistake can be more easily found and corrected, and it is much more satisfactory to the pupil. We claim that this method will foster self-reliance fully as much as any other we have yet come across.

There are numerous good elementary text-books, not so voluminous as the German, but this may be considered a good point. If such books lack illustrations and examples, the teacher should be capable of manufacturing them, or at least obtaining them from other text-books.

The object of this paper has been to call your attention to industrial schools. Your congress will probably treat of higher education, but it is our firm belief that you can treat of no more useful branch of schools than the one here spoken of. Being in a position to know how much interest is taken in them by the state, individuals, corporations, and workingmen themselves, we can state it is very great, and therefore demands your attention, as it is for the benefit of the masses individually and the nation as a whole. For supplying skilled labor, and at the same time intelligent labor, these schools are indispensable.

# THE MECHANICS' INSTITUTES IN THE PROVINCE OF ONTARIO.

BY OTTO KLOTZ,

*President of the Association of Mechanics' Institutes of Ontario.*

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## I. THE OBJECT.

The original object of the establishment of mechanics' institutes was to organize a system of instruction which would prove best adapted to impart useful knowledge for practical life to the industrial classes.

To accomplish this object it was deemed essential to establish a *library* with suitable books and accessible to each member; a *reading room* supplied with good reviews, magazines, periodicals, and newspapers, and open at convenient hours; and *evening classes* under the direction of competent teachers, whereat any member desiring the same might obtain either elementary or technical instruction.

This system of instruction was considered as a continuation, and an enlargement for practical adaptation, of the system of instruction pursued in the common schools of the country, and especially in those branches which have a direct bearing upon the occupations of the mechanic, the artisan, the tradesman, the farmer, and the housewife; and it is for this reason that the name "mechanics' institute" was adopted.

The original object obtains to the present day, though the system of instruction has from time to time been enlarged and improved, in accordance with the progress of the institutes and the demands of the public, and the membership at present numbers representatives of various professions and callings.

## II. THE PRESENT SYSTEM OF INSTRUCTION.

The present system of instruction consists of:

(1) A library comprising works specially adapted to mechanics, manufacturers, artisans, tradesmen, farmers, and housewives, as also works on science, fine arts and decorative art, biography, history and travels, poetry and drama, dictionaries, encyclopædias, and standard novels. The books are properly classified, numbered, and catalogued, easy of access, and readily found whenever required by members.

(2) A reading room supplied with magazines, periodicals, reviews, and newspapers.

(3) Evening classes held in suitable rooms, supplied with the requisite accommodation and apparatus, and under the superintendence of competent teachers, where elementary and technical instruction are given. The elementary instruction comprises: (a) Writing (including shorthand and telegraphy), book-keeping, English grammar, arithmetic, and mensuration; (b) drawing, and the elements of physics and chem-

istry. The technical instruction comprises: Primary grade, B—(a) free-hand drawing from flat examples; (b) practical geometry; (c) linear perspective; (d) model drawing; (e) drawing from memory. Second, or high grade, A—(a) shading from flat examples; (b) outline drawing from the round (cast or nature); (c) shading from the round; (d) drawing from flowers and objects of natural history; (e) advanced perspective; (f) descriptive geometry and topographical drawing; (g) drawing from dictation; (h) machine drawing; (i) building construction; (j) industrial design.

(4) Public lectures, either general-subject lectures or scientific lectures, the former upon any subject which is considered by the Board of Directors to be instructive and useful, and at the same time interesting; the latter upon a special subject of popular science, and illustrated by objects and apparatus.

(5) As auxiliaries to that system there have been added amusements, diversions, and recreations; these comprise concerts, public readings, recitations, picnics, excursions, and recreation rooms supplied with billiard tables and tables for chess, checkers, and other innocent games. These auxiliaries have been found to be of considerable benefit to all partakers thereof, while at the same time they have in many instances argely aided in improving the finances of the institutes.

### III. THE FUNDS OF THE INSTITUTES.

The funds for the maintenance of the institutes are supplied, (1) by the annual subscriptions of members, which according to the by-laws of the respective institutes varies from one dollar to three dollars; (2) by the annual legislative grant from the treasury of the Province, paid over under certain conditions (more fully explained under V); the maximum for any one institute is at present four hundred dollars; (3) by an occasional or a regular annual grant from the funds of the municipality in which the institute is established; (4) by the proceeds derived from lectures, concerts, or other entertainments; and (5) by donations.

### IV. THE ASSOCIATION OF MECHANICS' INSTITUTES.

In order to have a bond of union for the numerous institutes in the Province and a representative head, "The Association of Mechanics' Institutes of Ontario" was formed by authority of a legislative enactment. This Association is a body corporate, composed of all such institutes as elect to join the same; its officers are, a President, a Vice-President, three Directors, and a Secretary-Treasurer. Its object is to promote in a more systematic manner the real purpose of mechanics' institutes, and to devise means for carrying the same into execution. Each associate institute is authorized to send two delegates to the annual meeting of the Association.

The funds of the Association formerly consisted of an annual contribution by each associate institute of five per cent. of the amount of its legislative grant; but that contribution has been abolished, and at present the Association receives an annual legislative grant which is not to be less than twelve hundred dollars.

The surplus fund of the Association, after deducting the necessary working expenses, has been from time to time applied for different purposes, and as considered by the delegates assembled at the annual meetings best calculated to promote the objects of the institutes. These purposes comprise prizes for essays on mechanics' institutes, prizes for

competition at evening classes, books for presentation to institutes, and payments toward the charges of lecturers who deliver authorized lectures under the auspices of institutes.

The officers of the Association have from time to time laid before the Government of the Province the wishes and desires of the public in respect to extended privileges and further aid through legislative enactment, as the same have been expressed by the delegates at the annual meetings; and it is most gratifying to record that in the majority of cases those representations have been favorably received and enactments passed in conformity therewith.

#### V. LEGISLATIVE AID.

Although the Legislature of the old Province of Canada as early as 1847 did grant out of the provincial treasury assistance to several mechanics' institutes then in existence, and repeated such grant during some of the following years, it was not until 1868 that mechanics' institutes were acknowledged by statute as annually entitled to legislative aid.

Immediately after the confederation of all the Provinces into one Dominion and during the first session of the first Parliament of the Province of Ontario, an Act was passed which provided that "Any mechanic's institute incorporated in due form, having evening classes organized for the imparting of practical instruction to its pupils; or having established a library of books on mechanics, engineering, or chemical or other manufactures, shall be entitled to receive from the unappropriated moneys in the hands of the Treasurer of the Province, for the purpose of aiding in such class instruction, or technical library, or both, a sum not to exceed two hundred dollars in any one year. Provided the sum so paid shall not be greater than the sum locally contributed or appropriated by such institute for such specific object or objects."

During the second session of the same Parliament, in 1869, the above-cited Act was amended by substituting the words "manufactures, agriculture and horticulture, science, the fine and decorative arts, history and travels," for the words "engineering, or chemical or other manufactures."

A most important improvement was granted during the fourth session of the first Parliament, in 1871, upon the petition of the Association, by an enactment which increases the legislative grant from two hundred dollars, as above recited, to four hundred dollars; and which moreover provides that a sum equal to one-half of the amount to be so paid by the Government is locally contributed or appropriated, or has been expended by such institute during the current year for such specific object or objects.

The demand for a larger variety of reading matter, however, increased, and upon representation by the officers of the Association of that demand to the Government, an amendment to the last cited Act was made during the second session of the second Parliament, in 1873, allowing institutes to expend not exceeding one-fourth of the legislative grant and its equivalent from local contribution for the purpose of a reading room, and adding to the list of authorized subjects of library books, works on philosophy, poetry, and biography; in fact, it was permitted to purchase books upon any subject, except works of fiction and licentious works. But the reading public demanded works of fiction, and at a special meeting of the delegates held in 1879 it was decided by a large

majority to apply for permission to purchase works of fiction with the money received as the legislative grant.

The Legislature in 1880 granted certain powers to the Educational Department, including the power to make regulations for instruction to be given in evening classes, and for the purchase of books other than those expressly authorized by the Act. Accordingly the officers of the Association waited upon the Honorable the Minister of Education, and succeeded in obtaining his permission to expend not exceeding twenty per cent. of the legislative grant in the purchase of standard works of fiction approved of by the Department. Another encouragement given by the Minister of Education for the promotion of evening classes of technical instruction is, that each institute which expends at least \$50 (exclusive of fees) in addition to the legislative grant of \$100 for evening classes, shall be paid an additional sum of \$1 for every student over fifteen years of age who attends at least two-thirds of the required time, and obtains one certificate; and \$2 for every student who receives two certificates; or \$4 for every student who obtains all the certificates in drawing. And as a further inducement to establish evening classes the Department will forego the local contribution for this purpose, and the directors will not be called upon to raise any definite sum, but may use the government grant of \$100 and the pupils' fees exclusively, to meet the expenses of the drawing classes, on the following conditions: 1, That they engage a properly qualified teacher; 2, that there be at least twelve pupils over fifteen years of age; 3, that the prescribed course of study be followed; 4, that pupils submit to examination at end of session.

The benefit and privileges derived from those certificates are: Certificates entitling the holder to teach industrial drawing in public schools will be granted to successful candidates in grade B; and certificates entitling the holder to teach in high schools, county model schools, mechanics' institutes, and industrial art schools, will be given to successful candidates in grade A. (See grade B and grade A, explained under II.) As a further encouragement to institutes the Minister of Education has permitted to be paid out of the legislative grant the expenses for rent, light, and fuel, and also the expenses connected with authorized public lectures, and for advertising, hall rent, and other incidentals, provided such amount shall, in no case, exceed \$15 for a scientific lecture and \$10 for a general-subject lecture.

Of the representations made to the Government by the officers of the Association at the request of the delegates, expressed at the annual meetings, with a view to the granting of further privileges, which have not been favorably considered by the Government, may be mentioned: An application for an increase of fifty dollars of the legislative grant to any institute for every fifty pupils over two hundred in attendance during the prescribed time at evening class instruction; and an application for permission to institutes to apply a certain portion of the legislative grant for the purpose of assisting in the erection of institute buildings.

It may also be mentioned that the Department of Education has repeatedly by circular informed institutes that no charges for salaries will be allowed to be paid out of the legislative grant.

## VI. THE FREE LIBRARIES.

The Legislature of the Province in 1882 passed an Act authorizing the establishment of "free libraries" in any city, town, or incorporated village in the Province. Upon petition of a certain number of elec-

tors (in cities 100, in towns 60, and in villages 30) presented to the Council, praying for the establishment of a free library under that Act, such Council may pass a by-law giving effect to the petition, with the assent of the electors qualified to vote at municipal elections given before the final passing of the by-law.

In case of the establishment of a free library under that Act, the government, the general management, regulation, and control of the library, and of the news-room and museum (if any), are vested in a Board of Management, whose duties and powers are defined by that Act. And for the purpose of providing for the expenses necessary for carrying that Act into effect, the council of the municipality is required to provide the same by assessment in manner directed by that Act. And it is also provided thereby that any mechanics' institute in the municipality may transfer to the corporation of the municipality for the purpose of that Act, all or any property, real or personal, of the institute.

In consequence of that Free Library Act of 1882, a number of free libraries have been established in cities and towns in Ontario, where at the time large mechanics' institute libraries were in existence, and the mechanics' institutes, by the transfer of their property to the corporation of the municipality of the same place, ceased to exist.

#### VII. THE GRADUAL PROGRESS OF THE INSTITUTES.

The first mechanics' institute was established in Toronto in 1830, and in subsequent years, up to 1868, the number of institutes had increased to 13. The statute of 1868, by which mechanics' institutes were acknowledged as entitled to aid from the provincial treasury, and by which statute the Association of Mechanics' Institutes of Ontario became established, has materially aided the progress and beneficial influence of mechanics' institutes.

In the year 1869, 13 institutes received by legislative aid \$1,610. In the year 1874 there were reported to the Association 50 institutes; of the report made by each the following is the aggregate: Legislative aid, \$15,143. Expenditure for books, \$15,439.99; for periodicals, \$3,945.46; for evening classes, \$4,170.29. Net income, \$42,476.31. Number of members, 8,262; number of volumes in libraries, 67,210; number of volumes issued during the year, 123,000; evening classes held in 23 institutes with 723 pupils; number of lectures, 62; number of concerts and entertainments, 109.

In the year 1883 there were 139 institutes in the Province; of these, 107 reported to the Association for the fiscal year ending May 1, 1884, of which reports the following is the aggregate: Legislative aid, \$22,754.98. Municipal aid, \$3,723.79. Expenditure for books, \$17,609.32; for periodicals, \$4,832.13; for evening classes, \$3,539.97; number of members, 12,878; number of volumes in libraries, 143,108; number of volumes issued during the year, 239,170; and evening classes held in 30 institutes.

The other 32 institutes, with a membership of 2,737, and 27,326 volumes in their libraries, had not reported to the Association up to the time of the annual meeting in September, 1884.

In the Report for 1874 are included those large mechanics' institutes in cities and towns with an aggregate of membership of 2,936 and an aggregate of volumes in libraries of 19,252, and which institutes are not included in the Report for 1883, they having transferred their property to the several corporations of the municipalities for "free library" purposes, and ceasing to be mechanics' institutes in name, although their

large libraries and other property continue to benefit the public by a more extensive use of the same through the free library system.

It may, therefore, be estimated that during the last nine years mechanics' institutes have increased in number at the rate of about 180 per cent., as to membership at the rate of about 125 per cent., and as to volumes in libraries at the rate of about 200 per cent.

The beneficial influence which mechanics' institutes have had, and continue to have, by affording cheap and practical evening class instruction, ample and varied reading matter through books and periodicals, and useful and interesting lectures and entertainments, cannot be estimated by per cent. nor tested by figures; but there are numerous instances known where young men, and even men advanced in years, suffering from the consequences of a neglected or defective education, and thereby rendered unable to pursue with advantage to themselves their daily vocations as mechanics or tradesmen, attended mechanics' institute evening classes, commencing in the elementary branches, and in course of time attended classes in technical instruction; and, aided by self-culture through reading useful books, they became thereby experts in their callings, to the great benefit of themselves and their families.

Far greater, however, is the number of those young men and young women who, by frequenting the reading room and making extensive use of the library, have cultivated a taste for reading good literature; they have gradually yet considerably improved their language, their manners and habits, their morals, and their knowledge; and have become useful members of society. Many a young man has found in one single book a treasure which has been the cause of his future prosperity; and many a young woman has found in the books of a mechanics' institute library the real secret which has enabled her to make the home of her husband happy and herself beloved.

But it is not alone the young men and young women who have received and who continue to receive those incalculable benefits from the library and the reading room of a mechanics' institute; these benefits extend to all members, to men and women of every age, and also to their children.

Parents who employ their leisure hours with good reading not only improve themselves and enrich their own minds, but they are good instructors to their children, and by their example cultivate in the minds of their offspring a taste for good reading, and thereby lay the foundation for the future intellectual development and moral culture of such children.

The first mechanics' institutes in England were called into life by philanthropists, by men imbued with a desire to do good to those adults whose education had been sadly neglected, who either had not received any elementary education or a very defective one, and who were by reason of such defect unable to follow with advantage to themselves their occupations as mechanics or tradesmen. These philanthropists conceived the noble idea of establishing schools of instruction for adults, in the elementary branches as well as in technical instruction, and at the same time libraries containing such books as would be of particular use to such persons.

Actuated by similar motives, and upon a similar plan, the first mechanics' institutes in this Province were established. In the course of years, however, other persons who were not mechanics or tradesmen became members of the institutes, so that eventually every profession, trade, and calling, and both sexes had representatives among the members of mechanics' institutes. This increase of membership necessa-



rily produced demands for a more varied assortment of reading matter, and in consequence thereof books upon numerous other subjects not before deemed necessary had to be added to the libraries.

Another most important factor, which is the main reason why the demand for evening class instruction, especially elementary instruction, did not increase at the same ratio as the membership, is our excellent common-school system, which affords free, good, and liberal tuition to all children in the Province; it was established in 1841 and fully organized in 1850; it is superior to that of many older countries and not inferior to any other.

It is to our common schools (now styled public schools) we are indebted that among the young men and the young women of the present day, there are very few who have not received elementary instruction; the large majority of them now enter upon their duties of life with a fair, and many with a superior education.

Technical instruction no doubt is desirable, and is a valuable acquisition for a large number of young men and young women, the better to qualify them for the position they desire to fill in the community; a systematic plan for that class of instruction, however, has only recently been devised and set into operation by the Department of Public Instruction, with a view that technical instruction, which heretofore has only been given in cities and large towns, may eventually be introduced and maintained in the rural sections of the country.

The want of competent teachers to give technical instruction in its various branches is chiefly the reason that the same has not been more generally introduced into evening classes; for although the Province is supplied with an abundance of well-qualified teachers for the public schools, men who are competent to give technical instruction have been heretofore very rare, and even at the present time are not numerous.

The plan recently introduced by the Department of Public Instruction is designed to remedy this want. The art school at the normal school in Toronto educates its students for the profession of teachers in technical instruction, and provision is made for the establishment of "branch art schools" in connection with mechanics' institutes; a number of those students are now in possession of certificates of qualification to teach, and wherever they have been employed the instruction thus imparted is producing beneficial results.

It may, therefore, be justly expected that by further improvements in the system by the art school, the ultimate purpose of mechanics' institutes may be attained in this Province at a time not far distant, namely, *the technological education of the industrial classes*, both male and female, the mechanic, the artisan, the tradesman, the farmer, and the housewife.

So may it come to pass!



## SECTION C—SUPERIOR INSTRUCTION.

UNIVERSITIES, PROFESSIONAL SCHOOLS, HIGHER COLLEGIATE AND HIGHER TECHNICAL INSTRUCTION.

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## THE NORMAL SCHOOLS AND THEIR WORK IN ONTARIO.

BY JOSEPH H. SMITH,

*Public School Inspector, County of Wentworth.*

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The people of Ontario feel an honest pride in their educational system, reaching as it does from the children attending the primary schools and wrestling for the first time with the mysteries of the alphabet, to the university graduates who seek not only to master the wealth of learning handed down from former generations, but to familiarize themselves with the wonderful achievements of modern science. Nor are we proud of it simply because it offers to every one a comprehensive course of study, and affords excellent facilities for mental culture. We rejoice to know that its influence extends to every hamlet, and the children of the pioneers in the newest and most remote settlements, as well as of the people who live in the midst of a more wealthy, refined, and cultured society, alike enjoy its benefits, and feel its power to elevate and ennoble our common humanity. Our object, however, is not to treat of this system as a whole, but to trace the rise and progress of one department of it, that has done more than any other to awaken an interest in popular education and diffuse among the people more correct ideas concerning the objects aimed at in educating the masses. That department, then, to which we purpose devoting special attention, is our system of normal schools.

In order to appreciate the work done, and rightly value their importance as a part of our system of education, it will be necessary to trace the various stages of growth and development through which they have passed, to examine the work they are now doing, and to note the influence they exert in the education of our children. Following up this outline, we shall proceed briefly to review the history of these institutions from their inception to the present time.

As early as 1836, when this Province was but a sparsely populated colony, the question of providing for the proper training of teachers engaged the attention of those in charge of our educational affairs. No systematic effort was put forth, however, until 1846, when the lamented Dr. Ryerson, then Chief Superintendent of Education, prepared a "Report on a System of Elementary Instruction for Upper Canada," and submitted it to the Legislature. The Government of the day, acting upon the suggestions contained in that report, appropriated a sum of money for the establishment of a normal school for the training of teachers. This school was opened in 1847, under the headmastership of the late T. J. Robertson, M. A., formerly an inspector of schools in Ireland. In 1850 the Legislature voted the sum of \$60,000 for the purchase of a suitable site and the erection of proper buildings. This sum proving insufficient, an additional grant of \$40,000 was made in 1852, making a total of \$100,000.

The first few sessions of the normal school were held in Government House, but owing to the destruction by fire of the Parliament buildings in Montreal, in 1849, the seat of Government was transferred to Toronto. This rendered a removal necessary. Temperance Hall was secured as a temporary home, but owing to the very inadequate accommodation it provided, the masters were hampered in their work, and permanent buildings were rendered a necessity. With a zeal and perseverance that cannot be too highly commended the Chief Superintendent of Education and the normal-school masters persisted in maintaining the efficiency of this school, in spite of the adverse circumstances by which they were surrounded. In 1852 the handsome and commodious buildings now occupied by the Education Department were completed, and the normal school was accordingly removed to that place. From this time forward its usefulness was an acknowledged fact, and its influence was felt even in the most remote districts of our Province. In pursuance of the plan of having an educational museum and a school of art and design in connection with the normal school, it became necessary to provide accommodation specially adapted for normal school purposes. A suitable building was erected in the rear of the Departmental buildings, and the normal school was transferred thereto in 1858, where it has since remained.

Prior to the opening of the normal school, the Chief Superintendent of Education, assisted by the Council of Public Instruction, prepared a programme of studies for the guidance of the masters and students. At the close of each session the head master certified to the attendance and conduct of each student, but these certificates possessed no legal value. Before these normal school students could become legally qualified teachers, it was necessary for them to pass an examination before one of the local county boards of examiners. In 1853 certificates of the first and second classes were granted, for the first time, by the Chief Superintendent upon the recommendation of the normal-school masters. In 1855, each of these classes of certificates was further sub-divided into three grades, A, B, and C, A being the highest. These certificates were valid during the good behavior of the holder, and in every municipality in the Province. The rapid increase in the number of elementary schools and the growing demand for a better class of teachers led to the revision and enlargement of the programme of studies. This was done in 1858, and is substantially the same as the one adopted by the Central Committee of Examiners in 1871, when the privilege of obtaining a provincial certificate was extended to all teachers, whether they had attended the normal school or not. After one or two of these uniform examinations had been held, it was found that many of the teachers throughout the Province were considerably below the standard. This led to a demand for more normal school accommodation. In response to this demand, a normal school was built in the city of Ottawa, and opened for the reception of students in 1875. These two schools were soon filled with students, and it became necessary to devise some further means whereby candidates for third class certificates should receive some preliminary training in methods of teaching, and school organization and discipline. This led to the establishment of our system of county model schools, one of which is to be found in every county in the Province.

In connection with, and as appendages to, each of these normal schools are two model schools, one for boys and the other for girls. In each of these schools four teachers are employed, who are under the direct supervision of the head masters of the normal schools. The design of these

schools is, (1) to afford the student-teachers practice in the art of teaching; (2) to exemplify the best methods of organizing a school and classifying the pupils; (3) to illustrate the most approved methods of instruction; and (4) to show how proper order and discipline are to be maintained.

We have thus far briefly sketched, imperfectly it may be, the rise and progress of these institutions, and the growth and development of a public sentiment that now sustains them and adds to their influence. Our work will not be complete nor their value properly appreciated until we have examined somewhat minutely the work they are now doing. Before taking up this part of our subject, it may be as well to glance briefly at the design and functions of these schools. They were originally established as professional schools, and designed to train public-school teachers for the more efficient discharge of their duties, by giving them, firstly, instruction in the science of education, and, secondly, practice in the art of teaching. Until quite recently it was found necessary to combine instruction in all the elementary branches with professional training. This arose from the fact that the majority—fully nine-tenths, it is said—of applicants for admission to the normal school were so deficient in scholastic acquirements as to need special instruction. Since 1871, owing to the indefatigable exertions of the high school inspectors, a very great impulse has been given to the cause of secondary education, and now all candidates for public-school teachers' certificates receive their literary training in the high schools and collegiate institutes. The normal-school masters, who are thus relieved from teaching the non-professional subjects, are left free to devote all their energies to their legitimate work, the professional training of teachers, and we have abundant reasons for believing that this work is done in a most satisfactory manner.

There are two sessions of these normal schools in each year, the first opening on the third Tuesday in January and closing on the third Friday in June, the second opening on the third Tuesday in August and closing not later than the twenty-second of December. The hours of daily work are from 9 A. M. to 12 M., and from 1.30 P. M. to 4 P. M. These schools are opened and closed by reading a portion of Scripture, accompanied with a suitable prayer. The head master is held responsible for the order, discipline, and general progress of the students in all the classes, and is required to arrange the division of work among the masters, subject, however, to the approval of the Minister of Education. He is also required to visit, from time to time, the classes under the different masters; to satisfy himself as to their progress; to hold, or cause to be held, such oral or written examinations during the course of the session as may be necessary to test the work done by the students; and to keep a record of the results of such examinations. The assistant masters are directly responsible to the head master, and are required to report monthly to him the standing and progress of each student in the subjects of their departments.

Candidates for admission are required to comply with the following conditions, viz: To be native born or naturalized subjects of Her Majesty; to have passed the prescribed examination for second-class non-professional certificates; to hold a third-class professional certificate or its equivalent; to have taught successfully for at least one year, as certified by the public-school inspector in whose inspectorate the teaching was done; to give satisfactory evidence of good moral character at the time of making application; and, if females, to be not less than eighteen years of age, and, if males, nineteen. The necessary blank forms are

furnished by the Education Department, which, when properly filled out, are examined by an officer appointed for that purpose, and if found satisfactory, certificates of admission are issued. At the opening of each session these certificates are presented to the head master by the candidates, their names are registered, and they are henceforth amenable to the rules in force in these schools. These rules are designed to impress upon the minds of the students the special purpose for which the normal schools were established, viz, to fit them for the proper discharge of their duties as public-school teachers, so that, by example and professional ability, they may make their influence for good felt in their respective schools and the community at large. The following brief summary will show the scope of these rules: Students are required to be regular and punctual in their attendance at the several classes; to give due attention and respect to the masters; to act with becoming courtesy towards each other; to lodge and board at such houses only as are approved by the head master; and not to be absent from such boarding houses later than 9.30 P. M. without special permission. Ladies and gentlemen are not allowed to board at the same houses, and communications of any and every kind between the sexes are strictly prohibited. Classes for religious instruction are to be regarded as regular classes in the school.

In every scholastic institution a carefully prepared course of study is an essential requisite. This is particularly the case with those designed for the professional training of teachers, since in such institutions every lesson taught should be a practical illustration of the best methods of instruction, as well as a means of imparting valuable information. From what has already been said, it will be observed that none but advanced students are admitted into the normal schools. These having had, in addition to their literary culture, some preliminary training in the science of education and the art of teaching, at our county model schools, are prepared to take up a more comprehensive course of study. Such a course of study has been prepared, and is now used in our normal schools. Minute details of the subjects to be taught, together with specific instructions as to the number of lectures required in each subject, or division of a subject, are given, of which the following is a brief synopsis:

I. *Education*.—In this subject a course of eighty lectures is given, embracing the history of education, the science of education, the principles and practice of teaching, school organization, and school management.

II. *English Language and Literature*.—The study of these subjects consists in the critical reading of one of the plays of Shakespeare or the work of some other standard author, together with a course of twenty lectures upon words and their uses, the proper construction of sentences, the use of correct language, and the beauties and defects of style as found in the writings of standard authors.

III. *Hygiene*.—In this subject a course of twenty lectures is given on the preservation of health, the air we breathe, the food we eat, the clothing we wear, the fluids we drink, and the physical and mental exercise necessary for the highest development of man.

IV. *Chemistry*.—In this subject a course of thirty lectures on elementary chemistry is given, illustrated by a series of experiments made in the simplest manner possible. The objects aimed at are, (1) to make the experiments understood, (2) to have them explained by the students, (3) to accustom the students to render an account to themselves of natural phenomena, and (4) to enable the future teachers to repeat these experi-



ments with very little cost. In order to accomplish these purposes, opportunities are afforded for practical work in the laboratory, under the supervision of the science master.

V. *Botany*.—This subject is made as practical as possible by the examination of specimens collected from time to time, and consists of a course of twenty lectures, embracing the chemistry and the histology of plant life, the structure of flowering plants, and the general classification of plants.

VI. *Zoology*.—A general outline of this subject is given in a course of twenty lectures.

VII. *Physics*.—The course in this subject consists of a series of thirty lectures upon heat, light, and electricity. In this, as in chemistry, great importance is attached to the explanation of the physical phenomena of daily life.

VIII. *Drawing*.—This subject is taught by a specialist, who gives a course of forty lessons, in which designing, model drawing, free-hand, perspective, constructive drawing, scientific perspective, and practical geometry are taught.

IX. *Music*.—This subject is also taught by a specialist, and consists of a course of forty lessons, in which the scales and their various transpositions are taught, combined with the singing of songs in two, three, and four parts.

X. *Calisthenics*.—The course in this subject consists of a series of calisthenic exercises, under the direct supervision of a competent drill-master.

XI. *Military drill*.—The exercises in this subject are taught similarly to those in calisthenics and by the same person.

XII. *Methods of instruction*.—This course consists of a series of one hundred and fifteen lectures, in which the following subjects are reviewed with the object of illustrating the best methods of teaching them, viz: Language lessons, grammar, composition, spelling, reading, writing, arithmetic, algebra, Euclid and mensuration, history, geography, and object lessons.

XIII. *Practical teaching*.—During the early part of each session the students, accompanied by the normal-school masters, are required to visit the model school and observe the methods of teaching the different subjects, as practically illustrated by the teachers in the model school. They are also required to observe the methods adopted for securing attention and interesting the pupils in their work. After sufficient opportunities have been given to the students of witnessing the manner in which the different subjects are taught in the model school, they are called upon to teach before each other in the normal school, under the guidance and supervision of the masters, and to criticise each other's teaching in a friendly way.

XIV. *School law*.—Under this head is given a knowledge of the elementary principles of law, and of their application under the statute to trustees, teachers, inspectors, etc.

Finally, they are required to take charge of classes in the model school, under the supervision of the teachers, and are expected to teach at least three times in each department of the model school.

The final examinations, which are held during the last week in each session, are conducted by examiners appointed for that purpose by the Minister of Education. These examiners are not connected with the teaching staff of either of those schools. Questions are prepared on each subject in the course of study, and the candidates are required to sub-

mit their answers in writing. In addition to these written examinations, each candidate is required to teach some specified subject to a class in the presence of one of these examiners. The results of these examinations and of those held during the session, together with the reports of the masters of the normal school and of the teachers in the model school, determine the final standing of each student. On the recommendation of the masters of the normal school, students holding second class, grade B, may be awarded grade A, and those holding grade A may be "honorably mentioned." The student who obtains the highest standing, as determined at the close of each session, shall be awarded the Prince of Wales gold medal.

There yet remains another point to which reference should be made, and that is, the influence these schools have exerted in advancing the cause of popular education. This reference must of necessity be brief. Facts and figures show a very marked increase in the number of children attending our public schools, but this increase alone does not give an accurate idea of what has been done, nor does it reveal to us the sources from whence this growth and development have arisen. These sources lie deeper, and are to be found in the lives and work of those trained teachers who from time to time have graduated from our normal schools, and have gone forth laboring diligently in their chosen avocation. In the profession, we find that the great majority of our public school inspectors and masters of our county model schools, as well as many of our leading high-school masters, are graduates of these institutions. These, laboring as they are in every part of the Province and from motives higher than the mere acquisition of wealth or fame, are introducing better methods of teaching and inspiring those with whom they come in contact with a real love for learning. Outside of the profession, again, are those who have attended these normal schools, but are now in many cases prominent members of other professions or leading business men. These, in their sphere, contribute largely toward building up a public sentiment in favor of our system. The united influence of these two classes of graduates, now working harmoniously together, leads us to look hopefully at the future. What that future may be none can tell, but we fondly hope that our brightest dreams may be more than realized. Our task is now done, and we feel justified in repeating what we said in a former part of this paper, that these institutions have done more than any others to awaken an interest in popular education, and diffuse among the people more correct ideas concerning the objects aimed at in the education of the masses.

The writer cannot permit the present opportunity to pass without paying a tribute to the memory of two men who were mainly instrumental in laying the foundation of our present system of elementary instruction, and who devoted their time and talents to the cause of education. The one, by a careful study of the various rational systems of education in the Old and New Worlds, selected their most desirable features, combined these into one harmonious whole, and bequeathed to us a system that stands almost unrivaled for its many excellencies. The other, by his untiring devotion to the profession of teaching, his knowledge of the art of teaching, and his zeal in the cause of education, did a grand and noble work in training teachers for the proper discharge of their duties, and in sending them forth to take charge of our leading public schools. These men are the Rev. Dr. Ryerson, for many years Chief Superintendent of Education, and T. J. Robertson, M. A., the first head master of the Toronto Normal School. To them

we may justly apply the following tribute, paid to two of America's most illustrious statesmen by one of her most eloquent orators: "Although no sculptured marble should rise to their memory, nor engraved stone bear record to their deeds, yet will their remembrance be as lasting as the land they honored. Marble columns may indeed moulder into dust, time may erase all impress from the crumbling stone, but their fame remains. 'Their bodies are buried in peace, but their name liveth forevermore.'"

## BEREA COLLEGE, KENTUCKY.

BY REV. E. H. FAIRCHILD, D. D., *President.*

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All who know of Berea College are aware that co-education of the sexes and the races prevails here in theory and practice.

The founders of the school were anti-slavery men, and, of course, were regarded with suspicion from the beginning. Yet, in the midst of slavery and in a sparsely-settled district, it attained a popularity which brought to it a hundred students, many of them sons and daughters of slave-holders.

The raid of John Brown in Virginia excited the suspicions and fears of the people to such an extent that there was no allaying them. A large county convention appointed a committee of sixty-five men, among whom were many wealthy and honorable citizens, to remove the school from the State. This they accomplished with as much dignity and decorum as is consistent with such an enterprise.

At the close of the war the school was revived. It had got well under way and gave fair promise of success, when a new class of citizens began to realize the need of preparation for their new life.

Two colored youths asked admission to the school. A consultation was held; the whole school and community were agitated; and when the youths were admitted the next morning, half the students left. This was not unexpected; it was even a better result than was anticipated.

At this point it seems appropriate to give the reasons for an act so rash and ill-considered as, to many, this seemed to be.

The first and most obvious reason was that the colored people needed education more than the white. They had now their own business to manage, their own bills to settle, their own bargains to make, and could neither read, write, nor reckon; and they had not a school or a teacher in the whole State of Kentucky. If in such an emergency their best friends should reject them, what hope remained? If the prospect had been that every white student would leave and a colored school would fill the vacancy, the path of duty was plain.

In three years the school was more than twice as large as ever before. Those that left had returned, and the colored outnumbered the white. From that time to the present it has been the largest school in the State of its grade, and always more than one-third, sometimes one-half, have been white.

We are often told that if we would separate the races, and instruct them in separate rooms and at different hours, we could have all the money we need, and as many students as we could accommodate.

This leads to the second reason for pursuing our present course, even at the sacrifice of so great promises. The negroes are citizens, and are to remain so; and if they are to be a useful, happy, contented, peaceful class of citizens, they must enjoy all the rights, privileges and responsibilities enjoyed by other men. But their drill of two centuries in

servitude and for servitude, and an equal drill of the white race in masterhood, have but poorly adapted them for co-operation in the various functions of government. They are ill at ease sitting upon the same jury, sharing in the county offices, acting as directors of the same bank, trustees of the same asylums, members of the same school board and town council, pleading at the same bar, sharing in the same receptions, celebrations, and festivals, and a hundred other interests directly or indirectly connected with government. This antipathy, whether natural or acquired, must gradually pass away, or another trouble will be brewing, which may cost a future generation as much blood and treasure as slavery itself. If it is right and wise to perpetuate and intensify this antipathy, the most legitimate and effective way to do it is to teach our children and youth, in all our grades of schools, from five years of age to twenty-five, that it is utterly unsuitable and abominable to unite white and colored in the same school.

With the hope of aiding to mitigate and remove this general repugnance between the races, we bring them together in the same school. They room in the same buildings, board at the same tables, recite in the same classes, sit promiscuously in all assemblies, work at the same wood-piles or in the same dining-hall, play on the same grounds at the same games. No distinction whatever is made on account of color. And we have found, or think we have, that the natural, constitutional antipathy of race, which, as we are told, will make it necessary to remove our colored population to Africa or to some other out-of-the-way place, is not natural at all, but unnatural, unconstitutional, and senseless. Little children know nothing of it till it is drilled into them. They love a black playmate as well as a black kitten, or a black mammy as well as a white mamma. All southern people know this. It requires constant vigilance and effort to keep the white and colored children apart.

Twenty-five years of mixed schools would hardly leave a vestige of this "constitutional, ineradicable antipathy." It is a relic of slavery, and, the occasion of it having disappeared, it must be diligently nursed or it will pass away. Here lies the objection to mixed schools, not that the antipathy will injure the schools, but that the schools will annihilate the antipathy and lead to social equality, a thing more hated and feared than ignorance or vice.

Another reason why we favor mixed schools is that in no other way can the educational wants of the people be met. Where the colored people are few, and but one, two, three, or even ten schools are provided for them in a county, while they are scattered all over the county, their wants are not met. Few children will attend a public school more than three miles from their home. To organize a county into a single school-district and direct the colored children from all parts of the county to one place for their education, will not give them a very high appreciation of their privileges as citizens, nor very soon educate them for their civil responsibilities. There are not less than fifty counties in this State where no adequate provision is made for the education of colored children, and no adequate provision can be made for them, unless they are admitted to the white schools. What great calamity would befall the country if two or three or even a dozen colored children should be admitted to each of these white schools, we are too blind to see. If the prejudice that prohibits it is more sensible, more dignified, more Christian, than Hindoo caste, we cannot discover it. To our apprehension it seems not only cruel and unjust, but silly, senseless, ridiculous. We cannot think it is to remain a permanent feature of our civilization. Education, culture, Christianity must wear it away.

In a thickly-settled county, where the inhabitants are about equally divided between the two races, the difficulty is less serious; but even there the burden of maintaining two sets of schools, when one set would accommodate all the pupils, is too great to be borne. The people will relieve themselves by extending their districts over too much territory, by shortening the school year, or by reducing the salaries, and hence the qualifications, of teachers.

In large cities in which the races are about equal in number, the burden is hardly felt, except in relation to high schools. *They* must suffer by division.

Every careful observer must see, and every earnest educator must regret, the state of feeling which is the greatest hinderance to education where education is so much needed. We do not expect any sudden disappearance of prejudices or ideas which are the fruit of ages of misrule. But gradually, as generations pass away, and colored men become highly educated, and many of them take a high rank as teachers, preachers, physicians, lawyers, writers, orators, and statesmen, and many become men of wealth and of influence in commercial circles, people will begin to wonder where the "natural, constitutional antipathy" has gone. "That time," I shall be told, "is far away." We live in an age of progress. If the changes of the next fifty years shall equal those of the last fifty, since that noble philanthropist, whose likeness graces the walls of our college parlor, wore a rope necklace in the "cradle of Liberty," we shall sing—

Watchman, tell us of the night,  
For the morning seems to dawn.

## THE UNIVERSITY SYSTEM OF ONTARIO.

BY J. GEORGE HODGINS, M. A., LL. D.,

*Deputy Minister of Education for Ontario.*

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University affairs in Ontario are at present in somewhat of a transitional state. A scheme of university confederation has been recently under discussion, which may issue in the grouping together of most of the college-universities now in operation. At present there are the following universities in the Province, viz:

1. The University of Toronto, projected in 1798, opened as King's College University in June, 1843.
2. The University of Victoria College, Coburg, founded as Upper Canada Academy in 1832, opened in October, 1841.
3. The University of Queen's College, Kingston, projected in 1839, opened in March, 1843.
4. The University of Trinity College, Toronto, founded in 1851, opened in January, 1852.
5. The (R. C.) University of Ottawa, founded in 1848, opened in 1866.
6. The Western University, London, founded in 1877, opened in 1878.

### PRELIMINARY REMARKS.

Before referring to these universities in detail, I shall briefly glance at the early history of university education in this Province.

Lieut.-Gen. J. Graves Simcoe, the first Governor of Upper Canada, arrived here in 1792. He was a man of comprehensive views and noble impulses in regard to university education. He was educated at Eton College and partly at Merton College, Oxford, but entered the army before taking his degree. He served with distinction under Wolfe at Quebec and during the American revolutionary war.

In April, 1795, Governor Simcoe addressed a letter to the Protestant Episcopal Bishop of Quebec—then having jurisdiction in Upper Canada—urging him to seek to promote the establishment of a "Protestant Episcopal university" in Upper Canada. The reasons which he gave for this appeal were characteristic of the English Churchman and of the times, and reveal somewhat of the social and religious state of the colony. They showed, too, that he was a statesman as well as a Churchman. He said:

The people of this Province enjoy the forms as well as the privileges of the British constitution. They have the means of governing themselves; and, having nothing to ask, must ever remain a part of the British Empire, provided they shall become sufficiently capable and enlightened to understand their relative situation and to manage their own power to the public interest. Liberal education seems to me, therefore, to be indispensably necessary; and the completion of it by the establishment of a university in the capital of the country, \* \* \* would be most useful to inculcate just principles, habits, and manners into the rising generation; to coalesce the differ-

ent customs of the various descriptions of settlers \* \* \* into one form. In short, from distinct parts and ancient prejudices to new-form, as it were, and establish one nation, and thereby strengthen the union with Great Britain and preserve a lasting obedience to His Majesty's authority.

I naturally should wish that the clergy requisite for offices in the university, in the first instance, should be Englishmen, if possible. \* \* \* I most earnestly hope that \* \* \* by giving the means of proper education in this Province, both in its rudiments and in its completion, that from ourselves we may raise up a loyal, and, in due progress, a learned clergy, which will speedily tend to unite, not only the Puritans within the Province, but the clergy of the Episcopal Church, however dispersed \* \* \* and on all sides, to bring within the pale [of the Episcopal Church] in Upper Canada a very great body of sectaries, who, in my judgment, as it were, offer themselves to its protection and re-union.

These objects would be materially promoted by a university in Upper Canada, which might, in due progress, acquire such a character as to become the place of education to many persons beyond the extent of the King's dominions. \* \* \* The Episcopal clergy in Great Britain, from pious motives as well as policy, are materially interested that the Church should increase in this Province. I will venture to prophesy its preservation depends upon a university being erected therein. \* \* \* I have not the smallest hesitation in saying that I believe if a Protestant Episcopal university should be proposed to be erected (even in the United States) the British nation would liberally subscribe to the undertaking. \* \* \* The universities of England, I make no doubt, would contribute to the planting of a scion from their respectable stock in this distant colony.<sup>1</sup>

There are two or three things worth noticing in this vigorous letter of the Governor:—

(1) Among the objects sought to be attained by the establishment of a university was the conservation of "the privileges of the British Constitution"; (2) the fusing of the various nationalities represented in the colony; (3) the absorption of "Puritans" and "sectaries" into the Episcopal Church; (4) the growth and spread of loyalty to the King's authority.

Two things also are noticeable: First, the Governor did not ignore, or underestimate, the necessity of popular education, or "education in the rudiments"; second, he gives no hint of a desire to appropriate the public domain to the building up of an "Episcopal university". On the other hand, he assumes that, if done at all, it is to be aided by contributions from England. I call attention to these two points, from the fact that they were quite lost sight of by those who afterwards took up the cause of university education in Upper Canada where he had left it.

<sup>1</sup> It is of interest to notice that while the present generation owes so much to the foresight of the first Lieutenant-Governor of Upper Canada, General Simcoe, in anticipating the wants of elementary, higher, and university education in the Province of Upper Canada, which in 1791 was about being established by the Quebec Act, he sets forth in his letter to Sir Joseph Banks, Bart., President of the Royal Society, dated January 8, 1791, "his hope that he would be able to establish in the then virgin Province, among other means of civilization, a university"; and thus proceeds to speak of the locality which was to be the center of the new community: "For the purpose of commerce, union and power, I propose that the site of the colony should be in that great peninsula between the lakes Huron, Erie and Ontario, a spot destined by nature sooner or later to govern that interior world. I mean to establish a capital in the very heart of that country, upon the River La Tranche [Thames], which is navigable for batteaux 150 miles, and near to where the Grand River, which falls into Erie, and others that communicate with Huron and Ontario, almost interlock." Upon this spot the city of London, in which the Western University has just been established, stands, and while the site of Toronto was subsequently adopted as the capital, the views of Governor Simcoe in respect to the university remained the same, and have been literally fulfilled in the Provincial University at Toronto, and this one at London, according to his expectations as expressed in his letter of the 16th October, 1795, to Bishop Mountain: "My views in respect to a university are totally unchanged; they are on a solid basis, and may or may not be complied with, as my superiors shall think proper, but shall certainly appear as my system to the judgment of posterity."—*Appeal on behalf of the Western University.*



Governor Simcoe, having received a higher appointment in the colonial service, left soon after. The Bishop of Quebec, however, acted upon his suggestion and wrote to the Colonial Minister on the subject, in June, 1796. In November, 1797, the Legislature of Upper Canada addressed a memorial to King George III, asking "that His Majesty would be graciously pleased to direct his Government in this Province to appropriate a certain portion of the waste lands of the Crown as a fund for the establishment and support of a respectable grammar school in each district thereof, and also of a college, or university, for the instruction of the youth in the different branches of liberal knowledge."

To this memorial the King directed a gracious answer to be sent. The duke of Portland, Colonial Minister, therefore instructed the acting Governor, President Russell, to give practical effect to the prayer of the petitioners. In doing so he used the following language:

[His Majesty] being always ready \* \* \* to assist and encourage the exertions of his Province in laying the foundation for promoting sound learning and a religious education, has condescended to express his [desire] to comply with the wishes of the Legislature \* \* \* in such a manner as shall be judged to be most effectual—

*First*, by the establishment of free grammar [classical] schools in those districts in which they are called for, and—

*Secondly*, in due process of time, by establishing other seminaries of a larger and more comprehensive nature, for the promotion of religious and moral learning, and the study of the arts and sciences.

Such were the terms in which the King, through his Colonial Minister, intimated his desire that classical and university learning should be promoted in this Province. The very comprehensiveness and express terms of the duke of Portland's dispatch on this subject gave rise to a protracted controversy in after years, especially as the controverted expressions were embodied in substance in the royal charter for a university obtained in 1828 by Rev. Dr. Strachan (afterwards first Church of England Bishop of Toronto). Around the expressions—"religious education," "religious and moral learning," and "other seminaries of a larger and more comprehensive nature," etc., a fierce war was waged for many years, which, though virtually over now, has yet left traces of the bitter conflict.

The result of the instructions to President Russell was, that 549,217 acres of crown lands were set apart for the twofold purpose set forth in the Colonial Minister's dispatch. Of these acres, 225,944 were, in 1827, devoted to the university that was virtually established, on paper, in that year, and by royal charter in 1828.

This charter virtually placed the proposed university under the control of the Episcopal Church. When its terms were known in Upper Canada, it was fiercely assailed. The charter was subsequently modified, in deference to public opinion; but it was not until many years afterwards that the university was, by statute, declared to be free from denominational control. Out of the controversy which the duke of Portland's dispatch and the charter caused, arose other colleges and universities, which will be referred to in detail hereafter.

I shall now proceed to give a brief account of the various universities in Ontario.

### I. THE UNIVERSITY OF TORONTO.

This university was originally established under the charter obtained by Rev. Dr. Strachan in 1828. The proceeds of the endowment were for many years so small that the university only existed on paper, until 1842-'43.

In April, 1842, the corner stone of the new institution was laid by Governor-General Sir Charles Bagot (M. A. of Christ Church, Oxford). In June, 1843, it was opened under the style and title of the "University of King's College," Toronto, by the Right Rev. John Strachan, D. D., LL. D., President of the University. In October of that year, an effort was made by Hon. Attorney-General Baldwin to introduce a comprehensive scheme of university reform, but it was defeated in the Legislature. In 1845 and 1847 other abortive attempts were made to "reform" the university; but in 1849 a comprehensive measure was introduced into the Legislature and passed into a law, by which it was reincorporated under the name of the "University of Toronto," and made a purely national institution, by placing it under the sole control of the Legislature and of a senate and officers appointed by the Government.

After the controversy caused by this change died away, the popularity of the University largely increased; and it is now in a highly efficient state.

After the change made in the management of the institution to which I have referred, and its separation into University College and the University of Toronto, Rev. John McCaul, LL. D., was appointed President of University College. He had taken high rank in classics in the University of Dublin and had been professor of classics in King's College. He gave to University College a prestige in that department of learning which it has maintained ever since. He was a pleasant and agreeable man, and never failed to give *éclat* to convocations and public gatherings by his well-rounded periods and eloquent utterances,—especially on historical or patriotic subjects. On his retirement from ill health he was succeeded by Daniel Wilson, LL. D., of Edinburgh University and Professor of English History and Literature. The new president is a man of distinguished ability as a writer and speaker and an active Christian worker.

I shall proceed to deal with a few details:

Under a royal charter granted in 1828, as modified by subsequent statutes of the Legislatures of Upper Canada and of the Province of Ontario, the University of Toronto and University College are now constituted. The University prescribes the requirements for degrees, scholarships, and prizes; appoints examiners; and confers degrees in the faculties of law, medicine, and arts. University College gives instruction in the departments of arts and science prescribed by the University for the degrees of B. A., M. A., and LL. B.

The governing body of the University is the senate, composed of—

1. *Ex officio* members.
2. Members appointed by the Government.
3. Members elected by convocation.
4. Representatives of affiliated institutions.
5. Representatives of high-school masters.

Under the control of the senate are—

1. University College.
2. The School of Practical Science.
3. Upper Canada College and Royal Grammar School.

University College is a teaching institution, while the University of Toronto is a purely examining body. Under statutes of the senate women are admitted to University examinations in course, and also to the local examinations prescribed by the University. By resolution of

the Legislature passed in 1884, women are admitted with the men students to the lectures of University College.<sup>1</sup>

From the last Report of University College the following interesting particulars are inserted :

In the academic year 1882-'83, the number of students in attendance on the lectures of senior years was: third year, fifty-nine; fourth year, seventy-one; in the year 1883-'84 it was: third year, sixty-six; fourth year, fifty-three.

Since the re-organization of the college and University on their present basis in 1853, the degrees conferred in the faculty of arts, law and medicine on students of University College, as distinguished from graduates of the University who received their preparatory training in other colleges, are as follows: LL. D., 10; LL. B., 49; M. D., 19; M. B., 64; M. A., 237; B. A., 856; making a total of 1,235 degrees conferred on undergraduates who have pursued their studies in University College, and have proceeded to degrees in the various faculties of the University.

The officers of University College are as follows:

**Visitor:** His Honor the Hon. John Beverley Robinson, Lieutenant-Governor of Ontario.

**President:** Daniel Wilson, LL. D., F. R. S. E.

The following constitute the present teaching staff of University College, including the fellows appointed under a recent statute:

*Classical literature, embracing the Greek and Latin languages:* Professor—Maurice Hutton, M. A., Fellow of Merton College, Oxford.

*Classical Tutor:* William Dale, M. A.

*Fellow in classics:* J. C. Robertson, B. A.

*Oriental literature, including Hebrew, Chaldee, Syriac, and Arabic:* Lecturer—Jacob M. Hirschfelder, Esq.

*German:* Lecturer—W. H. VanderSmissen, M. A.

*French:* Lecturer—John Squair, B. A.

*Fellow in French and German:* Charles Whetham, B. A.

*English language and literature, and Italian:* Lecturer—David R. Keys, B. A.

*Ancient and modern history and ethnology:* Professor—Daniel Wilson, LL. D., F. R. S. E.

*Logic, metaphysics, and ethics:* Professor—G. Paxton Young, M. A., LL. D.; Fellow—A. S. Johnston, B. A.

*Physics and mathematics:* Professor—James Loudon M. A.; Mathematical Tutor—Alfred Baker, M. A.; Demonstrator in Physics—W. J. Loudon, B. A.; Fellow in Mathematics—J. W. Reid, B. A.; Fellow in Physics—T. G. Campbell, B. A.

*Mineralogy and geology:* Professor—Edward J. Chapman, Ph. D., LL. D.; Fellow—H. R. Wood, B. A.

*Biology:* Professor—R. Ramsay Wright, M. A., B. Sc.; Fellow—T. MacKenzie, B. A.

*Chemistry:* Professor—William H. Pike, M. A., Ph. D.; Fellow—T. P. Hall, B. A.

<sup>1</sup> The question of co-education has occupied a good deal of public attention in Ontario. It was, so far as it related to university education, discussed at some length in the Legislature of the Province in 1884, and the following resolution on the subject was passed:

"That inasmuch as the senate of the provincial University, having for several years admitted women to the University examinations and class lists, and inasmuch as a considerable number of women have availed themselves of the privilege, but labor under the disadvantage of not having access to any institution which affords tuition necessary in the higher years in the course; in the opinion of this House provision should be made for that purpose as early as practicable in connection with University College."

The other institutions under control of the senate of the University of Toronto are Upper Canada College and the School of Practical Science.

#### UPPER CANADA COLLEGE.

Upper Canada College was founded in 1828 upon the model of the great public schools of England, and was endowed with a grant of 66,000 acres of public lands, from which it now derives an annual income of \$15,000, in addition to its building and grounds in the city of Toronto. Its pupils number about 300, and it aims at preparing them for matriculation in the provincial University, and for different professions and pursuits. It is governed by a committee of the senate of the provincial University under statutes passed by it from time to time; but such statutes are subject to the approval of the Lieutenant-Governor of the Province. The curriculum extends over a six years' course of study in the same number of forms, and embraces Greek, Latin, mathematics, French, German, English, grammar, literature and composition, history and geography (both ancient and modern), natural philosophy, experimental chemistry, physiology, biblical knowledge, the usual commercial branches, drawing, music, gymnastics, fencing and drill exercises.

In other forms, known as the lower and upper modern, commercial and scientific training can be obtained. The examinations in each form are quarterly. Scholarships may be established by the different county councils, while four exhibitions have been founded out of the University funds, each exhibition being the result of a competitive examination, and tenable for one year, in the fifth and sixth forms. Its staff of teachers comprises the following: One principal, two classical masters, two mathematical masters, five English masters, one French and German master, drawing master, gymnastics and drill. This school and the high schools already referred to constitute the principal feeders of the provincial University. The present Principal is I. M. Buchan, Esq., M. A. of the University of Toronto.

#### THE SCHOOL OF PRACTICAL SCIENCE.

The School of Practical Science was opened in September, 1878, in a building near the University, and with appliances specially adapted to lectures of a practical character in the subjects of natural and physical science and of engineering, which are given by four professors of University College, with a professor of engineering and assistant.

The following constitute the present teaching staff of the School of Practical Science:

- J. Galbraith, M. A., Assoc. M. Inst. C. E., *Professor of Engineering*.  
 W. H. Ellis, M. A., M. D., *Professor of Applied Chemistry*.  
 W. H. Pike, M. A., Ph. D., *Professor of Chemistry*; T. P. Hare, B. A., *Fellow*.  
 E. J. Chapman, Ph. D., LL. D., *Professor of Mineralogy and Geology*; H. R. Wood, B. A., *Fellow*.  
 J. Loudon, M. A., *Professor of Mathematics and Physics*; Alfred Baker, M. A., *Mathematical Tutor*; J. W. Reid, B. A., *Fellow*; W. J. Loudon, B. A., *Demonstrator in Physics*; T. Mulvey, B. A., *Fellow*.  
 R. Ramsay Wright, M. A., B. Sc., *Professor of Biology*; A. B. McCallum, B. A., *Fellow*.  
 D. Wilson, LL. D., F. R. S. E., *Professor of Ethnology*.

*Departments of Instruction.*—(1) Engineering; (2) mathematics and physics; (3) chemistry; (4) biology; (5) mineralogy and geology; (6) evening lectures in chemistry.

The following is a report of the work done in this department:

1. Lectures have been given to the engineering students in the second and third years, on the subjects laid down in the curriculum, viz: the chemistry of fuel and combustion, explosives, building materials, and the metallurgy of iron.
2. A course of evening lectures on chemistry was given last winter, the attendance on which was almost exclusively by students of the Ontario Veterinary College.
3. Instruction has been given in the laboratory to the students pursuing the regular course of the school, and also to medical and other special students.

In the last session there were seventy-six students working in the laboratory, classified as follows:

Engineering students .....	28
Medical students .....	43
Special students .....	5
Total .....	76

#### ONTARIO ART SCHOOL.

In addition, I may state that technical education also receives attention in the Ontario School of Art, in connection with the Education Department, as the following extracts from a recent document published by the Department will show:

The Ontario School of Art was established by the Ontario Society of Artists in 1876. A council was appointed for the management of the school, consisting of the Minister of Education and six members of the Ontario Society of Artists. \$1,000 per annum was voted by the Government for the school.

In 1880 the grant was increased to \$4,500, and it being found that the Society of Artists required that amount every year, it was considered desirable that the Government should have some control over the expenditure. It was finally arranged in 1882 that the school be removed to the Education Department, so that the collection of sculpture, paintings, etc., could be fully utilized for art studies; at the same time it was considered advisable to establish classes for teachers. Dr. May is the present superintendent of the school.

The following is a programme of studies:

*Elementary course.*—Free-hand outline, geometrical, perspective, model drawing.

*Advanced course.*—Shading from flat, outline from the round, shading from the round, advanced perspective, drawing flowers and objects of natural history, black-board drawing.

*Technical instruction classes.*—Plain and solid geometry, ornamental design, linear perspective, plan drawing, building construction.

*Painting classes.*—Painting in oil and water colors.

*Modeling classes.*—Modeling in clay.

Other art schools—at Hamilton, London, Kingston, etc.—are now being associated with the Ontario Art School for examination purposes. The normal-school teachers receive instruction in the art school, so that they may be enabled to teach drawing to the pupils in their schools.

#### II. THE UNIVERSITY OF VICTORIA COLLEGE, COBURG.

The Rev. Dr. Ryerson, who was the founder of this university, thus speaks of its early history, in an address to the students when he was appointed its first principal in 1841. He said:

His late Most Gracious Majesty William IV, of precious memory, first invested this institution, in 1836, with a corporate charter as the Upper Canada Academy—the first institution of the kind established by royal charter unconnected with the Church of England, throughout the British colonies. It is a cause of renewed satisfaction and congratulation that, after five years' operation as an academy, it has been incorporated as a university and financially assisted by the unanimous vote of both branches of the Provincial Legislature,—sanctioned by more than an official cordiality, in Her Majesty's name, by the late lamented Lord Sydenham, Governor-General, one of whose last messages to the legislative Assembly was a recommendation to grant £500 as an aid to the Victoria College. \* \* \* We have buoyant hopes for our country when our rulers and legislators direct their earliest and most liberal attention to its

literary institutions and educational interests. A foundation for a common school system in this Province has been laid by the Legislature, which I believe will, at no distant day, exceed in efficiency any yet established on the American continent;<sup>1</sup> and I have reason to believe that the attention of Government is earnestly directed to make permanent provision for the support of colleges also, that they may be rendered efficient in their operation and accessible to as large a number of the enterprising youth of our country as possible.

This institution originated with the Wesleyan Methodists in 1828-'30. The conference in the latter year agreed to establish it as an academy, and in the following year, when matters had been arranged to this end, Dr. Ryerson, in the *Christian Guardian* newspaper, of which he was then editor, issued a strong appeal in behalf of the proposed institution on the 21st April, 1831. On the 7th June, 1832, the foundation stone of the academy was laid; and on the 18th June, 1836, it was formally opened under the designation of "Upper Canada Academy." In the previous year Dr. Ryerson was deputed to go to England to collect subscriptions on behalf of the institution. The duty was a most onerous and harassing one. He not only succeeded very satisfactorily, but, after a good deal of difficulty—there being no precedent to guide in the case—was enabled to obtain a royal charter for the academy and a grant of \$16,400 from the local Legislature, the payment of which was resisted by the then Lieutenant-Governor, Sir F. B. Head, until he received orders from England to have the grant paid without further delay.

For eight years the institution was open to male and female students alike, but after its incorporation in August, 1841, the female students were transferred to ladies' academies which had been opened in Coburg by two of the professors of the college. In October, 1841, Rev. Dr. Ryerson was appointed the first president of the university, a position which he held until he was appointed Chief Superintendent of Education for Upper Canada in 1844. He was succeeded by the Rev. Dr. Macnab, now rector of Darlington. In 1850 the present accomplished president (Rev. S. S. Nelles, D. D., LL. D.) was appointed. He had been a pupil under Dr. Ryerson, but finished his university education at the Wesleyan University, Middletown, Conn., and graduated there. He received the degree of D. D. from the Queen's University, Kingston, and that of LL. D. from his own university. His career has been an unusually long and prosperous one; and under his administration the university has taken high rank amongst the sister universities of Ontario.<sup>2</sup>

In the original appeal made by Dr. Ryerson in England on behalf of the academy (in 1835), he stated the "specific objects of the institution" to be as follows:

1. To educate, upon terms equally moderate with similar institutions in the neighboring republic of the United States, and with strict attention to their morals, the youth of Canada generally.
2. To educate for common-school masters, free of charge, poor young men of Christian principles and character, and of promising talents, who have an ardent thirst for knowledge.
3. To educate the most promising youth of the recently converted Indian tribes of Canada as teachers to their aboriginal countrymen.<sup>3</sup>

<sup>1</sup>This memorable prophecy, made by Dr. Ryerson in 1841, was abundantly verified in after years, chiefly as the result of his own labors in maturing the school system, of which he was the founder.

<sup>2</sup>It is a gratifying fact that Victoria College was the first university in Upper Canada whose doors were opened to receive students. The first session commenced in October, 1841; that of Queen's College University in March, 1842, and King's College University in June, 1843. The first graduate in arts who received a diploma in Upper Canada was sent out from Victoria College in 1845-'46.

<sup>3</sup>Several promising Indian youth were educated at Victoria College, and some of them became useful teachers and missionaries.

These extracts are highly interesting, as showing the noble and comprehensive aims, in these early days of educational effort, which Dr. Ryerson had in view in founding this valuable institution of learning. He goes on then (apart from these objects) to show the grave necessity which existed for the early establishment of such an institution. He said :

For want of such an institution upwards of sixty of the youth of Canada are now attending seminaries of learning, under a similar management, in the United States, where nearly two hundred Canadian youth have been taught the elementary branches of a professional education during the last eight years. There is good reason to believe that nearly, if not quite, all the Canadian youth now being taught in the United States seminaries of learning, will return to Canada as soon as this institution shall have been brought into operation. \* \* \*

In behalf, therefore, of this institution—most important to the best interests of a healthy, fertile, and rapidly improving British colonial possession, the inhabitants of which have in this, as in other instances, shown the strongest desire to help themselves to the utmost of their very limited means—a respectful and earnest appeal is made to British liberality, an appeal which it is devoutly hoped will be responded to in a manner that will contribute to draw still closer the bonds by which the loyal Province of Upper and the British population of Lower Canada are united to the Mother Country.

This appeal was indorsed by the Governor of the Province, Sir John Colborne (afterwards Lord Seaton), in the following terms :

The Rev. Egerton Ryerson proceeds to England \* \* \* to solicit subscriptions \* \* \* to enable [the conference here] to bring into operation a seminary established at Coburg, in Upper Canada. \* \* \* As I am persuaded this colony will derive the greatest advantage from the institution and from the exertions of the conference to diffuse religious instruction, I cannot but strongly recommend that it may receive encouragement and support from all persons interested in the welfare of Upper Canada.

The "appeal" was also heartily indorsed by the Hon. Peter McGill, founder of McGill College University, Montreal, and by other distinguished gentlemen and merchants in Montreal. In his letter Mr. McGill referred to Dr. Ryerson as "a gentleman who has distinguished himself in Upper Canada by his writings in defense of religion, order, and good government."

After much delay and great discouragements Dr. Ryerson succeeded in the objects of his mission—money and a royal charter; but at its close he writes to the Canadian committee of the academy as follows :

Thus terminated this protracted [business], \* \* \* though I had to encounter successive, discouraging, and almost insurmountable difficulties [in obtaining the charter]. Not having been able to effect any loan \* \* \* on account of the agitated state of the Canadas, and being in suspense as to the result of my application to the Government, I was several months pressed down with anxiety and fear, by this suspense and by reason of the failure of my efforts to obtain relief. In this anxiety and fear my own unassisted resolution and fortitude could not sustain me. I had to rely upon the un-failing support of the Lord my God.

I have given these particulars somewhat in detail so as to afford a striking narrative illustration of the almost insurmountable difficulties which the early pioneers of education in this Province encountered in endeavoring to found these noble institutions which have been so invaluable to this country, and which have shed such luster upon their founders' names. It is also due to Victoria University, and (as I shall show) to Queen's University also to state these particulars, from the fact that the first practical, yet entirely abortive, attempt to make King's College a provincial university, was made in 1843, two years after the Methodists and Presbyterians had in self-defense been compelled to found universities of their own. This they did at a great sacrifice.

By the time that the liberation of this institution from its sectarian trammels took place, in 1849-53, the really provincial universities at Coburg and Kingston had become recognized as most important factors in our educational system; and from them alone, up to that time, could students of all denominations obtain a university education.

The faculty of Victoria University is as follows:

*President and Chancellor,*

Rev. SAMUEL S. NELLES, D. D., LL. D.

Rev. S. S. Nelles, *Professor of Mental Philosophy, Logic, Ethics, and the Evidences of Religion.*

John Wilson, LL. D., *Professor of Latin and Greek.*

Rev. Alfred H. Reynar, M. A., *Professor of Modern Languages and English Literature.*

A. R. Bain, M. A., *Professor of Mathematics.*

Eugene Haanel, Ph. D. (Bresl.), F. R. C. S., *Dennis Moore Professor of Chemistry and Physics.*

Arthur P. Coleman, Ph. D. (Bresl.), *Professor of Natural History and Geology.*

A. J. Bell, B. A., *Adjunct Professor of Classics and Modern Languages.*

Rev. G. C. Workman, M. A., *Adjunct Professor of Mental Philosophy and Logic.*

Professor Bain, *Lecturer on Astronomy.*

Professor Haanel, *Lecturer on Mineralogy.*

Rev. N. Burwash, S. T. D., *Dean*, and Edward Jackson, *Professor, of Biblical and Systematic Theology and of the Exegesis and Literature of the Old Testament.*

William Kerr, M. A., Q. C., *Dean of the Faculty of Law.*

William T. Aikins, M. D., LL. D., *President of the Faculty of Medicine, Toronto School of Medicine (in affiliation).*

Thomas E. D'Oroonnens, M. D., U. M., LL. D., *President of the Faculty of Medicine, Montreal School of Medicine (in affiliation).*

In connection with the university, Faraday Hall, or School of Practical Science, was erected in 1877. It is a handsome and spacious building, and is admirably fitted up for the purpose of science teaching under the direction of its able professor, Eugene Haanel, Ph. D. of the University of Breslau. Its apparatus and cabinets are very complete.

ALBERT COLLEGE (BELLEVILLE).

The following is extracted from the Calendar:

This institution, founded in 1854, was the product of the zeal and wise policy of the Methodism of that early day, and grew out of the conviction that schools for the Christian education of the youth of the Church should be maintained and cherished by the Church. The location is exceedingly favorable. The city of Belleville is one of the most important and enterprising cities between Toronto and Montreal. It has a population of about 10,000, and is situated on the historic Bay Quinté, in the direct line of the Grand Trunk Railway, and is the southern terminus of the Midland Division of the G. T. Railway. Its advantages as a location for a seat of learning had long been noticed before steps were taken for forming one in its vicinity. Accordingly, when the prosperity of Canada began to make the multiplication of facilities for higher education a necessity, the General Conference of the Methodist Episcopal Church, in 1854, adopted a scheme—initiated in the Bay Quinté Conference in the preceding year—for the erection and maintenance of an educational institution of high grade in Belleville. Having been chartered by Parliament in 1857 as "Belleville Seminary," it was opened in July of the same year, and entered upon its work under very favorable auspices, with a superior staff of instructors and a large number of



students. In the year 1866, by Act of Parliament, the name was changed to "Albert College", and a senate created with ample powers. By the terms of the union of the Methodist Churches of Canada, Albert College was retained in Belleville, and adopted by the General Conference of the united Church as a Church school. The charter was amended and the college was affiliated to the Victoria University, Coburg. The college, as now constituted, has an ample teaching staff for imparting instruction to ladies and gentlemen in the advanced branches of a liberal education, and a senate with full powers to examine, grant prizes, scholarships, medals, honor certificates, and diplomas in music, fine arts, commercial science, collegiate courses, etc.

The faculty is as follows:

The Rev. Jabez R. Jaques, D. D., Ph. D., *President*.

Thomas F. Holgate, B. A., *Secretary*.

The Rev. Jabez R. Jaques, D. D., Ph. D., *Professor of Classics and Instructor in German*.

John Macoun, M. A., F. L. S., *Emeritus Professor of Botany*.

James Thompson Bell, D. Sci., *Hastings Professor of Mining and Agriculture, and Lecturer in Zoology*.

The Rev. William P. Dyer, M. A., *Professor of Chemistry and Geology, and Lecturer in Philosophy*.

John A. Stanistreet, *Professor of the Theory and Practice of Music*.

T. O. Bolger, P. L. S., *Professor of Civil Engineering*.

Thomas F. Holgate, B. A., *Professor of Mathematics*.

George A. Swayze, *Professor of Commercial Science and Penmanship*.

Fred Richardson, *Professor of Oil Painting and Drawing*.

Annie E. Abrahams, M. L. A., *Professor of Modern Literature and Modern History*.

The courses of study in the institution are—

- I. Collegiate Course, embodying elective undergraduate studies.
- II. Junior or Senior Matriculation, in arts, civil engineering, law, medicine, and theology.
- III. Teachers' Courses, to prepare for teachers' examinations.
- IV. Course in Agriculture.
- V. Musical Course in Musical Academy.
- VI. Commercial College Course, and course in ornamental penmanship.
- VII. Course in Fine Arts, embracing painting, drawing, etc.
- VIII. Alexandra Ladies' College Course, leading to the M. L. A. and M. M. L.

It is the aim of Alexandra College to provide for young ladies an opportunity not only for thorough mental discipline, but for intellectual, social, and Christian culture as well; and to discover and direct the varied abilities so as to insure their best use and broadest influence in the future. A good foundation for this general culture is laid in the earlier requirements of any course, while the later elective studies permit the choice of work suited to the taste, talent, or special purpose of the student.

All students meet in general exercises, and the ladies of Alexandra College attend the same lectures and receive instruction in the same classes as the students of Albert College. They enjoy the same privileges, subject to like conditions of entrance, and receive like rewards or honors.

### III. QUEEN'S COLLEGE UNIVERSITY, KINGSTON.<sup>1</sup>

As early as 1835 it was felt among the members of the Church of Scotland in Canada that a seminary or college for the training of their ministers was highly desirable. As the management of the proposed King's College University at Toronto was in the hands of the adherents of the Church of England, it was felt that such an institution could not be made available for Presbyterian theological instruction. A committee of the British House of Commons, to which had been referred petitions from Canada in 1828 and 1830 against the exclusive character of the charter of King's College, Toronto, were disposed to solve the difficulty by suggesting that two theological chairs be established in King's College (and did so recommend)—one for students of the Churches of England and Scotland, respectively. Nothing, however, of the kind was done; nor was there any arts college then open

<sup>1</sup> The information here given of Queen's University is largely taken from a revised printed statement.

on equal terms to all the youth of the country. The Presbyterians, like the Methodists, had, therefore, to found an institution of their own. Steps were taken by the synod of the Church in 1839 to found such an institution. At a meeting in St. Andrew's Church, Hamilton, in November, 1839, the commission appointed for that purpose prepared the draft of a charter for the proposed college. Kingston was selected by the synod as the site for the new institution.

An Act embodying the charter was passed by the Provincial Legislature in February, 1840, incorporating the "University of Kingston." The Act was, however, disallowed by the imperial authorities, on the ground that it conflicted with the royal prerogative of granting charters. A royal charter was, however, issued in 1841, incorporating the institution under the name of Queen's College, with "the style and privileges of a university."

The opening of Queen's took place on the 7th of March, 1842. Rev. Thomas Liddell, D. D., of Edinburgh, was the Principal and Professor of Divinity, and Rev. P. C. Campbell, of Brockville, was appointed to the Chair of Classics. There were eleven regular students, and a few others were allowed to attend the classes in the classics and mathematics who were not sufficiently advanced to matriculate. Rev. James Williamson, D. D., LL. D., arrived in the autumn of 1842, and entered at once on his work as Professor of Mathematics and Natural Philosophy. He is still in active work, being now Professor of Astronomy and Curator of the Observatory. His connection has, therefore, been continuous during nearly the whole existence of the college, and he is, therefore, the oldest college professor in Ontario. Dr. Williamson is a brother-in-law to Sir John A. Macdonald.

After the opening of King's College, Toronto, in 1843, an agitation commenced with the view to unite the three universities then in operation into a single provincial institution. Many plans were proposed, and several measures tending to that end were introduced into Parliament and fully discussed. In 1843 the Hon. Robert Baldwin introduced a university bill, which, though it presented many popular features, was strongly objected to by the churches named and others also, because it was deficient in providing for religious instruction.

A bill was introduced by Hon. W. H. Draper, in 1845, to amend the law so as to make it more generally acceptable to the religious bodies of the country, and in 1847 the late Hon. John Hillyard Cameron introduced a measure in which it was proposed to devote a large part of the endowment to increased support of high schools and also to largely subsidize the denominational colleges. The measure failed to carry in Parliament, however, and this practically ended the agitation for the union of colleges for many years.

In the year 1844, a serious division took place in the Presbyterian Church, which tended much to add to its embarrassment, and the number of students was greatly reduced. In 1846 Dr. Liddell resigned his position as Principal and returned to Scotland. Rev. J. Machar, D. D., was next appointed Principal, and under his administration there was slow but real improvement. The number of students increased and the financial position was improved by an annual provincial grant of \$2,000, which was afterwards increased to \$5,000. These annual grants were continued until 1868, when they were entirely withdrawn by the Sandfield-Macdonald Government.

Rev. Dr. Cook, of Quebec, occupied the position of Principal for a time, with great acceptance, but he refused to accept the position permanently. Rev. Dr. Leitch was next appointed, but his early death

deprived the institution of his services. He was followed by the Rev. Dr. Snodgrass, and on his retirement the Rev. George Monro Grant, D. D., of Halifax, was appointed. Dr. Grant entered on his arduous duties with his accustomed energy, and occupies that position with great acceptance. He is an able speaker and a wise administrator. During the past few years there has been a large increase in the number of students, and also in the teaching staff. Queen's College to-day compares favorably in all respects with any similar institution in the Dominion. It has now faculties of arts, theology, and law, and there are affiliated with it the Royal College of Physicians and Surgeons, also in a prosperous condition, and the Kingston Women's Medical College.

In 1869 the financial condition of the university was such that a special meeting of synod was called to consider the matter, and it was resolved to make an appeal to the country for aid. The people of Kingston came forward and raised about \$25,000, and the summer of that year was spent by Principal Snodgrass and the late Professor Mackerras in raising an endowment. The result of the whole effort was that about \$103,000 was raised for the equipment of the college.

In 1878 Principal Grant made the proposition to raise \$150,000, in order to provide new buildings, additional professors, and apparatus. Many thought the proposition impracticable, but the doctor entered into the scheme with great energy, nobly backed by several well-tried friends. The inhabitants of the "Lime-stone City" were asked to raise \$40,000 of this amount, and they enthusiastically responded by subscribing over that amount. All classes and denominations came to its aid in the last great effort. The appeal was successful; additional ground of about twenty acres was at once purchased—a site of rare beauty and convenience—and the present noble building was erected.

At present there are 242 students in attendance in the arts and science classes, and 134 in the medical classes. Allowing for double registration there are 302 students in all at the university.

The officers and professors of the university are as follows: Chancellor, Sanford Fleming, C. E., C. M. G.; Vice-Chancellor, Very Rev. George Monro Grant, M. A., D. D.; Vice-Principal, Rev. M. James Williamson, A., LL. D.; Registrar, Rev. George Bell, LL. D.

The Professors in Divinity are Dr. Grant, Rev. Dr. J. B. Mowat, Rev. Donald Ross, Rev. James Carmichael, and Rev. H. G. Parker.

#### *Faculty in Arts.*

Rev. J. Williamson, M. A., LL. D., *Professor of Astronomy.*

Rev. John B. Mowat, M. A., D. D., *Professor of Hebrew.*

Nathan F. Dupuis, M. A., F. B. S., Edinburgh, *Professor of Mathematics.*

Rev. George D. Ferguson, B. A., *Professor of History and English Language and Literature.*

John Watson, M. A., LL. D., *Professor of Logic, Mental and Moral Philosophy, and Political Economy.*

John Fletcher, M. A., Oxon, *Professor of Classical Literature.*

David H. Marshall, M. A., Edinburgh, F. R. S. E., *Professor of Physics.*

W. L. Goodwin, B. Sc., London, D. Sc., Edinburgh, *Professor of Chemistry and Mineralogy.*

Rev. A. Nicholson, B. A., *Lecturer on Modern Languages and Assistant to Professor of Classics.*

Rev. J. Fowler, M. A., *Lecturer on Natural Science.*

Rev. R. Campbell, D. Sc., *Lecturer on Political Economy.*

Rev. H. G. Parker, *Lecturer on Elocution.*

Messrs. Nicol, Robertson, and Gaudry, *Tutors in Chemistry, German, and French.*

Fife Fowler, M. D., F. R. C. S., is President of the Faculty of Medicine. The professors in this faculty are also lecturers in the Women's Medical College, which is affiliated with the university. There are six lecturers in the faculty of law.

#### IV. THE UNIVERSITY OF TRINITY COLLEGE, TORONTO.

The following statement was kindly prepared by Rev. William Jones, M. A., Registrar :

The University of Trinity College is a university in connection with the Church of England, created by royal charter in 1852. Previously to that time the University of King's College, of which the first Bishop of Toronto was President, had existed in connection with the Church of England; but under the provisions of an Act of the Provincial Legislature which came into operation on January 1, 1850, the faculty of divinity in that university was suppressed, and other important changes in its constitution were made which appeared to necessitate the erection of a new college and university in which secular instruction should not be dissociated from religious teaching.

The Bishop succeeded in raising a large endowment from voluntary subscriptions from churchmen in Canada, England, and the United States, so that on April 30, 1851, the foundation stone of the college building was laid, and on January 15, 1852, the work of instruction was begun, the staff consisting of four professors in arts, besides those in the faculties of law and medicine. During the last thirty years the endowment has been largely increased by liberal contributions made from time to time, so that the original amount is now about trebled. In 1878 a large and handsome convocation hall was erected, and in 1884 a long felt want was supplied by the erection of a finely proportioned and beautiful chapel.

The University of Trinity College at present consists of the faculty of arts and divinity, of an affiliated Medical School with a commodious building and a large staff of professors, and an affiliated Women's Medical College. Provision is also made for the higher education of women in connection with the Bishop Strachan School in Toronto, and connected with the university is a large school for boys at Port Hope, containing about 150 boarders.

The following is the number of graduates in the several faculties in the university : in divinity, 17; in arts, 282; in law, 16; in medicine, 351. The number of undergraduates is as follows : in arts, 41; in law, 19; in medicine, 172; in music, 6.

The government of the university is by the royal charter vested in the Corporation of Trinity College, which body by an Act of the Legislature of the Province of Canada (15 Vic. ch. 32) is composed of the Bishops of the five dioceses into which the original Diocese of Toronto has been divided, of the Trustees of Trinity College, and of the members of the Council of Trinity College. The College Council consists of three classes of members: *ex officio*, nominated, and elected members. The *ex officio* members are the Chancellor of the University of Trinity College, the ex-Chancellors, the Provost, and Professors in Divinity and Arts of Trinity College. The following members are nominated, four by each of the Bishops of Toronto, Huron, Ontario, and Niagara, from their respective dioceses, and one by each medical school or college affiliated with the university. Fifteen members are elected, eight by the same electors as the Chancellor, to hold office for four years, two being elected in each year, and the remaining seven by the whole corporation.

#### *Faculty in Arts.*

*Provost:* Rev. C. W. E. Body, D. C. L., late Fellow of St. John's College, Cambridge.

*Dean and Professor of Mathematics:* Rev. William Jones, M. A., St. John's College, Cambridge.

*Professor of Classics:* Rev. A. Boys, M. A., Jesus College, Cambridge.

*Professor of Mental and Moral Philosophy:* Rev. William Clark, M. A., Hertford College, Oxford.

*Keble Professor of Divinity:* Rev. G. A. S. Schneider, M. A., Caius College, Cambridge.

*Lecturer in History:* Rev. William Clark, M. A.

*Lecturer in Oriental Languages:* The Provost.

*Lecturer in Physical Science:* T. H. Smyth, M. A., B. Sc., Universities of Toronto and Edinburgh.

*Fellow and Lecturer in Natural Science:* Rev. G. E. Haslam, M. A., Trinity College, Dublin.

*Lecturer in Modern Languages:* J. C. Dunlop, University of Edinburgh.

*Lecturer in Elocution:* Rev. H. G. Parker, Philadelphia School of Oratory.

*Lecturer in Apologetics and Pastoral Theology:* Rev. W. Clark, M. A.

*Lecturer in Homiletics:* Rev. J. P. Lewis.

Walter B. Geikie, M. D., C. M., F. R. C. S. E., L. R. C. P., Lond., is Dean of the Faculty of Medicine of the Trinity Medical School. With the university is also affiliated the Women's Medical College of Toronto, M. Barrett, M. A., M. D., Dean.

A course of study for women was established in the year 1883. Candidates who pass any of the examinations will be entitled to receive a certificate to that effect from the registrar, but candidates will not be admitted to degrees. Attendance at lectures will not be required.

Women may present themselves for each of the three examinations for the degree of bachelor of music, and upon passing any one of these, will be furnished with a certificate to that effect.

Want of space compels the omission of the curriculum of the university. In regard to it Rev. Professor Jones, Registrar, says:

It may be remarked that the principal distinguishing features of the curriculum are:

(a) The place assigned to theology as an art subject, including an honor course in that department.

(b) The admission of optional subjects in increasing ratio in the latter part of the course, the candidate in the final examination being allowed to concentrate his energies in a large degree on one division. In these respects, as also in a three years' course, the procedure of the Universities of Oxford and Cambridge has been followed.

In the arts course for women the place assigned throughout the course as an alternative for mathematics may be noted. The courses provided for degrees in the faculties of divinity and music are a specialty of this university among the Canadian universities.

Trinity College School, Port Hope, is connected with the university. It is designed for the education of youths and as a feeder to the university with which it is connected. It is modeled on the plan of the public schools in England, and has all the appliances for giving a superior classical, mathematical, and English education to boys previous to their matriculation in the university, or their admission to the Law Society as "Students of the laws." Its officers are as follows:

#### *Visitor.*

The Right Rev. The Lord Bishop of Toronto.

#### *Governing body.*

*Ex-officio Members.*—Hon. G. W. Allan, D. C. L., *Chancellor of the University of Trinity College*; Rev. The Provost of Trinity College; Rev. W. Jones, M. A., *Professor of Mathematics, Trinity College*; Rev. Algernon Boys, M. A., *Professor of Classics, Trinity College*; Rev. W. Clark, M. A., *Professor of Mental and Moral Philosophy, Trinity College*; Rev. C. J. S. Bethune, M. A., D. C. L., *Head Master of the School*.

*Elected Members.*—Rev. J. G. Geddes, M. A., D. C. L., *Dean of Niagara*; Charles J. Campbell, Esq., Rev. John Pearson, John R. Cartwright, Esq., B. A., Rev. Henry Wilson, D. D., Arthur T. H. Williams, Esq., M. P.

The present head master is the Rev. C. J. S. Bethune, M. A., D. C. L., Trinity College, Toronto.

NOTE.—I may here state in this connection that the collegiate institute at Coburg, under the principalship of D. C. McHenry, Esq., M. A., is affiliated to Victoria University as a preparatory institution, while it is also the county grammar or high school. The collegiate institute at Kingston, under the principalship of A. P. Knight, Esq., M. A., is affiliated to Queen's University in the same way. There is also a superior college for boys at Pickering (near Toronto). The other feeders to the university colleges of Ontario are fifteen other collegiate institutes and eighty-seven high schools scattered all over the Province. For particulars on this subject, see the accompanying Paper on "Secondary Education in Ontario," by D. C. McHenry, M. A. (p. 185).

#### V. UNIVERSITY COLLEGE OF OTTAWA.

The College (or University) of Ottawa is under the direction of the Roman Catholic Church. It was founded in 1848 by the Right Reverend Joseph Eugene Guigues, O. M. I., D. D., first R. C. Bishop of Ottawa. In 1856, the Bishop confided the direction of the college to the "Society of the Oblate Fathers of Mary Immaculate." The total value of the college building and grounds is about \$75,000. It has also a good library and cabinet of natural philosophy (or physics), and of chemistry and natural history. The college obtained university powers in 1866. It confers degrees in arts, science, and literature—B. A., B. Sc., B. L., as well as M. A. The number of students at present attending the collegiate course is 140; in the commercial course 160; total 300. The officers and faculty are as follows:

- Very Rev. J. H. Tabaret, O. M. I., D. D., President, *Lecturer on Political Economy.*  
 Rev. J. Mangin, O. M. I., D. D., Director of Theologians, *Professor of Moral Theology, Canon Law, and Sacred Eloquence.*  
 Rev. M. Froc, O. M. I., D. D., *Professor of Dogmatic Theology and Holy Scripture.*  
 Rev. A. Pallier, O. M. I., *Professor of Church History.*  
 Rev. P. E. Gendreau, O. M. I., Bursar.  
 Rev. J. B. Balland, O. M. I., D. D., Prefect of Studies, *Professor of Physics and Mechanics.*  
 Rev. J. J. Fillatre, O. M. I., D. D., *Professor of Moral Philosophy, Geology, and French.*  
 Rev. W. M. Bennett, O. M. I., M. A., *Professor of English Literature.*  
 Rev. R. M. Barrett, O. M. I., M. A., *Professor of Latin.*  
 Rev. Z. Vaillancourt, O. M. I., *Professor of Latin and French.*  
 Rev. L. A. Nolin, O. M. I., M. A., *Professor of Greek, Latin, and French.*  
 Rev. A. Dubaut, O. M. I., *Professor of Greek and Latin.*  
 Rev. G. J. Van Laar, O. M. I., *Professor of History and Geography.*  
 Rev. A. Leyden, O. M. I., M. A., *Professor of Mathematics.*  
 Rev. C. Marson, O. M. I., M. A., *Professor of Mathematics.*  
 Rev. A. Dontenville, O. M. I., M. A., *Professor of Natural Sciences and Drawing.*  
 Rev. R. S. Dozois, *Professor of French, History, and Geography.*  
 Rev. P. Gladu, O. M. I., *Professor of Vocal Music.*

In the commercial course there are eleven professors and instructors.

In regard to the government of the college, the Very Reverend the President sends the following information:

The college is directed by a Superior, appointed for an undeterminate length of time by the Senior Superiors of the Congregation of the Oblates. A Council, consisting of three members, is associated with him for the management of the pecuniary

affairs of the house. He is by right president of the council boards of studies and of the council of discipline, which have for objects respectively to see that the studies are well and properly pursued, and that due regularity is maintained. The prefect of studies sees that the programme is strictly carried out. In the more advanced classes the system of teaching by lecture is followed. The classical course lasts seven years. The matriculation examination takes place at the end of the third year of the classical course; the intermediate at the end of the fifth year. The commercial course lasts four years.

NOTE.—Regiopolis College was founded at Kingston in the year 1846 by the Very Reverend Angus Macdonnell, Vicar-General. It maintained a highly respectable position for many years, and especially during the episcopate of the Right Reverend E. J. Horan, the second Bishop of Kingston. After his death it was closed and has not yet been re-opened. Bishop Horan had been Principal of one of the normal schools in the Province of Quebec, and was noted for his educational zeal. On his arrival at Kingston he sought to make Regiopolis College even more efficient than it had been, and to take rank among the first colleges of the country. It had about one hundred students.

## VI. THE WESTERN UNIVERSITY, LONDON.

The Western University of London, Ontario, was incorporated by Act of the Legislature of Ontario, 41 Vic., chap. 70 (7th March, 1878), in connection with the Church of England in Canada, with power to affiliate with Huron College, a similar Church of England institution, and to confer degrees in arts, divinity, medicine, and law, subject to the conditions contained in Sections 7 and 10 of the Act. Section 10 provides that any university powers granted for conferring degrees shall not be exercised until it has been made to appear to the satisfaction of the Lieutenant-Governor in Council that the sum of one hundred thousand dollars, at the least, has been raised in property, securities, or money, including Huron College when affiliated thereto, and is held for the purposes of the university, and it was declared that such powers might be withdrawn at any time when the Legislature deems it expedient to require such university to become affiliated in the whole, as in respect of any particular faculty or department, with the Provincial University, and that the college thereby incorporated might, on its own motion, become so affiliated in respect of any of its faculties, other than divinity. Section 7 provides that the senate shall not confer any degrees in the faculty of arts until such time as four professorships, at least, have been established therein, and four professors appointed to discharge the respective duties thereof, and until this has been made to appear to the satisfaction of the Lieutenant-Governor in Council.

Huron College, on the 24th of June, 1881, became affiliated with the Western University, and constituted its faculty of divinity, by agreement between the two corporations, and all the property and securities of Huron College, amounting in value to the sum of \$95,000, also became vested in trust for the purposes of the Western University.

The university was opened in October, 1881, and at the first meeting of convocation in April, 1882, the several faculties reported 10 students in theology, 16 in medicine, and 7 in arts.

## WOODSTOCK COLLEGE.

The annual announcement, or calendar, of this institution for 1884-'85 says:

Woodstock College, formerly "The Canadian Literary Institute", was founded in 1867, principally through the exertions of the late R. A. Fyfe, D. D. Under his wise presidency, ably assisted for eighteen years by Prof. J. E. Wells, M. A., the school constantly increased in efficiency and power, until from a small beginning it has attained its present large proportions and wide influence.

Its friends have donated in all nearly \$100,000 for grounds and buildings. \* \* \*

The latter now consist of three large and separate structures. \* \* \*

During the presidency of the late Dr. Fyfe, the school consisted of two departments, a theological and a literary. Into the latter both sexes were admitted. The theological department having been removed to Toronto, the literary, now Woodstock College, enlarged by the addition of a commercial college, remains.

The constant aim of the management is to provide a thorough Christian education. Though it was founded and is maintained principally by the Baptist denomination, yet it has never been sectarian. None of the peculiar tenets of that denomination are taught.

The college embraces the following departments of work:

1. The collegiate department.
2. The ladies' department—a separate building.
3. The commercial department.
4. The preparatory department, or boys' school.

Principal, Rev. N. Woolverton, B. A., with fifteen assistants.

The College is affiliated with the University of Toronto.



## HOW TO INCREASE THE PROPORTION OF LIBERALLY EDUCATED MEN.

BY O. H. PAYNE, D. D., LL. D.,

*President Ohio Wesleyan University, Delaware, Ohio.*

By liberally educated men is meant persons who have been graduated from some respectable college, after having pursued a wisely selected and somewhat extensive course of study. The question implies that it is desirable to have the number of persons who are thus educated, women as well as men, increased. It implies also that it is possible, and even probable, that the proportion of educated men *may* be increased, if means are wisely adapted to the desired end.

We may properly inquire, What are the causes which now conspire to prevent a larger proportion of men from seeking a liberal education? Without attempting an accurate analysis, or an exhaustive treatment of these causes, we name the following as perhaps the principal ones:

*First*, An undefined prejudice against colleges, as fostering a kind of literary Phariseism, or intellectual aristocracy—a prejudice which is accompanied by serious charges against their spirit and management.

*Secondly*, A still more wide-spread disbelief in the practical value of a college education.

*Thirdly*, The time required to complete a college course.

*Fourthly*, The expense incurred.

These are the hinderances which must be removed, as far as is consistent with the end sought. In whatever degree they can be taken out of the way, or their influence diminished, to that degree will the proportion of educated men be increased.

These causes deter from a collegiate training nearly all the business men of our country, and indeed, nearly all others who are not intending to enter one of the so-called learned professions, while by far the larger proportion, even of the candidates for these professions, rush into their vocation through some shorter and less expensive route than the college or university.

Probably the largest proportion of men with liberal culture will be found in the ministry, though there it is far too small; in the practice of medicine, and also of the law, probably not *fifteen per cent.*, including the entire country, are graduates of colleges; in journalism there are only a few, and in the profession of teaching, outside of the colleges themselves, the number is lamentably small.

If Socrates were among us to-day and should put his hand on the shoulder of every man proposing to enter public life and manage weighty concerns, and ply him, as he did the brilliant and ambitious Alcibiades, with caustic questions as to what outfit of knowledge or wisdom he had for his adventurous purpose, he would puncture many a bubble of conceited ambition, and cover with humiliating shame many an aspirant for high position and distinction.

There is an ample field for our American colleges to cultivate; and we are here to consider with all honesty how we can cause the field to yield a richer harvest of cultured and capable men.

If it is desirable to increase the number of educated men, it is certainly advisable to adopt the means necessary to secure the desired end. We must seek light, and invite suggestions in the spirit of honest and earnest inquirers. We must be prepared to abandon traditions and uproot deep-seated prejudices.

The educator, like his pupils, must take good heed to cultivate the teachable disposition, remembering, as Bacon suggests, that the kingdom of knowledge, like the kingdom of heaven, is entered only as one possesses the spirit and temper of a little child. We must especially avoid the common mistake of looking at any system or process of education too subjectively, as though it possessed any importance in *itself*. It is never anything but a means to an end; like a sermon, it is never to be criticised or judged as a work of art, independent of the supreme end sought. It is only an instrument of service, valuable as it produces good results.

If we desire to multiply the number of men and women possessing genuine culture and qualification for life's work, we must think of colleges and universities only as instruments to this high and worthy end. We must never sacrifice the end to defend the means. The *man* must ever be more than the *means*.

In this spirit we proceed to answer, as best we can, the question under discussion—the great question, *How?*

I. We must seek, in all legitimate ways, to bring the college nearer to the *heart* of the people. It cannot be denied that to-day the hearts of the American people are far from being touched with any special feeling of sympathy with our colleges, or interest in their work. It is the thousandth man that bestows upon them a kindly thought and the hundred-thousandth a generous gift. The people, even the better class, are far more interested in the missionary work of Kaffraria and Japan than they are in the educational work of the colleges which supply their pulpits with ministers, and should supply their schools with teachers for their children. How few homes are there, comparatively, in which the name of a college is a household word, and the children's faces are steadily turned toward it as the scene of their future mental exploits? If higher education is to reach a larger number of persons in the future than it has in the past, there are three classes whose sympathy and service must be especially enlisted,—parents, teachers, and clergymen. Give our colleges the cordial good-will and co-operation of these influential parties, and they will not want for patronage. If we could place teachers with liberal culture in our public schools, the colleges would soon be crowded. Under favorable influences, out of nearly every family of medium size and in ordinary circumstances, one member might be induced to seek collegiate training. But if to-day there were only one out of ten families in the State of Ohio whose educational advantages are superior, the number in the colleges of this State would be increased *thirty-fold*. Now the number of students in the collegiate departments of Ohio colleges, according to the latest Report of the United States Commissioner of Education, is 1 to 1,224 of the population. This is the third State in the Union in respect to the proportion of college students to the population, Connecticut being first with 1 student to 663 of the population, and Massachusetts second with 1 to 924.

In the total number of students in its colleges Ohio stands second, being outranked only by New York, which with a population of 5,082,871

has 3,620 students in colleges, while Ohio with a population of 3,098,062 has 2,611. These figures, it must be remembered, embrace all students reported as connected with the higher departments of the universities and colleges of the several States, and undoubtedly include many thousands who could hardly be classed with propriety among students of the standard collegiate courses.

The entire number of students, including preparatory and irregular students, reported in 1882 in the United States, is 64,096, against 52,053 in 1873. Thus it appears that while our population probably increased in the nine years preceding 1882 28 per cent., the increase of students in universities and colleges was only 23 per cent.

Evidently the proportion of young men and women now seeking a liberal education, in any State and throughout the entire country, is not encouragingly large. One college student to nearly two thousand people does not indicate intense love for collegiate education.

Nor must it be forgotten that not many more than one-half of those who enter college complete the full course.

Now it is clear enough that by some means the college must become a more popular institution, using the term popular in its best sense, among the American people, if it is to win more of our promising young people to a cultured and well-equipped life. The very name of college must become more familiar in our American homes, and what it signifies and suggests must be made more desirable. The prejudice which has been referred to must be removed, and even indifference must give place to interest and sympathy.

Here is the difficult task which confronts educators and lovers of genuine education. The heart of the people must be reached, the goodwill of a larger constituency must be secured.

It need hardly be added that the attitude and action of college men will materially affect the problem. There must be no dogmatic assumption of oracular wisdom, and no pretense that supreme excellence belongs to the traditional education founded on the buried centuries. Intellectual Phariseeism, if discovered in the slightest degree, is quite as offensive as religious Phariseeism, and neither is relished by the people of this free and progressive Republic.

Greece and Rome must not entirely exclude the voices and visions of the Nineteenth Century, nor the Middle Ages dictate the thought and control the life of to-day. The popular favor extended to colleges and the influence which they exert will also be largely determined by the *quality* of the men and women who pass out of their halls. They will be rigidly and rightly judged by their "fruits." One man is worth a thousand theories, and one living example will practically do more to establish or refute a theory with the majority of men, than all the fine-spun arguments of learned advocates. What the world wants to-day above all other wants is men—men and women of lofty type and genuine character and masterful power. And in proportion as the colleges send forth this type of symmetrical and stalwart men will the public feel their force and appreciate their value.

II. This leads to the consideration of a second point in the attempted answer to the question under discussion.

It must be made evident, beyond question, that a college education is of the greatest practical value to a vastly larger number of persons than now believe it.

We cannot close our eyes to the fact that the multitude of even ordinarily intelligent men are unable to see its great value, and thousands of sagacious business men will even question whether the education

which the colleges afford, with the time demanded, does not operate as a *disqualification* for business success. Nor do business men stand alone in this questioning attitude. In full agreement with them are not a few of the most eminent men of our times, men who have themselves enjoyed the highest culture, and in many instances are distinguished educators.

It is not the object of this paper to enter upon an elaborate discussion of the fruitful question as to the merits of the "old education" and the "new education," the ancient classics and the modern sciences, and the place which each should have in our colleges. The subject, however, relates directly to the question before us and deserves thoughtful consideration, particularly because of its bearing upon this vital problem of how to *increase* the proportion of educated men.

There is certainly reason for a calm and dispassionate review of the whole subject of education, as to its scope and end, the studies embraced and the methods employed. It were folly to claim such great excellence for our present system as to become blind to its imperfections and failures. We certainly are not so bound to the dead Past as to be deaf to the voices of the living Present.

We all acknowledge that the colleges are not reaching with their beneficent influence so large a number as they should. If any change can be adopted that will not imperil the value of a liberal education and yet furnish its invaluable aid to a greater number, who of us has the hardihood to resist such a change? And since there is assuredly something to be said in favor of a change, and something *is* said by men as wise and as loyal as any of us, who of us has the temerity or the assured wisdom to affirm that no change is required?

For myself I am free to acknowledge that I have a listening ear and a receptive mind for any word honestly spoken touching our whole system of education. I have no such supreme faith in anything human that I do not believe it can be greatly improved. While listening to all the voices and treasuring all the gifts of the Past, it would be the supremest folly to assume that the Past taught all the wisdom and furnished all the treasures of learning that the nineteenth century could hope to enjoy. Nay, more, there are few of us who would not be obliged to go further, and say that the results of our entire educational work are far from satisfactory.

The present age demands *thinkers* and *workers*; but the average pupil is rarely taught either to think or to work with conspicuous ability. How many students in high school or college can give an intelligent reason for any rule, or an original example of any principle which they repeat with parrot-like flippancy?

Must it not be acknowledged that while our colleges have rendered the country invaluable service, and educated men are and have been the leaders of society, yet the *average* college graduate is not specially remarkable for culture or character? that he does not possess in marked degree mental power or symmetry or balance, and can hardly be pointed to as an illustrious example of whatever is true and beautiful and good in character? His *whole* nature has *not* been so fully and symmetrically developed as to warrant any strong assumption that we have reached supreme excellence in system and method. The probabilities, therefore, of fatal loss attending any change are not so great as to make us shudder at its contemplation.

On the other hand, we cannot rashly venture upon any radical reconstruction of our educational system which seriously threatens to break

down what little scholarship we now have, and give us results still more unsatisfactory.

The two ends of education may be broadly stated as *enrichment* and *equipment*—the ennobling of one's life, and the qualifying of one's self for a successful life-work. 'This twofold object of education must never be lost sight of; nor need the dual work ever be separated. One sided views of education are mischievous.

Richter says, "The end of education is to elevate above the spirit of the age." That is a great truth which, amid the clamor about an education for the times and of the times, we do well to heed. We must have a culture which ennobles, enlarges, and enriches the mind, and lifts it out of the materialistic atmosphere of the age. Hence the necessity of a judicious attention to the classics, ancient and modern, to literature, to history and philosophy, and kindred studies.

We cannot afford to strike at genuine culture nor at Christian faith, and become the abettors of a demoralizing materialism, in order to make our educational work conform to the demands of a false public sentiment. And yet we must meet the *real* wants of society and wisely adapt educational methods to those wants.

It is not enough to tell men that education will give them broader views and richer thoughts and higher enjoyments; we must be able to add with unquestioning confidence that it will assuredly qualify them the better to perform their life-work, whatever that may be. And this I think should be true of higher education as well as of primary and secondary education.

I can hardly accept the conclusion reached by some estimable men that colleges are necessarily exclusive, and doing a work that can only apply to a favored few, and that they need not attempt to reach a larger constituency. I cannot readily accept the theory which obtains among not a few college men, that higher education cannot be adapted to business men, and is not essential to men of affairs. It seems to me that hardly any class of men to-day need the benefits of genuine education—mental breadth and grasp and power—more than the manufacturer, the banker, the merchant, the manager of farms and mines, and of all the great enterprises connected with the material development and industrial interests of our country. To surrender this large, intelligent, and influential class of citizens, destined to grow still larger and more influential, as wholly or mostly beyond the reach or need of collegiate education, is in my judgment a grave mistake; a mistake which neither the college nor the community can afford to make. It is doubtful whether colleges resting on such a basis can continue to hold even their present position of limited influence, much less advance to a more commanding position.

If then, we grant that colleges ought not to be satisfied to educate a select few, a small proportion only even of those who are to enter the learned professions, but that they should seek to extend their ennobling influence to as many as possible, the question of adapting means to ends becomes of paramount importance. How can the college curriculum and the college work be best adjusted to the twofold object already stated? There is need of breadth and wisdom and charity here. Mr. Matthew Arnold's "sweetness and light," the high end of culture, will be essentially helpful to us. Neither the "old education" nor the "new education," distinctively characterized, can be confidently claimed as absolutely best adapted to the ends sought.

It is conceded by the wisest and most liberal advocates on both sides, that when right methods of study are employed, there is no essential

difference in the mental discipline or culture furnished by either system. The claim that disciplinary results and culture are obtained only or largely through the ancient classics cannot be sustained, and is not now generally pressed by the adherents of the old *régime*. President Garfield, himself a fine classical scholar and regaling himself by reading Horace and Homer during his busy public life, says,

In general, it may be said that the purpose of all study is twofold,—to discipline our faculties and to acquire knowledge for the duties of life. It is happily provided in the constitution of the human mind, that the labor by which knowledge is acquired is the only means of disciplining the powers. It may be stated, as a general rule, that if we compel ourselves to learn what we ought to know, and use it when learned, our discipline will take care of itself.

He then proceeds to enumerate and discuss the “kinds of knowledge which should be the objects of a liberal education,” and makes some of the gravest charges against our system of education, in colleges especially, that have ever been made, which every educator ought to read. He affirms, and it would be difficult to refute the charge, that the old and still prevailing system of college education, with all its excellences, fails to give practical qualifications for the greater part of life's pursuits. In reference to this failure he makes use of the following strong language:

Business colleges originated in this country as a protest against the failure, the absolute failure, of our American schools and colleges to fit young men and women for the business of life. Take the great classes graduated from the leading colleges of the country, and how many, or rather how few, of their members are fitted to go into the practical business of life and transact it like sensible men? These business colleges furnish their graduates with a better education for practical purposes than Princeton, Harvard, or Yale.

He continues,

The people are making a grave charge against our system of higher education when they complain that it is disconnected from the active business of life. It is a charge to which our colleges cannot plead guilty and live. They must rectify their fault, or miserably fail of their great purpose. There is scarcely a more pitiable sight than to see, here and there, learned men, so-called, who have graduated in our own and the universities of Europe with high honors—men who know the whole gamut of classical learning, who have sounded the depths of mathematical and speculative philosophy—and yet who could not harness a horse, or make out a bill of sale, if the world depended upon it.

When such a man, himself a college graduate and college professor and life-long friend and supporter of colleges, publicly and repeatedly makes such utterances as these, and when a large number of the most thoughtful men in this country and in Europe join hand and voice with him, he must be a man of rare courage, or some other nameless quality of mind, who confidently stands by the old *régime* without an infinitesimal change, as certain that it is the educational *summum bonum* as he is of his own existence, and looks down with contemptuous pity on the man who is so ignorant as to challenge its perfection.

But while we thus acknowledge the defects and partial failure of the old system, we cannot but look with suspicion upon the radical changes proposed by the modern scientific school of educators. The undue preponderance of scientific studies has too strong tendencies toward the materialistic, which is already dominant in our age and country. Notes of warning certainly come to us from the Italian universities, which failed in the higher ends of culture.

Matthew Arnold says, “It shows how insufficient are the natural sciences alone to keep up in a people culture and life; that the Italians, at the end of a period with the natural sciences alone thriving in it, and letters and philosophy moribund, found themselves, by their own con-

fession, with a poverty of general culture, and in an atmosphere unpropitious to knowledge, which they sorrowfully contrast with the condition of other and happier nations." If it is replied that scientific methods are far different now from what they were centuries, or even decades, ago, the answer has been given by one of the most thoughtful and brilliant men among modern educators, Professor Diman, as follows: "The method has been improved, but the subject matter remains the same." "In its widest scope science aims simply at finding a theory of nature; its last word is impersonal, inexorable law. The more complete the absorption of the intellect in purely scientific methods, the more complete the severance from all spiritual intuitions." "Science discusses force and method, but says nothing of God, freedom, and immortality. She leads us to the tree of knowledge, not to the tree of life." When history is reduced to the rigid and inexorable laws of physical science, as it is by Buckle and Goldwin Smith, and moral philosophy is based on molecular movements, as it is in substance by Spencer and Bain; when the data of ethics must be searched for only among the rubbish of matter, with its necessitarian laws,—these studies lose their inspiring and ennobling power. It would be perilous to turn our American youth out into these sterile pastures to herd with the cattle, and to feed on that which perishes alike with themselves.

No! The "new education" that commends itself to our acceptance cannot be of this materialistic quality. The subject is environed with difficulties, but a wise combination of the two systems, the "old" and the "new," uniting the best features of both, the classical and the scientific, the literary and the practical, will doubtless be best for enriching the mind and equipping the man for his life-work.

We cannot discuss at greater length this most vital aspect of our subject. Enough to add that, recognizing the desirableness of reaching a larger proportion of American youths than we now do, and the necessity of correcting the mistakes of the past and adjusting our system of higher education to the broader ends sought, it becomes a question of wise adaptation and earnest endeavor. The public must be made to see that true education does not consist *alone* in giving one the power to transact business and to accumulate wealth, but that it aims at the ennobling of one's nature and the enriching of his life, at the same time that it does bring to its possessor increased ability for greater achievements.

While educators must recognize the importance of looking at the practical side of their educational work, remembering that however much they may disdain the bread-and-butter aspect of life, nevertheless its dire necessities press with relentless rigor on the scholar as well as the hod-carrier, and that the world's great industries are too closely connected with the higher interests of man to be overlooked in any broad and worthy scheme of education.

Three courses of procedure are open to the colleges of our country:

*First*, To confess their inability to meet the demands upon them, and permit the multitude of even conspicuous actors on the stage of our American life to live and die without the aid of higher education; or, *secondly*, To assign the work to another class of schools, such as business colleges, scientific and industrial schools, etc.; or, *thirdly*, To undertake the work themselves, and adjust machinery and methods to the end proposed.

The latter course would seem to be the wisest and best for several reasons, which time will permit me only to mention.

(1) The colleges cannot justify themselves before the public, whose confidence and support they need, in pursuing an exclusive policy which does not seek "the greatest good of the greatest number," but complacently permits ignorance where knowledge is needed and possible.

(2) Other schools are not likely to do the work as well as the colleges might do it. The history of agricultural colleges is not assuring; hardly one has proven a success except in connection with a regular college. Business colleges, exclusively such, are largely of a very superficial character, often giving their pupils a cheap substitute for a sound and solid education; yet they teach what all business men must know, and if the colleges will not combine the practical with their higher culture, the business colleges will take the young men by platoons, and genuine culture must ever be wanting among the most worthy and important classes in society.

Schools of technology and of special science are of a specific and limited character, and they are probably most serviceable when connected with the college. The same is true of normal schools, which, if they could be lifted above their present status, and out of their present atmosphere, and connected with well-equipped colleges, with all their culture and inspiration, would prove a benediction to the whole American people. And this great work can be accomplished by the colleges without deterioration in genuine scholarship, and with vast increase of influence and usefulness. The general can be combined with the specific, the literary with the practical, by a wise adjustment, and with great benefit to all concerned.

The chief obstacle to be overcome—let me name it without offense—is the prejudice and the pride, nurtured by traditions which, to many of us, have come to possess almost the sacredness of inspired wisdom. We are in trepidation lest our cherished institutions should become something other than the college of the illustrious Past, as though *that* must be protected and preserved, whether men were educated and Society lifted upward and propelled forward in its high mission or not.

But institutions are nothing; men are everything. The former are the scaffolding, the latter the glorious temple rising in beauty and perfection. Traditions should be used as helps, never permitted to become hinderances. "The meek shall inherit the earth," is a profound principle, eminently applicable to the entire work of education. If the college wishes to share more largely in this great inheritance, it must clothe itself with this rarest grace of meekness.

III. The *time* required to secure a collegiate education, since it excludes so large a number who but for this would seek college culture, is worthy of careful consideration.

The proposal to establish a partial course of wisely selected studies, limited to a somewhat narrower range than that usually covered, and yet sufficiently full to furnish a generous culture, seems not to have met with favor among college officers. It is, however, worth while to consider whether such a course, leading to an appropriate degree, might not profitably be connected with a first-class college, along with its more extensive courses.

But granting, as we all believe, that the present standard course is none too full for those who can possibly compass it, there is a serious question whether some other adjustment of time and methods might not accomplish equally good results with considerable saving of valuable time.

At the risk of introducing startling and unpopular theories I venture to make two or three suggestions.



First, is it not possible that some new arrangement of terms and hours of actual work might be wisely adopted, at least for such students as might prefer it? Meeting recently a young clergyman of clever parts, and falling into conversation with him, I learned that he had attended a school with which he had no special affiliation. Finding him both bright and frank, I inquired why he attended that school rather than some other college. The answer was promptly given; he could accomplish an equal amount of work there in materially less time than at the standard college. Incredulous, of course, I asked if he could do his work as thoroughly. The answer was, "Yes, with an honest, earnest purpose." "How?" There were four terms a year of twelve weeks each, and six days work in each week. I began to apply my mathematics. The ordinary college has about thirty-seven weeks of actual study, with five days per week. One hundred and eighty-five days a year, while my economical and talented young friend had given *two hundred and eighty-eight* days of honest study to each year. By this arrangement the ordinary four years college course *can* be fully completed in just *two and fifty-seven hundredths* years. Of course there are college professors and college students whose ideas of the eternal fitness of things would be fearfully shocked at the mere mention of such continuous work as this.

But why should we be startled at such a suggestion? Does not the merchant work forty-eight, and oftener fifty-two, weeks in a year to pick up gold, and the minister to benefit his brother, and the manufacturer to keep the wheels of industry buzzing? Earnest men with a great purpose are anxious to achieve the greatest possible good in their lives, and are more eager for labor than for holiday rest.

What class of men are, or should be, more in earnest than students and teachers in our colleges? It is doubtful whether for the majority of students the arrangement suggested might not be quite as favorable for health, scholarship, and morals. Young children in the primary schools may be, and perhaps sometimes are, overpressed with study; but few college students with correct habits are injured by hard study. College work is not more exhausting than that of most men outside of college halls. Holidays and vacations are by no means always profitable, in any sense. Of course such a plan would call for a larger teaching corps.

If it is said that the English colleges have shorter collegiate years than our own, two facts may be stated in reply; first, the English colleges graduate a large number of very superficially educated men; secondly, the *real* scholars do a large part of their *work* outside of college walls and college terms.

The German *realschulen* and *gymnasien*, which correspond most nearly to the American colleges, accomplish almost twice the work in a given time that our colleges do.

I do not propose this plan of more work in a year as the absolutely best plan that can be adopted, but I suggest it as a hint, and a possible alternative between a collegiate education thus secured, or not secured at all, by many earnest and worthy youths.

It would not be impossible to combine this plan with that ordinarily pursued, carrying forward two classes of students, according to choice, and thus test the merits of both. At any rate our thought will not be squandered on a suggestion that has such possibilities in it, and which bears so directly upon the subject in question.

Another suggestion as to the *time* problem. Is not much time often wasted by *methods* which are susceptible of great improvement?

James Freeman Clarke says :

In my youth, both in school and in college, much time was lost by the recitations. In college we had three recitations each day of each division, each lasting one hour. Thus we spent three precious hours every day in hearing other young men recite, more or less badly, what we had already spent some hours in studying ourselves. If we had learned the lesson properly, we could learn nothing more by hearing it recited by others. If the teacher had explained or illustrated the difficult passages, that would have been an advantage; but in those days he regarded it as his sole business to hear the recitation, and to mark on a paper by his side the degree of accuracy obtained by each scholar. This took his whole time. A better method has been introduced in some places. Teachers have learned that it is their business to *teach*.

It is to be feared that this characterization of time wasted in the recitation room is not by any means wholly inapplicable to the colleges of to-day.

Then, too, in adjusting our college machinery, ought there not to be a recognition of the great mental differences between students who start in the same class? Ought the bright and capable students to be kept waiting, as they usually are, for the dullards? A system wisely planned will give every man a fair chance to accomplish the work required in as little time as he can do it thoroughly. It will not, of course, encourage haste and superficiality, nor will it discourage honest desire to economize time when consistent with sound scholarship. The question whether much time is not wasted by the traditional college method of studying foreign languages is a vital one, and is challenging the attention of educators. It is claimed that there is too much grammar and lexicon, and too little actual knowledge of the language studied. The claim is not new. Great names have supported it, such as Milton, Locke, Montaigne, and a multitude of others of the best writers on education. Wise men of to day whose opinions deserve consideration affirm and lament the needless expenditure of precious time by an unwise adherence to false methods. President Garfield said,

Our colleges should require a student to understand thoroughly the structure, idioms, and spirit of these languages, and to be able by the aid of a lexicon to analyze and translate them with readiness and elegance. They should give him the key to the storehouse of ancient literature, that he may explore its treasures for himself in after life. This can be done in two years less than the usual time, and nearly as well as it is now done.

Language like this, and from such a source, deserves respectful attention. One thing is certain, the results of our ordinary methods are far from satisfactory, and the peril from an honest testing of some other method is not alarming. The average graduate, after all his toilsome years of thumbing his lexicon and grammar, may well be characterized as knowing "little Latin and less Greek," while with ancient classical literature he has but the slightest acquaintance. Probably not one college graduate in one hundred could speak intelligently for one minute in either of the dead languages, nor hardly in the modern languages; not one in twenty-five can read the ancient classics in the original with ease, and not one in fifty *does* read them to any considerable extent after graduation, unless he teaches them as a profession. Surely if there is any method that will save nearly half of the five or seven years devoted to Greek and Latin, and at the same time furnish the student with equal culture and with a far better knowledge of classical literature, the flavor and enchanting influence of which will accompany him through life, by all means let us give the method an honest and faithful trial, and not pronounce judgment against it on the slightest examination. But these are mere hints.

The practical question relevant to our subject is, whether by the

adoption of any or all of these suggestions, and of other means which want of time forbids the mentioning, the colleges may not, in part, overcome the hinderance which excludes from their halls so many thousands of young people, viz, the length of time required to complete a college course. But little time remains for the consideration of other points of equal, and perhaps of greater, importance.

IV. A full hour might profitably be given to the subject of the *expensiveness of a college education*. A few moments must suffice. There is probably no college president in the land who is not painfully aware of the fact that there are thousands of worthy young people who are intensely anxious to secure a collegiate education, but are prevented by reason of the expense involved. Is there any remedy?

Two things can and should be done.

*First*, our colleges should be so amply endowed and supplied with resources that, as nearly as possible, tuition may be made free. The student should not be made to feel that he is an object of charity, but the college, as far as it can, should stand in this respect on a par with the free, public school.

There is hardly an object in this country that calls so imperatively for the gifts of benevolent men, and promises such splendid returns for the money thus invested, as does the well-conducted college. Philanthropy never looked upon a more inviting field, and while much wealth is being thus devoted to highest uses, the marvel is, that far-seeing men do not in greater numbers see and seize their opportunity, and lift our colleges into a position in which they can invite the youth of our country to their literary feast "without money and without price." It is sincerely hoped that a brighter day will soon dawn upon all our embarrassed institutions of learning, and that the clouds which now so darkly overshadow them may speedily reveal a silver or a golden lining.

But, *secondly*, the college authorities should seek to keep the expenses of college life down to the lowest point consistent with health and scholarship. The task is a difficult one, as any one who has attempted it can attest. The citizens of the town in which the college is located will not be likely to render any assistance in this direction; many of the students will resist every attempt to limit their right to spend their parents' money with lavish hand. Nevertheless, nothing that has been said in this paper, or can be said, has more to do with the number of educated men than this question of expense. The *necessary* expenses of a student are often slight in proportion to his *needless* expenditures. And, as a general rule, all unnecessary expense among college students militates against the real ends of education. Take out of the average student's accounts all that does not help him to health or manhood or scholarship, and you have subtracted a large proportion of his expenses. The amount put into fraternities, clubs, late suppers, class follies, regalia, etc., is what startles the hard-pressed parent, and makes him resolve to let the next son try his hand at the world's work without a college training. The aristocracy of clothes and of society is an impertinence in college.

The mischief does not stop with the party immediately involved, but effects the whole body of students, and operates to keep away from colleges thousands who would otherwise enjoy their advantages. The prevailing habits of life in all our colleges should be such that no young man or woman living on crackers and cheese, and wearing garments of homespun material, would ever have occasion to feel the slightest mortification, or ever be reminded of any sacrifice of social recognition or honourable distinction.

There certainly are institutions in which this is the case; it ought to be universal in college society. When Mr. Thwing, or any other man, writes another book on American colleges, if he can truthfully inform the anxious thousands seeking higher education that the expenses have been greatly reduced, the proportion of educated men and women will soon be increased.

V. I have time barely to allude to the fact that the disciplinary *régime*, the moral order, and the religious spirit of our institutions of learning will largely affect the number of their patrons. Nothing gives such confidence in colleges and in the value of their work as an eminently moral and religious tone pervading them. Nothing destroys confidence and reduces patronage like the absence of this pre-eminent quality.

It must be admitted that the faith of the public in college culture has been subjected to rather severe strains by the moral status of not a few institutions. Reports of college rowdyism, of hazing, and of matched games of foot-ball or base-ball, which in spirit and results are not unlike the prize fighters' brutal sport, spread before the readers of the daily press with sickening detail and editorial spice, are not particularly favorable to the highest degree of confidence in the system and its fruits. There is but one way of counteracting this unfavorable influence, and that is to make the colleges such centers of moral power and Christian influence as to command the respect and confidence of the best classes throughout the country. And this leads to another remark. If our higher institutions are to hold their place and increase their patronage, they must be kept free from the influence of materialism, agnosticism, and all other forms of anti-Christian philosophy.

Whatever may be true of other countries, the colleges of this country have nearly all been founded on the principle expressed in Harvard's motto, *Christo et Ecclesie*, and "to Christ and his Church" must they remain true, or be content with waning rather than increasing influence. Not until this Republic has made a nearer approach to its "decline and fall"—a doom which we all pray and hope may never befall us—will infidel schools, or schools antagonistic to Christianity, rise to commanding influence.

On the contrary, the more of the teachings and spirit of the Great Teacher all our educational institutions inculcate and stamp upon the characters of their students, the wider will be the sphere of their influence and the larger will be the numbers who flock to their halls.

VI. Finally, perhaps the most essential and all-inclusive means of increasing the number of educated men, is to employ as *educators* only those persons who possess the loftiest type of character and the highest qualifications of mind and heart. More than any and every other consideration in the work of education, more than ample grounds and expensive buildings and costly museums and extensive libraries and scientific appliances and elaborate gymnasias and ostentatious curricula, is the true and regal teacher.

Garfield was quite right when he said, "It has long been my opinion that we are all educated, whether children, men, or women, far more by personal influence than by books and the apparatus of schools. If I could be taken back into boyhood to-day and had all the libraries and apparatus of a university, with ordinary routine professors, offered me on the one hand, and on the other a great, luminous, rich-souled man, such as Dr. Hopkins was twenty-five years ago, in a tent, in the woods alone, I should say, 'Give me Dr. Hopkins for my college course, rather than any university with only routine professors.'" The teacher of marked character and genuine power and enthusiasm will act as a mag-

net, drawing youth toward him as a center of potent influence, kindling within them the fires of his own enthusiasm, and imparting to them something of his own superior nature. Put into all our schools teachers of such a quality, and we shall thereby crowd them with enthusiastic pupils, eager to rise to the topmost round of the educational ladder.

When that unique character, "Father Taylor," the famous sailor preacher of Boston, was once consulted about placing a bell on his new church, he promptly replied, "I will put the bell in the pulpit." He was true to his promise, and his ringing notes from the pulpit crowded the church with interested listeners, so that no bell in the belfry was needed to secure an audience.

No word of application is required.

Fellow teachers: I have used plain speech, void of the rhetorical arts of concealment or conciliation. If I had aimed to utter sentiments of a popular character, in perfect accord with the opinions of all my brethren, and certain to receive your approval, the task would not have been a difficult one. Assuming that my audience would consist mostly of honest, thoughtful educators, eager to know if any new or but partially tested means might be used to secure the end we all deem desirable, I have ventured in good spirit and temper of mind, I hope, to make some suggestions. Whether these suggestions would be popular or unpopular has not been permitted to occupy my thought, and I leave them with you for what they are worth. They have not all of them been given as settled convictions of what was surely best, but as hints with more or less of possible or probable value in them.

Our common work is a great one, and difficult as great. It requires men of high culture and pure character and supreme devotion to God and humanity, such as we all aim and hope to be. The Nation and the Church need wise and strong leaders, and we in the colleges must supply the urgent need. All vocations in life and all classes in society greatly need men and women with genuine culture and the truest type of manhood and womanhood. We must do our best to meet this great demand.

## THEOLOGICAL EDUCATION IN ONTARIO.

By PROF. ALBERT H. NEWMAN, LL. D.,

*Toronto Baptist College.*

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### I. GENERAL OBSERVATIONS.

In no department of education has progress been so marked within the last twenty years, in Ontario, as in the theological. Most of the progress really falls within the last six years. Of the six leading Protestant theological institutions, two of the most flourishing have been founded within the latter period, one having been fully equipped and virtually endowed, and the other already taking rank alongside of the older institutions. Of the four older institutions, all have added largely to their resources, and we may suppose that their efficiency has correspondingly increased. There is every reason to expect that the next twenty years will be a period of even greater progress than the last. A generous rivalry prevails among the denominations in this, as in other departments of Christian work, and each can rejoice in the prosperity of the theological institutions of the rest, if for no higher reason, because of the stimulus which is imparted thereby to its own institutions.

1. *Conservative Character of Theological Education in Ontario.*—So far as I am aware, no new system of theology or ecclesiology has been developed on Canadian soil. Whatever of unorthodox teaching and practice has appeared has come from without, and the spirit of conservatism has been so dominant from the first that little encouragement has been given to innovators. Naturally, the theological colleges reflect this spirit of conservatism, and are themselves bulwarks of orthodoxy, each according to the standard of the denomination it represents. If there has been any shortcoming, it has been in failure to take sufficient cognizance of the current of modern thought.

2. *Faculties.*—The theological faculties of Ontario are none of them large as compared with those of some of the wealthier institutions of the United States, or in proportion to the actual need. The various theological faculties have each from three to five members, and in some of the institutions even these are able to devote only a portion of their time to theological teaching. Only one institution has a faculty of five, all of whom give their entire time to the work. In this particular there is abundant opportunity for progress, and there are indications that some of the faculties will soon be re-enforced by the establishment of new chairs. The fact is becoming more and more widely recognized that two or three men, however able, cannot satisfactorily master or teach the whole circle of the theological sciences, and that the necessity of distributing one's energies among several departments and of devoting an excessive number of hours to class-room work forbids the highest attainment in any department. The fact that the professors in our institutions have from the beginning been thus overburdened, along

with that of the want of adequate libraries, accounts, in large measure, for the literary sterility of Canadian theologians. Leisure and libraries are the indispensable conditions of useful literary production, in this as in all other departments of research. Many able and noble men have labored and are laboring under the disadvantages named above, and their labors have not been in vain; but it is becoming every year more and more difficult to labor successfully without concentration, in proportion as theology is coming to be studied more and more scientifically and the literature of each department is becoming even more extensive. The great need of theological education in Ontario is, therefore, a doubling of the faculties of most of the institutions, and this means a doubling of the funds for the support of professors.

3. *Endowments*.—Hitherto all of the theological institutions have been supported almost entirely by annual contributions of the churches and of generous individuals. Of the six institutions referred to before, one is supposed to be, virtually, well endowed, another has an endowment of about \$150,000, and the rest have each less than \$75,000. The time has not yet arrived in Canada when it is safe to say that \$1,000,000 is the smallest sum for which a theological college can be properly equipped, as many leading educators in the United States are saying; but one or two notable examples of broad-minded and far-sighted generosity in providing for theological education cannot fail to raise the standard to a far higher point than it has yet reached.

4. *Libraries*.—In scarcely any other particular are the theological institutions of Ontario more deficient than in libraries. These range from 3,000 volumes or less to 10,000 volumes. No one of them is endowed to any considerable extent, and the growth of most of them has been slow and precarious. The fact that the professors have been over-worked and have had little leisure for research, has doubtless prevented them in some instances from putting forth the exertion necessary to the collection of libraries. So far as I am aware, there is not in Ontario or in the Dominion of Canada a theological library where one could be sure of finding even the most essential works in any given department. Yet the libraries all contain many useful books, and are most of them fairly adequate to the wants of students. Here also there has been marked progress within the last few years, one of the largest and best libraries having been entirely collected since the beginning of the year 1881. The fact is coming to be recognized that books are as essential as bricks and brains, and that for the collection and maintenance of a library adequate to the needs of a theological college a liberal expenditure of time and money is indispensable.

5. *Students*.—The number of students in these six institutions ranges from 15 to 50, the latter being probably the largest number of strictly theological students ever present at the same time in any of these institutions. The degree of preparation required varies, one institution insisting upon the completion of a university course, one upon university matriculation, and others, while urging upon all the importance of completing a university course if practicable, receive students for special courses of study who have only a common-school education. The tendency throughout seems to be toward gradually raising the standard of admission.

6. *Courses of Study*.—The three years' curriculum prevails in most of the colleges, with special advanced courses of reading for the degree of B. D. The degree of D. D. is likewise conferred on examination by several of the colleges, and some of them have the power of conferring the honorary degree of D. D. Little has been attempted as yet in the

way of resident graduate courses of study. The tendency among students is to remain in residence the shortest time practicable. This is doubtless fostered by the regulations of the Provincial University, which require only one year of residence for the four years' course.

7. *Affiliations of the Theological Colleges.*—The theological colleges of Ontario may be divided into two classes, as regards their connection with literary institutions: *First*, those that are affiliated more or less closely with the Provincial University, or with the college maintained by the University (University College, Toronto); and, *Second*, those that form departments of denominational Universities. To the former class belong Knox College (Presbyterian), the Protestant Episcopal Divinity School (Wycliffe College), and Toronto Baptist College (McMaster Hall), all of Toronto. To the latter class belong the theological department of the University of Trinity College, Toronto (Anglican), Queen's College and University, Kingston (Presbyterian), and Victoria University, Coburg (Methodist). The institutions thus connected with the Provincial University, besides making use of the arts course for fitting their students for theology, avail themselves of the lectureship in Oriental languages maintained by the University, and are thus able to dispense, either wholly or in part, with instruction in Hebrew and Aramaic as languages. Moreover, theological students who have not enjoyed the advantages of University training have the privilege of attending any of the courses of lectures provided by the University, while pursuing their theological studies. The large University library is also accessible to the students of the affiliated theological colleges. The theological departments of the denominational universities are, of course, much more intimately related to the arts department, the same professors lecturing in theology and in arts.

## II. THE INSTITUTIONS IN DETAIL.

It will be most convenient to take up the institutions according to denominations.

### I. CHURCH OF ENGLAND THEOLOGICAL COLLEGES.

#### (1.) *Theological Department of Trinity College.*

The secularization of King's College, which up to 1850 had been controlled by the Church of England and had embraced a faculty in divinity, led to the establishment of Trinity College as a denominational institution in 1851. The training of candidates for the ministry was doubtless a prime consideration, and from the beginning theological instruction was provided. The college has been maintained largely by contributions from England, and latterly in Canada. There are at present two professors in divinity whose chairs are endowed, and two lecturers. Candidates for the degree of B. D. must be graduates in arts of three years' standing, and must pass examinations on a prescribed course of reading. The degree of D. D. is conferred on bachelors of divinity of five years' standing on examination. A special course of reading is set for this degree.

The library of the college numbers altogether 6,300 volumes, but the theological is not distinguished from the general collection.

Students are aided chiefly by means of scholarships (two of which yield \$160 each), and by means of exhibitions provided by yearly col-



lections under the authority of the synods of the Dioceses of Toronto, Niagara, and Ontario.

At present there are thirteen students in divinity classes, besides two who are reading for honors, making a total of fifteen.

#### FACULTY.

*First Professor*—The Provost, Rev. C. W. E. BODY, M. A., D. C. L.

*Second Professor*—Rev. G. A. S. SCHNEIDER, M. A.

*Lecturer in Apologetics and Pastoral Theology*—Rev. W. CLARK, M. A.

*Lecturer in Homiletics*—Rev. J. P. LEWIS.

#### COURSE OF STUDY.

The course of study in the divinity class extends over two years. Instruction is given by the professors and lecturers in the following subjects:

I. *Old Testament*: Biblical History, with special reference to the theology of the Old Testament; Selected Books of the Old Testament in English; Hebrew Grammar; Selected Portions of the Old Testament in Hebrew.

II. *New Testament*: New Testament Grammar and Synonyms; History of New Testament Times; the Gospel of S. John in Greek; Selected Portions of the Epistles in Greek, with full comments; cursory reading of other Epistles in Greek.

III. *Church History*: (a) Early Church History down to 451 A. D.; (b) the outlines of English Church History.

IV. *Patristics*: One selected Greek, and one selected Latin, patristic writing.

V. *Doctrinal Theology*: The Articles of the Church of England; Pearson on the Creed; Hooker's Ecclesiastical Polity, Book V.

VI. *Liturgiology*: The Book of Common Prayer, and its relation to earlier liturgies.

VII. *Apologetics*: Paley's Evidences of Christianity; Blunt's Undesigned Coincidences; Butler's Analogy; a New Analogy by Cellarius; Rowe's Bampton Lectures; Christlieb's Modern Doubt and Christian Belief; Barry's Boyle Lectures; Bishop Cotterill on Science and Religion.

VIII. *Practical Theology*: (a) Pastoral Theology—Van Oosterzee's Practical Theology, Blunt's Directorium Pastorale, Shedd's Pastoral Theology; (b) Homiletics.

#### LICENTIATE IN SACRED THEOLOGY.

The candidate for this degree must have kept nine complete terms. He must (1) have passed the primary examination for the degree of B. A., and two June examinations of the divinity class; or (2) have obtained honors in theology, and have passed at a Christmas or June examination of the divinity class in the year's work of the class in doctrine, apologetics, pastoral theology, and homiletics, having attended at least one term's lectures in these subjects.

#### BACHELOR OF DIVINITY.

The candidate for this degree must be a graduate in arts of the University of three years' standing, or in the case of a graduate admitted "*ad eundem statum*," of at least three years' standing from his first degree. The requirement that the candidate shall be a graduate in arts may, however, be dispensed with by the corporation, on special application having been made to them in the case of clergymen who have been in priest's orders for at least six years, but such candidates shall be required to pass the matriculation examination in Trinity College.

Except in the case hereinafter provided for, the candidate must pass two examinations, to be called the First and Second Examinations for the degree of B. D.

Graduates who have completed the two years' divinity course in Trinity College and have passed the two June examinations of the divinity

class, obtaining at least a second class in each examination, shall be exempted from the first examination for the degree of B. D.

The examinations in divinity will begin October 1st, and candidates for any examination must send notice to the Provost not later than July 1st, specifying, where necessary, the part of the examination for which they intend to present themselves.

*First Examination for the Degree of B. D.*

The subjects for this examination shall be as follows :

(1) Selected portions from the historical, poetical, and prophetic parts of the Old Testament (questions in Hebrew will be set, but are not obligatory for the degree). (2) A selected Gospel and Epistle or Epistles from the New Testament in Greek. (3) One selected Greek, and one selected Latin ecclesiastical writing. (4) The outlines of the history (a) of the Christian Church to A. D. 451; (b) of the English Church. (5) A selected work on dogmatic theology. (6) A selected work on apologetic theology. (7) A selected work on Christian ethics. (8) A selected work on pastoral theology.

The selected works for the years 1885-'87, inclusive, are :

(1) Joshua and Judges; Psalms, Book III.; Isaiah ch. i-xxv. (2) The Gospel according to S. Luke; the Epistle of S. James. (3) The Epistle of S. Clement of Rome to the Corinthians; S. Augustine's Confessions. (5) Martensen's Christian Dogmatics. (6) Christlieb's Modern Doubt and Christian Belief. (7) Martensen's Christian Ethics, Vol. I. (8) Brooks (Rev. P.), Lectures on Preaching.

The selected works for the year 1888 are :

(1) Exodus and Numbers; Psalms, Book I.; Isaiah ch. xl-lxvi. (2) The Gospel according to S. Mark; the Epistle to the Romans. (3) The Apostolic Constitutions, Book VII, and the *Ἀρχαί*; Irenæus, Book V. (5) Martensen's Christian Dogmatics. (6) Christlieb's Modern Doubt and Christian Belief. (7) Martensen's Christian Ethics, Vol. I. (8) Farrar's Christian Ministry.

*Second Examination for the Degree of B. D.*

The candidate may select for examination *one* of the five following groups of subjects :

I. *Old Testament*.—The Hebrew Scriptures, with special reference to selected books; also selected books from the Septuagint version. The history and development of the Kingdom of God during the Old Testament period, with special regard to its relation to the Christian ministry and sacraments.

II. *New Testament*.—The New Testament in Greek, with special reference to selected books; the history and constitution of the Christian Church during the Apostolic period; the history of the canon of the New Testament, and of its text—its inspiration and contents.

III. *Patristics and Ecclesiastical History*.—The history and constitution of the Christian Church during the Apostolic period, and to the death of Leo the Great, with selected Christian writings of this period; the history of the English Church, special regard being had to the history and doctrinal position of the various bodies which have separated from her.

IV. *Liturgies and Dogmatic Theology*.—The ancient liturgies and their relation to the various eucharistic offices of the Anglican Church; the creeds and illustrative documents; the history of some selected doctrine.

V. *Apologetics*.—Positive grounds of faith, embracing the several lines of thought by which the mind is led (a) to the conviction of the existence of God; (b) to the conviction of the truth of Christianity; selected ancient Christian Apologies; relation of Christianity to other philosophical and ethical systems.

The selected works of the various groups for the years 1885-'88, inclusive, are :

I. *Old Testament*.—In Hebrew—1 Samuel, Ecclesiastes, Isaiah; in the Septuagint Version—1 Samuel, Wisdom; Hengstenberg's Kingdom of God under the Old Testament; Oehler's Theology of the Old Testament; Richm's Messianic Prophecy; Perowne's Psalms (Introduction).

II. *New Testament*.—The Gospel according to S. John; the Epistle to the Romans; the Epistles of S. John; the Epistle of S. Jude; the Apocalypse; Neander's History

of the Planting of Christianity; Essays in Lightfoot's Commentaries; Westcott's Introduction to the Study of the Gospels; Westcott's History of the Canon; Sanday's Gospel in the Second Century; Westcott and Hort's Introduction (Vol. II of the New Testament); Row on Inspiration.

III. *Patristics and Ecclesiastical History*.—The seven Greek Epistles of S. Ignatius; S. Irenaeus c. Haereses, Book III; S. Cyprian de Unitate Ecclesiae et de Oratione; S. Cyril of Jerusalem, Catecheses III, IV, V; S. Chrysostom, Homilies on the Statutes V, XX; Socrates, Hist. Eccl., Books V, VI; S. Augustine de Civitate Dei, Books V, XXII.

IV. *Liturgies and Dogmatic Theology*.—Socrates Hist. Eccl. i. 8; Definition of the Faith by the Council of Chalcedon (Canons of the first four General Councils, p. 34); Hammond's Ancient Liturgies; Palmer's Origines Liturgicae; Comber's Companion to the Temple, Parts I, II; The Doctrine of Justification.

V. *Apologetics*.—Origen c. Celsus, Book II; Tertullian, Apology; article "Philosophy" in Smith's Dictionary of the Bible; Sketch of Ancient Philosophy, J. B. Mayor (Cambridge Press); History of Scholasticism, in Neander's Church History, Vol. VIII (pp. 1-239 in Bohn's Edition); Sidgwick's Methods of Ethics; Christlieb's Modern Doubt and Christian Belief; Barry, What is Natural Religion? Brownlow Maitland's Argument from Prophecy; Liddon's Bampton Lectures, III, V, VIII; Wordsworth, The One Religion (Bampton Lectures); Martensen's Christian Ethics, Vols. I, II.

The selected works for the year 1889 are the same as for the years 1885-'88 in Sections I, III, IV, V. In Section II the Epistle to the Philippians and the pastoral Epistles will be substituted for the Epistle to the Romans, and the first Epistle of S. Peter for the Epistle of S. Jude.

#### DOCTOR OF DIVINITY.

The candidate for this degree must be a bachelor of divinity of five years' standing.

#### *Examination for the Degree of D. D.*

The candidate may select for examination *one* of the five following groups of subjects, and will be required to write a thesis on the corresponding subject specified below:

I. *Old Testament*.—The Old Testament in Hebrew. For Thesis: Some selected subject connected with the relation of the Old Testament Scriptures to contemporary ethnic faiths, or with the authenticity, doctrinal position, or other kindred question of selected portions of the Old Testament.

II. *New Testament*.—The New Testament in Greek. Patristic and other schools of interpretation, with selected commentaries. For Thesis: The authenticity, doctrinal position, or other kindred question of selected books or portions of the New Testament.

III. *Patristics and Ecclesiastical History*.—Selected historical periods from ancient, mediæval, and post-Reformation ecclesiastical history, with selected writings of the period. For Thesis: Some selected historical subject.

IV. *Liturgies and Dogmatic Theology*.—The Book of Common Prayer in relation to its original sources. The history of doctrine in the sixteenth century, with special reference to the doctrinal position of the English Church. For Thesis: Some selected doctrinal subject.

V. *Apologetics*.—(a) The bearing upon the Christian Revelation of recent investigations in the various physical sciences and in history. (b) The relation of Christianity to the various non-Christian Faiths. For Thesis: Some selected subject from (b).

The selected works for the various groups for the years 1885-'88 inclusive are:

I. *Old Testament*.—Thesis: The Miracles of the Old Testament, considered with regard to the law of their distribution in the history of Israel, their purpose and significance, in contrast with those of contemporary ethnic faiths.

II. *New Testament*.—Origen on the Gospel of S. John, Books X, XIII; S. Chrysostom on S. Matthew, Homilies 2, 6, 7, 12, 13, 15-24, 28, 32, 36-39, 43, 54, 59, 69, 82, 87-89 (all inclusive); S. Augustine on First Epistle of S. John; Tholuck's Sermon on the Mount (T. and T. Clark); Baur's Paul (Theological Translation Fund Library—Williams and Norgate); Lightfoot's Epistle to the Galatians; Godet on S. John's Gospel. Thesis: The nature and circumstances of the contemporary Roman Church in relation to the argument of the Epistle to the Romans, and the doctrine of Justification contained therein.

III. *Patristics and Ecclesiastical History*.—Selected periods: (a) The Life and Times of Gregory the Great, including the History of Western Monasticism. Books recommended—Neander, History of the Christian Church (passim); Milman, History of Latin Christianity, Vol. II, Cap. VI, VII; Bede, Hist. Eccl., Books I, II; article "Gregory I", in Dictionary of Christian Biography; Gibbon's Decline and Fall of the Roman Empire, Cap. XXXVII, XLI–XLVI; Montalembert's Monks of the West. (b) The Life and Times of Archbishop Anselm. Books recommended—Life of Anselm (Dean Church); Neander's History of the Christian Church, Vol. VIII (passim); Hook's Lives of the Archbishops of Canterbury, Vol. II, cap. 3; Cur Deus Homo. (c) The Life and Times of Richard Hooker. Books recommended—Styrie's Lives of Archbishops Parker, Grindall, and Whitgift; Hook's Lives of the Archbishops of Canterbury, Vols. IV, V, new series; Hooker's Laws of Ecclesiastical Polity, Books VII, VIII; Bilson's Perpetual Government of Christ's Church. Thesis: The influence of the peculiar social and political characteristics of the period upon the character of the English Reformation.

IV. *Liturgies and Dogmatic Theology*.—Breviarium ad Usam Sarum (Cambridge Press); Liturgies of King Edward VI (Parker Society); Freeman's Principles of Divine Service; Maskell's Ancient Liturgy of the Church of England; The Sarum Missal (Procter's History of the Book of Common Prayer); Cardwell's Conferences; Institution of a Christian Man; Homilies, Vol. I, 4, 5; Vol. II, 1, 7, 9; Dean Nowell's Catechism; Jewell's Apology; Cranmer's True and Catholic Doctrine of the Holy Eucharist; Usher's Answer to a Jesuit; Winer's Confessions of Christendom (for reference); Masters in English Theology (Murray). Thesis: The doctrine of human freedom in its relation to original sin and divine grace.

V. *Apologetics*.—Plato's Phædo; Eusebius, Præparatio Evangelica, Book II; Eusebius, Demonstratio Evangelica, Book I; Rhys Davis on Buddhism, S. P. C. K.; Monier Williams on Hinduism, S. P. C. K.; Douglas on Confucianism, S. P. C. K.; Max Müller's Essays on the Science of Religion (Vol. I of "Chips from a German Workshop"); Chapters on "Religion" in Rawlinson's Ancient Monarchies; Ancient History from the Monuments, S. P. C. K.; Rawlinson's Historical Illustrations of the Old Testament; The Emperor Julian: Paganism and Christianity (Rendall); Duke of Argyll's Reign of Law; Père Didon's Science without God; The Supernatural in Nature; The Unseen Universe (Balfour & Tait); A New Analogy by Cellarius; Liddon's Some Elements of Religion; Bishop Littlejohn's Individualism. Thesis: The needs of Man to which Buddhism bears witness, and the way in which Christianity meets them.

N. B.—Candidates are at liberty to send in theses upon other subjects in each group, to be approved of by the examiners.

The selected works for 1889 are the same as above, with the substitution in Section V of the Duke of Argyll's "Unity of Nature" for "The Supernatural in Nature."

Candidates for the degrees of B. D. or D. D. are required to preach a sermon before the University.

Any graduate of the University, holding the office of bishop or dean in the Church of England, is eligible for the degree of doctor of divinity, *jure dignitatis*, upon payment of the accustomed fee for that degree.

## (2.) Wycliffe College, Toronto.

This institution was incorporated in 1879, and grew out of dissatisfaction with the alleged High Church tendencies of Trinity College. Its thoroughly evangelical position is well expressed by the following extract from the Calendar:

I. Its chief aim and purpose is to provide sound and comprehensive theological training, in accordance with the distinctive principles of evangelical truth, as embodied in the Thirty-nine Articles; and to send forth men trained in these principles—men who, renewed by the Spirit of Christ and constrained by the love of Christ, are determined, with S. Paul, to preach nothing but Christ, and Him crucified.

II. Its close proximity to and connection with University College secure for the students all the advantages to be derived from its ample resources, in the attainment of a sound and comprehensive liberal education. By no other arrangement could this intellectual training be so effectively and completely provided. And even in those cases where a complete university course cannot be taken, the student can avail himself of the advantages furnished by this well equipped University in the departments of Oriental languages, philosophy, mental science, and classics.

It is sustained by the sympathy and liberality of some of the most prominent laymen in Ontario. From the first it has utilized University College for instruction in all extra-theological subjects and in Oriental languages, and it has now entered formally into affiliation with the University. The cost of the buildings already completed and in course of erection is upwards of \$54,000. The endowment fund now reaches \$62,000. The annual income from endowment, annual subscriptions, etc., is upwards of \$8,000. The staff of instruction consists of four professors, three lecturers, and a tutor in patristics. A third professor is to be added this year. The library is still small, but extensive additions are to be made in the near future. The present number of students is 25. Beneficiary aid is furnished in the form of exhibitions, whose maximum value is \$120.

The college is now in affiliation with the University of Toronto.

#### FACULTY.

*Professor of Dogmatic Theology and of the Exegesis and Literature of the New Testament*—Rev. J. P. SHERATON, D. D., Principal.

*Professor of the Exegesis and Literature of the Old Testament and of Apologetics*—Rev. E. DANIEL, B. A.

*Professor of Ecclesiastical History and Liturgics*—Rev. G. M. WRONG, B. A.

*Professor of Ethics and Practical Theology*—Rev. F. H. DU VERNET.

*Lecturer in Homiletics*—Ven. Archdeacon BODDY, M. A.

*Lecturer in Apologetics*—Rev. SEPT. JONES, M. A.

*Tutor in Classics and Patristics*—P. H. LANGTON, Esq., B. A.

*Lecturer in Elocution*—

#### COURSE OF STUDY

embraces the following subjects:

I. *Exegetical Theology*: Biblical criticism, including the history and determination of the text; the history of the canon; the history of version; and the principles of interpretation.<sup>1</sup> The literature and exegesis of the Old Testament, including general and special introduction, and the reading of selected books and portions. The literature and exegesis of the New Testament, including general and special introduction, and the critical reading of selected books and portions.

II. *Dogmatic Theology*, including courses of lectures upon the nature and extent of the canon; the rule of Faith; the nature and character of God; the nature and sin of man; the person of Christ; the way of salvation; the Church and sacraments; the Last Things. Standard works upon the Thirty-nine Articles and the creeds are read critically.

III. *Ecclesiastical History and Liturgics*; especially the history of the first three centuries, the Reformation, and the Church of England. Also, the history and interpretation of the Book of Common Prayer.

IV. *Apologetic Theology*, including natural theology; the theistic argument; the historical evidences; with the critical reading of standard works on apologetics.

V. *Practical Theology*, including homiletics, the preparation and delivery of sermons, and pastoral theology, the nature and work of the ministry. (In connection with this subject, special attention is given to practical work and to elocution. All the students engage in mission work in country districts, and in Sunday school work, Bible classes, etc., in the city.)

VI. *Ethics*, theoretical and practical.

The course of study extends over three full years. It is possible for arts students to take in options during the third and fourth years of their arts course the equivalent of one year's theological study, and thus make the entire period occupied in the arts and theological curricula six years. All students who are not graduates in arts must matriculate in the University of Toronto, and must spend four years in their course, which in that case includes, in addition to the theological

<sup>1</sup>The study of Hebrew is pursued in University College.

curriculum, the equivalent of one year's work in arts, chiefly devoted to classics, metaphysics, and logic. Non-matriculated students can be admitted to a partial course, but cannot have the standing of graduates of Wycliffe College.

## II. METHODIST THEOLOGICAL COLLEGE.

With the union of the Methodist Churches of Canada, a union in theological education was also effected. The theological department of Victoria University will henceforth, it is supposed, enjoy the undivided patronage of the denomination in Ontario.

### *Theological Department of Victoria University, Coburg.*

This institution was primarily designed for the education of males and females, and of candidates for the ministry. The building was erected in 1832 at a cost of \$40,000—a large sum for that time; the institution was as yet unincorporated. It was incorporated as the "Upper Canada Academy" in 1836, and was reorganized as a university by an amended charter in 1841, the theological department being always prominent. The theological endowment now amounts to about \$58,000. Four professors of the university devote a portion of their time to theological instruction, and the Dean of the Faculty of Theology devotes his entire time to this work. The theological library numbers about 5,000 volumes. To enter the theological department at all, students must have matriculated in arts, and candidates for the degree of B. D. must be graduates in arts. The entire number of theological students last year (including 2 non-resident candidates for the degree of B. D. and 11 probationers) was 36. This year there are 42 in attendance, besides several non-residents who are reading for the degree of B. D. Beneficiary aid is bestowed in the form of loans, repayable in ten years without interest.

It is expected that the Methodists of Ontario, who are one of the largest, wealthiest, and most aggressive bodies in the Province, will, now that union has been consummated, bring their facilities for theological education into accord with their commanding position.

#### FACULTY.

*Professor of Ethics, Apologetics, and Homiletics*—Rev. S. S. NELLES, D. D., LL. D., President.

*Edward Jackson Professor of Biblical and Systematic Theology*—Rev. N. BURWASH, S. T. D., Dean.

*Exegesis and Literature of the New Testament*—JOHN WILSON, LL. D.,

*Biblical and Ecclesiastical History*—Rev. A. H. REYNAR, M. A.

*Adjunct Professor in Theology*—Rev. G. C. WORKMAN, M. A.

*Exegesis and Literature of the Old Testament*—Rev. N. BURWASH, S. T. D.

#### COURSE OF STUDY.

The following course extends over two or three years, according to the previous preparation of the students:

##### *First Year.*<sup>1</sup>

Systematic theology, soteriology, and practical doctrines of religion; Biblical introduction; Biblical history; New Testament, Greek; Hebrew language; metaphysics and logic.

<sup>1</sup> The first year is usually taken in connection with arts work.

*Second Year.*

*Systematic Theology:* General introduction; principles of theism; the nature and credentials of Revelation; inspiration; the canon; the doctrine of God; creation; providence; sin; the person and office of Christ.

*Exegetical Theology:* New Testament—the gospels Luke, John, and Matthew v, vi, vii; Old Testament—the Pentateuch and the Psalms, selections.

*Biblical Theology:* Lectures on the Mosaic doctrines of creation; the Fall of man; the deluge; Egypt and the Exodus; the Sinaitic legislation; Mosaism and ancient religions and ancient law; the development of Christian doctrine in the New Testament, especially prior to S. Paul.

*Historical Theology:* History of the Christian Church to the time of the Reformation.

*Third Year.*

*Systematic Theology:* The atonement; the office and work of the Spirit; the probational conditions of salvation; justification; regeneration and sanctification; Christian ethics; the doctrine of the Church; eschatology.

*History of Doctrine and Comparative Theology.*

*Church Polity and Homiletics.*

*Exegetical Theology:* The New Testament—Romans and Hebrews; the Old Testament—Isaiah, Zechariah, Job, and Proverbs.

*Biblical Theology:* Lectures on prophecy—its nature, development, and function in the Old Testament; Messianic prophecy in relation to the historical and religious development of the chosen people; the Pauline theology lectures accompanying the exegesis of Romans.

*Historical Theology:* Modern Church history.

## III. PRESBYTERIAN THEOLOGICAL COLLEGES.

(1.) *Theological Department of Queen's College and University, Kingston.*

As in most denominational institutions, theological education has from the beginning held a very prominent place in Queen's College. Before the union of the various Presbyterian bodies (1861 and 1875), it was maintained by the Old Kirk. There is no special endowment for the theological department, but part of the income of the general endowment fund of the university is appropriated to the theological work of the institution. Besides this, the theological department draws an income from the Temporalities Fund of the Old Kirk, and receives liberal collections from the churches. The entire income for this department is about \$7,500 annually. The theological library contains about 6,000 volumes. The faculty in divinity consists of three professors and two lecturers. No one is admitted as a student except graduates in arts and those who have given at least three years to university studies. The standard of admission is, therefore, unusually high. The degree of B. D. is conferred by special examination on a prescribed course of post-graduate reading. Beneficiary aid is given in the form of scholarships, which are open to competition, and bursaries provided for those who do not gain scholarships. The present number of students is 34.

Queen's University is one of the most enterprising of our institutions, and has made great progress in all of its departments within the last few years.

## FACULTY.

*Primarius Professor of Divinity*—REV. G. M. GRANT, the Principal, D. D., LL. D.

*Professor of Hebrew, Chaldee, and Old Testament Exegesis*—REV. JOHN B. MOWATT, M. A., D. D.

*Professor of Apologetics and New Testament Criticism*—REV. DONALD ROSS, M. A., B. D.

*Lecturer on Church History*—REV. JAMES CARMICHAEL (KING).

*Watkins Lecturer on Elocution*—REV. H. G. PARKER.

## COURSE OF STUDY.

I.—*Divinity.*

Lectures on the canonicity, authenticity, genuineness, and credibility of the Biblical Records; the inspiration and authority of the Scriptures; systematic theology; the pastoral office; and homiletics—with prelections and examinations on Hill's Lectures in Divinity.

II.—*Hebrew and Chaldee.*

*First Year.*—Wolfe's Hebrew Grammar. Gen. i, xxv, xxvi. Jos. ix, x. 1 Sam. i-iv. Ps. l-lvii. Translations into Hebrew.

*Second Year.*—Gesenius' Hebrew Grammar. Lev. xix. Num. xvi, xvii. Jer. xvii, xviii. Ps. cxxxv-cxliv. Isaiah iii-v. Prov. ii, iii. Translations into Hebrew.

*Third Year.*—Gesenius' Hebrew Grammar. Winer's Chaldee Grammar. Ps. lviii-lxxi. Isaiah li-lx. Dan. ii, iii. Ezra iv, v.

III.—*Apologetics.*

Lectures on fundamental apologetics.

IV.—*Biblical Criticism.*

1. Old Testament exegesis—Joel and Amos in LXX. Lectures.

2. New Testament exegesis—Acts of the Apostles; Romans; 1 and 2 Corinthians; lectures on N. T. canon; introduction; criticism.

V.—*Church History.*

TO THE COUNCIL OF NICEA.

The Church requires the following discourses to be delivered during the course: Homily; lecture and Greek exercise; sermon and Hebrew exercise.

*Matriculation.*

1883-'84: Westminster Confession; Hill's Lectures, Book I; Gospel by Mark in Greek and English; examination in Hebrew on regular verb and pronouns, and Genesis, ch. i, with analysis of the regular verbs and pronouns contained in it.

*Pass Examinations.*

On the work of the session.

## DEGREE OF BACHELOR OF DIVINITY.

*Regulations.*

I. Candidates for the degree of Bachelor of Divinity (B. D.) must be graduates in arts of this university, or of a university whose degrees are recognized by the senate.

II. The degree shall not be conferred until the candidate has completed his theological curriculum, with a view to the ministry in the Church to which he belongs, and has passed a satisfactory examination in the branches of theology taught in the university.

III. The subjects of examination shall be in two departments, the first embracing (1) Church history, (2) Biblical criticism, and (3) systematic theology.

IV. Candidates who have completed the theological course may be examined in either of these departments, and may defer their examination in the other department, provided there be not a greater interval than two years between their two examinations.



V. Students who have completed all the sessions but one of their theological course, may be admitted to examination in the first department.

VI. A candidate may, subject to the preceding regulations, appear at any university examination in theology, provided he gives two weeks' notice of his intention to the registrar.

VII. When a student, who is a candidate for the degree, shall obtain at a pass examination on any subject two-thirds of the marks allotted to the subject, he may, on recommendation of the examiner, be exempted from further examination on that subject.

#### SUBJECTS OF EXAMINATION.

##### *Department I.*

1. Evidences of religion, Biblical introduction, and inspiration of Scripture.
2. Hebrew, Isaiah xl-lxvi. Chaldee, Daniel ii, iii.

##### *Department II.*

1. Church history—centuries i-iii; the Reformation; the Church in Scotland.
  2. Biblical criticism—Epistle to Romans in Greek; Biblical hermeneutics; Hammond's Textual Criticism of New Testament; Introduction to Pentateuch and Gospel of John.
  3. Systematic theology—person of Christ, doctrine of sin, doctrine of the atonement, justification, work of the Holy Spirit.
- The following books may be consulted: Paley's Evidences, Butler's Analogy, Tulloch's Burnett Prize on Theism, Mozley Bampton Lectures on Miracles, Trench on the Miracles (preliminary essay), Westcott on the Canon of the New Testament, Lee on Inspiration, Dorner on the Person of Christ, Liddon's Bampton Lectures on our Lord's Divinity, Tulloch on the Christian Doctrine of Sin, Crawford on the Atonement, Grotius de Satisfactione Christi, Hill's Lectures in Divinity, Christian Dogmatics (Van Oosterzee's and Martensen's), Keil on the Old Testament and Bleek on the New Testament, Killen's Old Catholic Church, Fisher's History of the Reformation, Biblical Hermeneutics (Elliott and Harsha).

##### *(2.) Knox College, Toronto.*

This institution was established in 1845 as a theological school of the Presbyterian Church in Canada (Free Church). Since the union (1861 and 1875) it has common relations to the whole Presbyterian body. The college building, including site and furnishing, cost \$120,000. The endowment fund amounts to \$125,000. About \$70,000 additional has been subscribed, and a canvass is being made which is likely soon to increase the paid up endowment to \$200,000. The library contains about 10,000 volumes. The faculty consists of three professors and two lecturers. The lectureship in Oriental languages sustained by the University of Toronto is utilized by Knox College, as it is by Wycliffe College and the Baptist College. To secure admission students must be graduates in arts or present a certificate of having satisfactorily passed the final examination in the preparatory course of Knox College. This preparatory course is provided for those whose circumstances do not permit them to take a full university course. Students support themselves chiefly by doing mission work during the six months' vacation, and by scholarships which are open to competition. The present number of students is fifty. There are about the same number under the care of the college authorities, studying in the preparatory course and in University College. An additional professor will doubtless be appointed within the next year or two.

## FACULTY.

*Professor of Exegetics and Biblical Criticism*—Rev. Principal CAVEN, D. D.  
*Professor of Apologetics and Church History*—Rev. WILLIAM GREGG, D. D.  
*Professor of Systematic Theology*—Rev. WILLIAM MACLAREN, D. D.  
*Lecturer on Homiletics, Church Government, and Pastoral Theology*—Rev. J. J. A. PROUD-FOOT, D. D.

Hebrew is taught by Professor HIRSCHFELDER, in University College.  
 Elocution is taught by Prof. J. W. TAVERNER and R. LEWIS, Esq.  
 Messrs. J. C. SMITH, B.A., and W. FARQUHARSON, B.A., Classical Tutors.

## COURSE OF STUDY.

*First Year.*

*Exegetics*—Principal Caven.  
*Biblical Criticism*—Principal Caven.  
*Apologetics*—Professor Gregg.  
*Church History*—Professor Gregg.  
*Systematic Theology*—Professor MacLaren.

*Second Year.*

*Exegetics*—Principal Caven.  
*Apologetics*—Professor Gregg.  
*Church History*—Professor Gregg.  
*Systematic Theology*—Professor MacLaren.  
*Homiletics, etc.*—Dr. Proudfoot.

*Third Year.*

*Exegetics*—Professor Caven.  
*Church History*—Professor Gregg.  
*Systematic Theology*—Professor MacLaren.  
*Homiletics, etc.*—Dr. Proudfoot.

The *Elocution Class* is attended by the students of all the theological years, and is open to all who have the ministry in view.

Students of the first year are required to prepare a homily; of the second year, a lecture and a Greek critical exercise; and of the third year, a sermon and a Hebrew critical exercise.

## BOOKS TO BE CONSULTED.

The following works are named as a guide to students in their reading, in connection with the several subjects of their course. Those printed in italics are used as text-books:

**APOLOGETICS:** Butler's *Analogy*, *Blunt's Scripture Coincidences*, *Rawlinson's Evidences*, *McCosh's Christianity and Positivism*, Paley's *Natural Theology and Evidences*, Bolton's *Evidences*, Clarke, Lardner, Leslie, Watson's *Apologies and Tracts*, Newton on the *Prophecies*, Farrar's *Critical History of Free Thought*, Christlieb's *Modern Doubt and Christian Belief*, Luthardt, Flint's *Theism and Anti-Theistic Theories*.

**CHURCH HISTORY:** *Smith's New Testament History*, *Kurtz's Church History*, *Smith's Ecclesiastical History*, Killen's *Ancient Church*, and *Old Catholic Church*, Eusebius, Mosheim, Neander, Giesler, Milman, Robertson, D'Aubigné, Fisher, Schaff, Pressensé.

**SYSTEMATIC THEOLOGY:** Calvin, Turretini, Pictet, Maestricht, Owen, Edwards, Witsius on the *Covenants*, Goode's *Divine Rule of Faith and Practice*, Thoruwell, C. Hodge, A. A. Hodge, Dorner on the *Person of Christ*, Martensen, Müller on *Sin*, Fairbairn on the *Revelation of Law in Scripture*, Dods on the *Incarnation*, Liddon's *Bampton Lectures*, Bannerman on *Inspiration*, Crawford on the *Atonement*, Treffry on the *Eternal Sonship*, Brown on the *Second Advent*; On the *History of Doctrine*, Cunningham, Shedd, Hagenbach.

**HOMILETICS, PASTORAL THEOLOGY, AND CHURCH GOVERNMENT:** Whately's *Elements of Rhetoric*, Shedd's *Homiletics and Pastoral Theology*, Dabney's *Sacred Rhetoric*, Vinet's *Homiletics*, Plumer, Pond; Van Oosterzee's *Practical Theology*, Bannerman's *Church of Christ*, Barnes' *Apostolic Church*, Punchard's *View of Congregationalism*, Archbishop Potter's *Church Government*.

**EXEGETICS:** (a) *Hermeneutics*—Ernesti, Horne, Davidson, Fairbairn; (b) *Commentary*—Calvin, Beza, Poli Synopsis, Bengel, Alford, Ellicott, Wordsworth, Lightfoot, Brown, Eadie, Murphy, Alexander, Hackett, Hodge, Stuart, Bleek, Keil and Delitzsch, Hengstenberg, Lange, Stier, Meyer, Godet.

**BIBLICAL CRITICISM AND CANON:** *Horne's Introduction*, Davidson, Scrivener, Trevellick; Westcott on the *N. T. Canon*, Gausson on the *Canon*.

## EXAMINATIONS FOR B. D.

*First Department.*

- (1) *Latin*—Augustini, *De Doctrina Christiana*, Lib. I.
- (2) *Greek*—Gospel of Luke and Epistle to Romans.

- (3) *Hebrew*—Genesis, chs. i-v (inclusive); Psalms 2, 8, 19, 45, 72, 110.
- (4) *Apologetics*—Rawlinson's Historical Evidences; Farrar's Critical History of Free Thought; Flint's Anti-Theistic Theories.
- (5) *Church History and Church Government*—Killen's Ancient Church.
- (6) *Systematic Theology*—Westminster Confession of Faith; Bannerman on Inspiration; or Lee on Inspiration.
- (7) *Textual Criticism and Canon*—Scrivener's Introduction to the Criticism of the New Testament; Westcott's History of the New Testament Canon.

#### *Second Department.*

- (1) *Greek*—Justin Martyr, Apol. I.
- (2) *Hebrew and Chaldee*—Isaiah, chs. i-vi; Daniel, chs. iii-v.
- (3) *Church History*—Fisher's Reformation.
- (4) *Systematic Theology*—Turretini, Tom. II; Loccus, Decimus Quartus Quaest, I, II, X-XIV; Cunningham's Historical Theology, Vol. I.
- (5) *Exegetics*—Fairbairn's Hermeneutics; Ellicott on Galatians.
- (6) *Homiletics and Pastoral Theology*—Shedd's Homiletics and Van Oosterzee's Practical Theology.

#### IV. BAPTIST THEOLOGICAL COLLEGE.

##### *Toronto Baptist College, McMaster Hall.*

This is one of the very few theological institutions that have entered upon their career somewhat fully equipped. It was founded in 1881 by Hon. William McMaster, who erected the elegant and commodious building known as McMaster Hall, at an expense of \$100,000, and who has up to the present time contributed largely towards the expenses of the college. In 1883, by the closing of Prairie College, Manitoba, and of the theological department of Acadia College, Nova Scotia, and by the votes of the Conventions of Manitoba and the Maritime Provinces, Toronto Baptist College became the theological institution for the Baptists of the entire Dominion of Canada. During the same year the faculty of the college was increased from three to five. These professors devote themselves entirely to theological teaching. The college also avails itself partially of the lectureship in Oriental languages provided by the University. The library of the college has been most carefully selected, and consists of nearly 7,250 volumes. It is particularly rich in sources, embracing the entire set of Migne's Greek and Latin Patrology, the works of the German, Swiss, English, Scotch, and Polish reformers, etc. It is well supplied also with the latest important works in all departments of theological science. The reading room is well furnished with the best reviews and papers. The equipment of the college embraces a well-furnished gymnasium. Candidates for the degree of B. D. must be graduates in arts, and pass examinations on a prescribed course of reading at least one year after the completion of the college course. Those who have secured the degree of B. D. may after an interval of five years proceed to the degree of D. D. on examination. Students support themselves by missionary work performed under the direction of the faculty during vacation and in term time, the compensation received on their fields of labor being supplemented to a certain minimum amount. Those that do the full amount of mission work prescribed receive at present \$200 per annum, clear of traveling expenses and board, while on the mission fields. Room rent, including fuel, light, and care of rooms, is free, the only charge being \$3 per week for board, and ordinary rates for washing.

The number of students pursuing theological studies during the present session is about forty. Besides these, a considerable number of students for the ministry who are pursuing university studies, are enrolled among the students of the college and are under the care of the faculty.

## FACULTY.

*Professor of Systematic Theology*—JOHN H. CASTLE, D. D., President.

*Professor of Church History and Comparative Religion*—ALBERT H. NEWMAN, LL. D.

*Professor of Apologetics, Didactics, and Biblical Interpretation (English)*—MALCOLM MACVICAR, Ph. D., LL. D.

*Professor of New Testament Interpretation (Greek), and Homiletics*—WILLIAM N. CLARKE, D. D.

*Professor of Old Testament Interpretation (Hebrew and Chaldee), and Pastoral Theology*—DANIEL M. WELTON, Ph. D.

*Professor of the Hebrew Language and Literature*—J. M. HIRSCHFELDER (in University College).

A. H. Newman, *Librarian*.

## COURSE OF STUDIES.

I. *Exegetical Theology.*

This department of theological study includes all sciences that have an immediate bearing upon the interpretation of the Scriptures of the Old and New Testaments.

1. **BIBLICAL INTRODUCTION**—*Albert H. Newman*: In this course instruction is given in Biblical history, Biblical geography, Biblical archaeology, and related topics.

2. **BIBLICAL INTERPRETATION, IN ENGLISH**—*Malcolm MacVicar*: This course extends through two years, and aims to give the student a comprehensive method of studying and explaining the English Bible. It includes a full discussion of principles and methods of interpretation, and constant practice on the part of the student in applying these principles and methods in the analysis and exposition of selected portions of the Old and New Testaments.

3. **OLD TESTAMENT INTERPRETATION, IN HEBREW AND ARAMAIC**—(1) *In University College*—*J. M. Hirschfelder*: A large proportion of the instruction in Hebrew and Aramaic is given by Prof. J. M. Hirschfelder, in University College, embracing instruction in Hebrew and Chaldee grammar, together with the reading of extended portions of the Hebrew and Chaldee of the Old Testament; (2) *In Toronto Baptist College*—*Daniel M. Welton*: This part of the course consists of a reviewing of the syntax of the Hebrew language; the exegetical reading of selected portions of the Hebrew Bible; exercises in textual criticism with the aid of the Masora, the Septuagint, the Targums, and the Peshito; the study of the theology of the Old Testament in connection with a text-book.

4. **NEW TESTAMENT INTERPRETATION, IN GREEK**—*William N. Clarke*: This course extends through two years. It is intended not merely for the impartation of the results of study, but still more for the training of the student in power to study the New Testament on sound principles for himself. Hence the work consists mainly in actual interpretation, with constant practice in the application of grammatical principles and in analysis of the writer's thought. Thus by the experience of actual work the student is aided in learning the peculiarities of New Testament Greek, and the methods of sound interpretation. The course includes study of textual criticism, and Introduction to the books of the New Testament.

II. *Historical Theology*—*Albert H. Newman*.

This course is divided into two sections, each of which is completed in a year.

In section first, ancient Church history is taught, embracing such topics as introduction to Church history in general; constitution of the apostolic Church; relation of Christianity to the Roman Empire during the first three centuries; internal development of Christianity during the first three centuries—the consideration of heretical and reforming bodies; Christian literature and doctrine during the first three centuries; internal and external condition of the Church at the beginning of the fourth century; union of Church and State, and effects of this union on the Church; controversies and councils during the fourth, fifth, sixth, seventh and eighth centuries; development of the hierarchy, until the death of Gregory the Great; heretical and reforming bodies; extension of the Church through the Carolingian rulers; further development of the hierarchy, especially under Hildebrand and Innocent III; papal captivity and schism; reforming councils; mediæval philosophy and theology; reaction against papal absolutism, manifested in the various reforming movements of the Middle Ages; the revival of learning; with essays by members of the class.

In the second section, modern Church history is taught, embracing such topics as preparation for the Reformation; general characteristics of the Reformation; separate consideration of the Erasmian, Lutheran, Zwinglian, Anabaptist, Calvinistic, and English reformations; comparative view of the Protestant confessions of faith and catechisms; Roman Catholic resistance to Protestantism—Jesuits, inquisition, and

Council of Trent; modern denominations, especially the Church of England, the Congregationalists, the Presbyterians, the Methodists, and the Baptists; with essays by the members of the class.

In connection with this course, a series of lectures on comparative religion, and a series on Theological Encyclopædia are given. The professor of Church history conducts a class in theological German, which meets twice a week.

### III. Dogmatic Theology.

This department of study is divided into two courses, and embraces a systematic setting forth of the doctrines of the Bible, and a refutation of anti-Christian and pseudo-Christian systems.

1. **SYSTEMATIC THEOLOGY**—*John H. Castle*: This course embraces discussions of the Scriptural teachings as to the existence and attributes of God; the personal distinctions of the Godhead; the relations of God to the universe and to men, as manifested in creation, preservation, and providence; the original and actual state of man; the nature and effects of sin; redemption wrought by Christ; the person of Christ and the nature of the atonement; election; calling; regeneration; conversion; union with Christ; justification, sanctification, and perseverance; and the future state; with essays by members of the class.

2. **POLEMICAL AND APOLOGETICAL THEOLOGY**—*Malcolm MacVicar*: This course is divided into two sections: an elementary course designed for those students who have not had the advantages of thorough training in metaphysics and natural science, and which only such students are required to take; and an advanced course in apologetics proper, including the discussion of atheism, pantheism, materialism, modern agnosticism, the Biblical view of the Being of God, revelation, inspiration, miracles, the resurrection, etc.

### IV. Practical Theology.

1. **PREPARATION AND DELIVERY OF SERMONS**—*William N. Clarke*: In this course Dr. Broadus's "Preparation and Delivery of Sermons" is used as a text-book and guide, but it is intended that the work shall include much more than the mastering of a text-book. Sermons and plans of sermons are prepared and criticised by the class, and attention is given to the study of the literature of the pulpit. As much labor as the time allows is spent upon style, and the preacher's general literary preparation for his work. It is the aim to help the free, manly development of each student's personality, and to secure the utmost effectiveness in the work of preaching.

2. **PASTORAL THEOLOGY**—*Daniel M. Welton*: This course considers such topics as the nature of the pastoral office; call to the ministry; qualifications of a minister; the pastor in the conduct of public worship; the pastor and the administration of the ordinances; the pastor and social meetings; the pastor and the Sunday-school; the pastor and mission work; the pastor and administration of discipline; pastoral visitation; the pastor in relation to other Christian bodies.

Ecclesiastical polity will also form an important part of this course.

3. **DIDACTICS**—*Malcolm MacVicar*: This course is designed to give practical instruction on religious training in the family and the Sunday-school. It will include the following topics:

1. The philosophy of moral and spiritual development. Under this head will be discussed:

(1.) The nature of a true moral and spiritual education.

(2.) The principles and laws which underlie and regulate the methods and processes of moral and spiritual training.

2. The family and the Sunday-school. Under this head will be discussed:

(1.) The Scriptural organization of the family and the Sunday-school as factors of the Church of Christ.

(2.) Methods of family and Sunday-school management.

(3.) Methods of family and Sunday-school instruction and training.

(4.) The organization and instruction of parents' and Sunday-school teachers' training classes.

### EXAMINATIONS FOR THE DEGREE OF B. D.

Graduates in arts who have completed the course of theological study in Toronto Baptist College, in Woodstock College, or in any theological seminary of recognized standing, may secure the degree of B. D. by passing examinations as follows, such examinations to be held at least one year after the completion of the regular course:

1. Chaldee Grammar and the Chaldee of the Old Testament. 2. Twenty-five pages of the Hebrew Bible, not to include the Pentateuch, the historical books, or the Psalms. 3. Ehlert's Theology of the Old Testament. 4. Ewald's Syntax of the Hebrew Language, or Driver's Tenses of the Hebrew Verb. 5. The entire Greek New Testament, twenty-five pages of the Septuagint, and twenty-five pages of patristic

Greek. 6. Fifty pages of ecclesiastical Latin or German. 7. Hagenbach's History of Doctrine, or Dorner's History of Protestant Theology. 8. Van Oosterzee's Christian Dogmatics, or Dorner's System of Christian Doctrine. 9. Christlieb's Modern Doubt and Christian Belief. 10. Van Oosterzee's Practical Theology.

Fair equivalents will be accepted for any of these items, at the discretion of the faculty.

#### EXAMINATIONS FOR THE DEGREE OF D. D.

The degree of doctor of divinity will be conferred on those who have been admitted to the degree of bachelor of divinity in Toronto Baptist College on the following conditions:

1. The applicant must have been successfully engaged in the work of the ministry, whether as pastor, theological teacher, or religious editor, for at least five years just preceding the date of his application.

2. He must have attained to distinguished proficiency in some one department of theological science, and must demonstrate this proficiency by the following performances: (1) He must submit to an examination on the subject-matter of his chosen department. (2) He must write *impromptu* a thesis on a subject connected with the department in which he presents himself for examination, proposed by the faculty. (3) He must submit to the faculty a treatise (equal to not less than 100 printed pages 12mo) on some subject connected with the department chosen, which, to be accepted, must give evidence of extended research, thorough mastery of the subject, and capacity to present the subject in an original and effective manner.

#### V. THEOLOGICAL EDUCATION OF OTHER DENOMINATIONS.

(1.) The *Congregationalists* of Ontario unite with those of Quebec in supporting a theological college in Montreal.

(2.) The *Society of Friends* has a somewhat elementary college at Pickering, where training is given to those who have the ministry in view.

(3.) The *Roman Catholics* have colleges in Toronto and Ottawa, where something is done in theology; but they probably depend chiefly on the larger institutions in Montreal and Quebec, and upon foreign institutions for their educated priests.

*Statistical table showing subjects taught in each college, and the number of hours given to each subject per week.<sup>1</sup>*

Colleges.	Biblical introduction and criticism.	Biblical theology.	Hebrew and Aramaic.	Old Testament in English.	New Testament in Greek.	New Testament in English.	Church history.	Comparative religion.	Theological encyclopedia.
Trinity.....	1	.....	4	2	6	.....	4	.....	.....
Wycliffe.....	2	.....	12	.....	6	.....	6	.....	.....
Victoria.....	.....	2	9	.....	9	.....	4	1	.....
Queen's.....	.....	.....	12	.....	2	.....	5	.....	.....
Knox.....	1	.....	12	.....	9	.....	5	.....	.....
Baptist.....	2	.....	9	3	6	2	6	.....	1

Colleges.	Systematic theology.	Apologetics.	Homiletics.	Pastoral theology.	Didactics.	Theological German.	Patristics.	Symbolics.	Liturgics.	Ethics.
Trinity.....	2	2	1	1	.....	.....	2	.....	.....	3
Wycliffe.....	10	2	5	2	.....	.....	.....	.....	.....	.....
Victoria.....	11	.....	1	1	.....	.....	.....	.....	.....	.....
Queen's.....	10	5	.....	.....	.....	.....	.....	.....	.....	.....
Knox.....	14	5	4	4	.....	.....	.....	.....	.....	.....
Baptist.....	4	2	6	2	3	2	.....	.....	.....	.....

<sup>1</sup> For convenience, the numbers are given as if each subject were finished in one year. *E.g.*, six hours in church history means 3 hours per week for 2 years. These statistics are only approximately correct.

*Statistical table showing the equipment, resources, &c., of theological colleges of Ontario.*

Colleges.	Number of professors.	Number of lecturers.	Number of students.	Amount of endowment.	Value of buildings.	Number of volumes in library.	Length of session in months.
Trinity.....	2	2	15	.....	.....	16,300	7
Wycliffe.....	4	2	25	\$62,000	\$54,000	2,000	7
Victoria.....	5	.....	42	58,000	.....	5,000	7
Queen's.....	5	2	34	.....	.....	6,000	6
Knox.....	3	3	50	150,000	120,000	10,000	6
Baptist.....	5	2	50	.....	100,000	7,250	7

\* Several of these give only a part of their time to theology.

† Includes the entire university library.





**SECTION D—INSTRUCTION OF THE DEFECTIVE,  
DEPENDENT, AND DELINQUENT CLASSES.**

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THE CLASSIFICATION OF DEAF PUPILS WITH A VIEW TO  
IMPROVE THE FACILITIES FOR THEIR EDUCATION,  
BASED ON THE CAUSES OF THEIR DISABILITY.

BY SAMUEL SEXTON, M. D.,

*Aural Surgeon to the New York Eye and Ear Infirmary.*

The existence of deafness is not discovered even by discerning parents during the first few weeks of infancy, and what is frequently a mere suspicion in this regard at the sixth month may not become a painful reality before the child is expected to talk, and then the slowness of intellectual development may not be properly attributed to defective hearing. Partial, but disqualifying, deafness is thus liable to be overlooked until school education is attempted.

The detection of the very existence of hearing defects, it may be premised, is attended with difficulty, even by experts, during the earliest period of infancy, and even at the school age the exact degree of disqualification is not readily determined; it is with the view of affording some aid to parents and teachers in this regard that this paper is written. In order to enhance the practical value of the views advanced, I have availed myself of notes that have been taken during an extended experience in the examination and treatment of the aurally defective.

The 450 cases of children's deafness selected as illustrative, are from among children seen in private and infirmary practice, and they represent almost every variety of disqualifying deafness. The defective pupils among this number were brought to me from both hearing and deaf-mute schools. A considerable number of these constitutes a class not properly provided for in either, being too deaf for hearing schools and yet not deaf enough to be taught as deaf-mutes; they were, therefore, found to be oscillating, shuttlecock-like, between the two, liable to be cast forth into life with much less education than their intelligence entitled them to receive—usually with scarcely intelligible articulate speech.

On account of their instructiveness, I have included in the cases above selected a few not strictly of the school age.

The cases may be divided into two groups based on their school status; thus 371 were attempting to retain their position in hearing schools, whilst 79 were either so deaf as to be excluded or were not of the school age.

*The first group* of 371 was constituted as follows: 74 were between five and seven years of age; 200 were between eight and twelve years of age; 97 were thirteen years of age and upward. As to sex, 199 were females and 172 were males. The causation in these cases could be traced to either purulent or non-purulent inflammation of the ear-drum (tympanum). In 219 cases it was the former, and in 124 cases the latter.

Usually both ears were similarly affected in each case, but where a purulent affection existed on one side and non-purulent on the other, the case was classed with the former. In the non-purulent cases both ears were almost without exception similarly affected, although the left ear was usually the worse of the two.

Belonging to either one or the other of the above varieties were 10 cases where the ear had been severely boxed or pulled, causing rupture or strain of the drum-head, and consequent deafness; 33 cases where cold sea-water had passed from the mouth up into the drum through the Eustachian tube, while the child was bathing in the ocean; 3 where water was introduced into the drum while sniffing it up into the nose, or in using the nasal douche. In 31 cases the cause was attributed to scarlet fever, in 17 to measles, in 5 to diphtheria, in 4 to whooping-cough, in 1 to mumps, and in 1 to syphilis.

The external auditory canal was obstructed in a number of instances, thus interfering with the entrance of sound; in 52 cases it was by wax, in 7 by foreign bodies, in 25 by narrowing of its walls by inflammation. Among the last named were eight cases where the canal was ulcerated.

The drum-head gave evidence, on examination being made by reflected light, of defectiveness of the transmitting mechanism in a considerable number of cases. Thus, in 30 there was deformity of the membrana tympani from perverted development; in 27 cases there was greater or less destruction of the mechanism from suppurative inflammation; a polypoid growth sprung from the morbid tissues within the drum in 14 cases, and the inflammation extended from the drum to the pneumatic cells of the mastoid in 8 cases.

It is noteworthy that defective teeth were present in nearly every case, and 189 of them were specially bad. Head-catarrh and enlarged tonsils were present in the greater number, and in 13 cases either the nasal passages were so much obstructed, or the teeth so malformed, that mouth-breathing was habitual.

The affections thus far mentioned are those which interfere with the passage of sound to the middle ear and its transmission to the inner ear, but the deeper parts containing the distribution of the auditory nerve may, in the more severe cases of ear-disease occurring from scarlet fever, diphtheria, etc., be attacked at the same time. In 28 of these cases, it may be incidentally stated, either tumors, or abscesses, or wounds of the auricle from piercing for rings, were observed. Distress from the autophonia of ear-disease, the autophonous perception of voice and sounds arising from the performance of physiological functions of the circulation, respiration, and swallowing, were present in 41 cases, and dysacusma was present in 1. Pains in the ear (otalgia) were experienced by 28, pains in the aural region (neuralgia) by 36, ear-cough by 10, epilepsy by 1, vertiginous symptoms by 18, chorea by 2, and various other reflex phenomena by 17.

In respect to the degrees of deafness, 113 were almost totally deaf, while the remaining 258 were all of them incapacitated in some degree from receiving instruction at school along with good-hearing scholars.

The second group of 79 cases was composed mostly of so-called deaf-mutes; 38 were under five years of age, 21 between five and seven, 11 between eight and twelve, and 9 thirteen and upward. There were 41 females and 38 males. Of this group 18 were recorded as congenital deaf-mutes, but the diagnosis was in some of them considered doubtful; in 25 cases the trouble was traced to cerebral meningitis, in 19 to purulent inflammation of the drum, and in 17 to non-purulent inflammation of the drum.

In regard to their aural defectiveness, 26 of them were found to hear well enough to be taught *aurally* by the aid of a conversation-tube, or by using the voice close to the child's ear in teaching; 2 of them, although totally deaf, attended school along with hearing pupils; 4 of them retained speech after losing their hearing, and this without the aid of a teacher, and one of this number continued to use the English cockney accent which he had acquired before becoming deaf; in 17 cases the children were losing the speech they had acquired before becoming deaf, or were very defective in this regard from neglect to teach them. The younger children composing this last-mentioned class were nearly all of them backward in learning to talk; one of them did not acquire speech until his good-hearing brother became old enough to converse with him, and another did not talk until five years of age. Seventeen patients had never learned to talk, and a considerable number of these were considered mentally defective, solely on account of this defect, by their parents or teachers. In one case it was noted that the impact of sounds was painful (*dysacusma*).

It will be observed that in the greater number of all the cases above presented, the cause of aural defectiveness was attributable to some inflammatory affection of the hearing organ. Thus *cerebral meningitis*, occurring in connection with children's diseases, contributed largely to this list; its invasion is always sudden, and it generally causes bilateral deafness. It does not give rise to running from the ears. Meningeal inflammation is usually meant when *pachymeningitis*, *cerebro-spinal meningitis*, brain fever, *cerebral meningitis*, convulsions, fits, and the like, are mentioned in this connection. Sometimes the symptoms of irritation of the stomach are so marked in meningitis that the case has been erroneously regarded as "gastric fever." Inflammation of the ear-drums, whether purulent or non-purulent, acute or chronic, leaves characteristic appearances which are easily recognizable. Among the smaller number there were some where the precise nature of the origin of the difficulty was obscure; following the usual custom, the writer, tentatively, relegated these to the somewhat vague realm of the congenitally deaf. Subsequent experience, and a more particular study of the subject, seem to show that in some of the instances of supposed deaf-born children, the disability should be assigned to extra-uterine causation.

Thus *cerebral meningitis* affecting the nerve of hearing, and suppurative inflammation of the drum of the ear affecting the transmitting mechanism, consecutive to children's diseases, as scarlet fever, measles, and diphtheria, are frequently met with at the period in life when children are learning to talk, and the more carefully these patients are examined in this regard, the more frequently will it be found that deafness was first discovered to exist subsequently to some attack of this kind. In eliciting from parents the history of these cases, one should not place too much value on alleged injury to the ears from falls and blows on the head, which are often advanced as causes.

*Acquired deafness.*—Conditions favoring early deafness are not wanting—indeed causation may antedate or be encountered at birth, since at this period the drum in a normal state contains no air, but is filled with loose oedematous connective tissue, which slowly disappears when aëration of the cavity takes place with the establishment of the respiratory act, the cries, and the performance of deglutition by the infant. When action of the upper respiratory tract is defective, as it may thus be at birth, or, soon after, by head catarrh or by aural catarrh, the necessary aerial equilibrium is not established, and oscillations of the transmitting ap-

paratus cannot take place. Under these circumstances the perceptive function lies dormant because it cannot be aroused to normal action.

*Congenital deafness.*—A tendency to propagate constitutional dyscrasias doubtless exists in some persons, and when predisponents to catarrh are active in such a case, hereditary catarrh may give rise to disease of the ear at the earliest period of life. This hypothesis is borne out by clinical experience. I have at the present time under treatment for aural catarrh a bright little lad three years of age, who cannot yet talk on account of this defectiveness. His mother informed me that she was exceedingly susceptible to head catarrhs, and the grandmother is so deaf that she has to carry about a conversation-tube. I was much impressed by these cases, and was even surprised when informed that my patient's great-grandmother was very deaf.

The possible effect of influences on the maternal progenitor are worthy of consideration. The following case in this connection is suggestive. The first-born child of a healthy, well-developed, and intelligent woman was, when six months of age, thought to be deaf, since she could only hear jarring of the floor and the like, and the sound of a high-pitched whistle which her father carried, and which seemed to become quite familiar to her ears. The mother had, however, during the first month of pregnancy an attack of rubeola, or German measles, and was, furthermore, much worried during the entire period of gestation about her husband, who was very nervous and becoming deaf from aural catarrh. When I examined this child at the age of sixteen months, it was found to have catarrh of the head and ears, the origin of which may have been embryonic. No anatomical malformation of the ears was discovered in the infant, nor was there any apparent transmissible organic defect in the parents.

*Deafness due to congenital anomalies of the auditory apparatus.*—These are supposed to be traceable to some perversion of development during the morphological state. The hearing organ in man has both an intracranial and extracranial origin, one centric and the other peripheric. From the auditory vesicle which constitutes the centric is evolved the nervous, or perceptive tract of the ear, while the first visceral cleft evolves the peripheric, or outer structures comprising the transmitting apparatus, namely, the Eustachian tube, the drum, and the external auditory canal and auricle. Now during the embryonic or fetal states, any interference with the development in either of these regions would produce defects in the hearing organ. Evidence of developmental defects is not always obtainable, and where the trouble is centric a diagnosis cannot be made in the very young, for obvious reasons. Evidences of peripheric defects, however, are by no means rare; these consist, for the most part, in either defective or excessive development in the closure of the first branchial cleft, the most common form of which is *fistula auris congenita*. The presence of these anomalies is very likely to be overlooked. In the following typical example they were not observed until several examinations of the ear had been made, their existence not being suspected at first: The case was that of a child of eight years of age. She was thought to be defective in intelligence until she was two years of age, since she did not learn to talk; but she grew more intelligent in appearance, and it was then found that she was deaf. When four years old some person undertook the task of instructing her during a long sea voyage, and she learned to spell and pronounce a few words. When five years old she was sent to the public schools in New York, and had made considerable progress up to the time when she was brought to me. Examination of the hearing showed that she could not

understand conversation in any tone at the distance of a few feet; but when her name was spoken in a smart tone she would promptly look at the speaker. She can hear the voice quite distinctly when the speaker is only a few inches distant. The teacher, for some reason, requires her to sit in the farthest seat from her desk. A minute fistulous opening is to be seen on the front part of both auricles, from which a small quantity of offensive fluid issues spontaneously at times, and usually on the right side, when the parts are pressed by the fingers. The external auditory canals are of the normal size, but the drum-heads are somewhat defective in appearance, the membrane being puckered at its anterior superior quadrant.

I have seen a very considerable number of these cases in adults, always where hearing was defective, and, although generally unilateral, it is probable that in nearly all cases some degree of defectiveness exists on both sides. It seems probable that, where centric malformation exists, co-existent mental defects are liable to obtain, and we should, therefore, expect to find imbecility as well as deafness.

In the treatment or education of deaf children it is well to keep in mind the fact that defectiveness is not always absolute, and may, therefore, be amenable to treatment on the one hand, while not constituting an insuperable barrier to aural instruction on the other.

It would seem that the neglect of deaf-born children, in the lower order of social life, much more frequently results in dumbness than would occur if more pains were taken in their education; indeed, where the offspring of deaf-mutes are constantly surrounded by deaf-mutes holding converse with each other by signs only, it would be strange if they should learn to talk unless possessed of good hearing and allowed to associate with speaking persons. If children with defective hearing organs have but little, if any, opportunity to employ them, it is probable that continuous disuse of the sensory tract would finally lead to its deterioration. A child brought up under unfavorable conditions in this respect would acquire the use of the voice with difficulty, if at all, since even where normal hearing exists and favorable opportunities are afforded for learning, it is only after long and patient practice that intelligible speech is acquired.

The difficulties that beset partially deaf children where the defectiveness interferes with school instruction, admit of much easier interpretation than those of very young children. As regards the latter, inquiries as to causation are liable to be met by vague, unreliable, and even misleading statements, and the truth can only be reached by painstaking, eliminative analysis. Parents thus offer some entirely irrelevant accident, as an injury from a fall or blow, or an inconsequent trouble, as vaccination, or illness not affecting the ears, as causal, where examination often shows, after all obscurities have been put aside, that aural catarrh is the sole cause of the trouble, or that the case is congenital. It seems to offer the ignorant much more satisfaction, in many instances at least, to regard deafness as a calamitous visitation, to account for which a striking catastrophe is required, rather than any natural, though much more simple, cause.

The dumbness of deaf children by no means always bears a constant relation to their aural defectiveness; a child intellectually bright, with favorable opportunities for learning, will make much more rapid advances than a child mentally dull and neglected. The writer has met with numerous examples where totally deaf persons obtained an excellent education in private hearing schools; they had been, of course, attentive and quick to learn, and special attention had been given them

by teachers. This courageous achievement has been limited to the gentler sex, so far as my own observations have gone.

*Dysacusma*.—The painfulness of sounds to the perception of some deaf people is extreme. This is probably due to the sudden and unusual transmission of sounds which are felt at the perceptive center as a shock. The low rumble of thunder, or the deep tones of an organ, are unbearable to some deaf persons, while others cannot endure a whispered sound when made directly into the ear.

If a medical writer might venture to offer a suggestion in pedagogics, I would urge early attention to home instruction for deaf children. Hearing children naturally pick up their earlier education without effort from parents or by themselves, but deaf children must be unremittingly taught at close range; words must be uttered directly into the ear, not loudly, but distinctly. Tubes are of value in conducting sound to the child's ear, where close contact of the mouth is inconvenient, and the child should be encouraged to repeat its own words through the tube to its ears, so as to compare its own voice with the instructor's. If this course be pursued early enough, I am convinced that but few children would be found without *any* hearing sense, and many who have considerable hearing likely to be lost from disuse would gradually be improved.

The greatest difficulty encountered at first is in overcoming inattention on the part of deaf children, who are disposed to rely on the sense of vision, since it offers so much easier a method of conversing. Much time is lost, I am convinced, from neglect to insist on this matter.

Where it is possible to avoid doing so, a deaf child should not be taught alone, but placed in company with hearing children. Instruction at school could with advantage be commenced much earlier than is done at present; some children are as capable of attending school when only three or four years old as are others at a much more advanced age. Deaf children might, indeed, be made an exception of in regard to school age, since their training should begin so much earlier than hearing pupils. Where deafness has occurred after the pupil has learned to talk, unsparing efforts should be made to aid him in retaining this faculty; otherwise dumbness may result.



# ON THE NECESSITY OF PROVIDING FOR THE BETTER EDUCATION OF CHILDREN WITH DEFECTIVE HEARING IN THE PUBLIC SCHOOLS.

BY SAMUEL SEXTON, M. D.,

*Aural Surgeon to the New York Eye and Ear Infirmary.*

The purpose of this paper is to enlist an interest in our public school systems in so far as concerns the needs of pupils whose hearing disabilities prevent their advancement along with good-hearing scholars, since it is believed that this matter does not receive the attention its importance demands.

*The varieties of deafness.*—The defective children believed to be greatly neglected in regard to their education may, for convenience in this connection, be arranged into three classes, namely :

1. Children defective in one or both ears, and requiring close proximity and distinct utterance when taught. Of these, deafness in both ears requires seating on front row of benches, but when only one ear is affected the normal ear must be toward the teacher's desk.

2. Children very deaf, who cannot distinguish ordinary conversation in either ear when more than a few inches from the speaker, or unless the conversation tube, otacoustic fan, or other aid to hearing be employed.

3. The totally deaf, in whom the auditory apparatus of the middle ear cannot be made available. This class admits of division into two subdivisions, viz: *a*, those having learned to talk previous to losing their hearing; and *b*, those born too deaf to ever have naturally acquired speech, commonly known as congenital deaf-mutes.

*Deafness in the schools from a physician's point of view.*—In considering the relations of all classes of deaf pupils with both the public day-schools and deaf-mute schools from the physician's point of view, it is believed that the extent and importance of the subject may be more fully realized than in any other way, since where professional advice is required opportunity is allowed for thorough examination of the hearing organs, both as regards their physical condition and acoustic functions. A very considerable experience, including observations on a large number of specially interesting cases among school children of the poorer class, seen in hospital practice, led the writer to believe that great injustice was being done in permitting children to struggle for an education under the disadvantages arising from deafness without the aid of methods which experience had shown to be advantageous in such cases; he therefore concluded to make some efforts in their behalf, and in 1877 the matter was brought to the notice of the Board of Education of New York.

*Its consideration by the New York Board of Education in 1877.*—The Board referred the matter to the Committee on Teachers, and in ex-

plaining the matter to them it was shown that some children continued on at school, for years even, while scarcely any hearing remained, while there were many others who heard very badly; that in disregarding this matter deaf children were placed at a serious disadvantage, and that the time wasted in futile attempts to instruct them was a hinderance to others. Instances of special injustice were cited where children defective in hearing had made great efforts both at school and at home to prepare themselves for promotion, only to be put back on examination because the principal was not aware of the child's imperfection, and therefore had not given his questions distinctly enough to be heard. Other deaf children, from neglect to classify them, were seated too far away from the teacher's desk to hear his voice, and in consequence of inability to reply correctly were frequently punished for inattention and dullness. The rudeness often practiced toward these unfortunate pupils by unthinking or unsympathetic teachers was discouraging, and some pupils in consequence had left school altogether.

It was not recommended at this time that the partially deaf should be entirely separated from the hearing pupils, yet it was advised that pupils should always be examined in regard to their hearing, and that those found to be defective should be given every possible advantage, both in respect to seating and to distinctness of voice in teaching; the very deaf should have some instruction apart from others, since they often could not understand words shouted into their ears. The writer did not expect that the long-established order of things could be rapidly changed, but it is believed that teachers have become more interested in the subject than ever before, and that instances of "inattention" and "stupidity" are less puzzling since their true character is recognized. Complaints are now less frequently made by pupils who come for treatment of neglect in this regard, and, indeed, teachers very often recommend that deaf children be brought to our clinics for relief.

*Its consideration by the New York Board of Education in 1884.*—During the past few months the Board of Education has again taken this matter under consideration, a communication on the subject from the writer having been referred to the Committee on Course of Studies. The committee met on November 12, and on invitation the writer presented some typical cases of aural disabilities in children, and gave the results of his experience concerning deafness in the schools. The committee has not, as yet, so far as I know, made any recommendations to the Board, but it is to be hoped that some steps will be taken in the matter soon.

*Its consideration by the United States Government in 1881.*—In the meantime the subject of deafness among school children has attracted the attention of the Educational Department of the United States Government, and the matter being considered important enough to justify a special investigation of its causes, the writer was requested to prepare a paper on the subject, which was printed by the Bureau of Education for distribution in 1881. An examination of five hundred and seventy-five pupils made at that time showed that there were numerous instances of deafness where neither teacher nor pupil were aware of its existence, and that fully thirteen per cent. of the whole number examined had greater or less diminished hearing in one or both ears. Of these, only three per cent. were themselves aware of any defect existing, and only one of them was known to be deaf by the teachers.

*Advantages of the study of deafness from a clinical point of view.*—A consideration of the subject of aural disabilities should not be confined to observations on children in the school-room, where the detection of

deafness in many cases must be attended with difficulties, but investigations should also be made at leisure with favorable surroundings and apparatus for obtaining precise results. Hence the more valuable conclusions are to be drawn from examinations in practice, ample opportunities for which may be found in private and hospital experience. Thus from the clinical standpoint it may be premised that a large number of persons come through the ordeal of children's maladies and other ailments affecting the ears, either directly or remotely, with impaired hearing organs. In some the hardness of hearing is very manifest, in others it is unrecognized, even when considerable. Some apathetic persons disregard deafness, while the more sensitive endeavor to conceal their misfortune.

*Estimate of the extent of aural disabilities in the United States.*—Careful estimates have been made, indicating that no greater number than five per cent. of the entire population have normal hearing, but this of course does not show the number of persons defective enough to exclude them from the benefits of the ordinary common-school curriculum. The tenth census computes that there are about thirty-four thousand deaf-mutes in the United States, or 1 out of every 1,500. One-half of these are illiterate.

*Estimate of the extent of aural disabilities in the schools of New York City.*—Nearly four thousand deaf-mutes reside in the State of New York, and over one thousand in this city. Of the latter, 575 are in asylums. The number of totally deaf persons of the school age in this city, but outside of asylums, is stated to be 163; but this estimate is much too low, since the enumeration of the census-takers is very unreliable in respect to this class. Parents are slow to acknowledge their deaf-mute progeny, and often the census-takers make no efforts to get at the facts. The writer has met with a considerable number of these children who were not enumerated, and he doubts not that there are no less than 500 of them in this city of the school age, unprovided with educational facilities.

Before the census of 1880 was taken, the question of ascertaining the number of very deaf people was considered by the special agent, Mr. Wines, but the scheme was abandoned, as it was thought that any returns of this kind would be wholly unreliable unless obtained by the aid of expert examiners. It is, therefore, impossible to give a very close estimate of their number; but if one may form an opinion from experiences in practice, the number having more or less disqualifying aural defects may be put down at no less than ten per cent. of the entire school population of New York City. Thus out of about one hundred and forty thousand pupils in attendance at the public schools at the present time, some fourteen thousand of them would be the better for classification in respect to seating and instruction at close range, or by means of some aid to hearing. These figures show that we have to deal with a vast number of defectives, in respect to hearing, and although this avenue to illiteracy, and consequently to pauperism, was not of much significance when the country was new, it surely demands our attention now, when vagrancy and kindred evils are attracting so much attention from the vastness of their proportions.

*The education of the very deaf and deaf-mutes in the day-schools.*—While attention has thus been drawn to the wants of the partially deaf, strenuous efforts have been made in behalf of the deaf-mute with a view to improving his educational facilities. The labors of Prof. Alexander Graham Bell in this field have been notable, and besides giving much personal attention to the work, his contributions to the literature of the subject have been numerous and valuable. But while the writer himself

has mainly had in view the needs of the partially deaf, yet in pursuing this interesting subject from his own point of view, it is to be plainly seen that from a pedagogical standpoint a very considerable number of deaf-mutes, so called, may be more advantageously provided for in the public day-schools than otherwise.

Day-schools for deaf-mutes have thus been established in the United States as follows: Horace Mann Day-school, Boston, in 1869; Erie Day-school, in 1874; Chicago Day-school, in 1875; Cincinnati Day-school, in 1875; Portland (Me.) Day-school, in 1876; Rhode Island Day-school, in 1877; St. Louis Day-school, in 1878; Oral Branch Pennsylvania Institution, Philadelphia, in 1881; Scranton Oral School, in 1883; Phonological School, Milwaukee, in 1878; A. Graham Bell's School, Washington, D. C., 1883. It would seem that the systems of deaf-mute education were undergoing a transformation at the present time, since hearing defects are beginning to be regarded as constituting a factor of varying importance, no longer offering an insurmountable barrier, in a great number of instances, to an education which shall enable them to hold converse after the manner of hearing persons.

This leads us to express the opinion that very considerable numbers who are at present being educated as deaf-mutes could be cared for in the public day-schools along with the very deaf who are at present unprovided for, since they both require similar methods of instruction.

Totally and very deaf children, moreover, require taking in hand at a much earlier age than is feasible in deaf and dumb institutions; their education should, in fact, begin much earlier than it is commenced at present; they should be placed in school when four or five years old. Children who have lost their hearing soon after acquiring speech soon forget to talk unless means are promptly taken to keep them in practice. The same rule would apply with equal force to the congenitally deaf, since valuable time is lost when instruction is neglected during the impressive period of early childhood. It becomes a necessity in respect to the education of children at such a tender age that they should be provided for in schools near their homes, an entirely practicable matter, fortunately, in large cities and towns, and even in sparsely populated districts, according to the reasoning of Bell in his "Memoir upon the Formation of a Deaf Variety of the Human Race."

As to disassociating very young children from home influences, the humane impulses of parents are altogether opposed to this; the writer has often witnessed the dismay and grief of parents when informed that their deaf children could obtain an education only in a deaf and dumb institution. There are, perhaps, a few families who prefer to place their children away from home, where the responsibilities of support and training will be assumed by others, but it is otherwise with our better citizens, who desire to have them brought up more as other children.

*The education of the deaf in deaf-mute institutions.*—In certain institutions an increased interest has shown itself of late in respect to the very considerable number of pupils who have heretofore been treated as totally deaf, but who are, in point of fact, conscious of more or less perception of sound, which may be made available in education. The results alleged to have been attained by means of aural teaching are very gratifying. During the year 1877 the writer visited some deaf-mute institutions with a view to discover what number of these pupils could hear the voice by means of a conversation-tube placed in the mouth or ear, and he was surprised to find a number being educated as deaf-mutes with whom conversation could be carried on orally by the employment

of this aid to hearing. Repeated observations subsequently made by teachers have confirmed the above, and it is now believed that of all the pupils in deaf and dumb institutions, a large number could be educated through the hearing sense by the aid of speaking tubes and otacoustic fans, and that a small number hear well enough to be taught by the unaided voice. In the Minnesota institution it has been found that from 15 to 25 per cent. of all the pupils received can be taught by the aural method, and that after being instructed for a time many could hear well enough at the distance of ten or fifteen feet to converse when elevated voice was used.

*The confusion and consequent injustice to deaf pupils arising from neglect to classify them properly.*—It will be admitted, if the figures above given concerning the deaf be approximately correct even, and it is believed that as further examinations are made they will be found not to be in excess of the correct number, that in so far as educational objects are concerned we cannot separate pupils into two great classes, *one of which can hear well and the other not at all*, by an arbitrary or sudden line of demarkation, inasmuch as the hearing disabilities of children consist in all degrees of deafness, ranging between slight defects and absolute incapacity.

It would seem necessary, therefore, that some practical scheme for the classification of the deaf should be made which would not exclude any from the schools. Under the present arrangement the only class of defectives provided for has been the so-called deaf-mute class, which leaves out of consideration entirely a large number of partially and very deaf pupils, occupying, so to speak, intermediate ground between totally deaf and normal-hearing persons. This arrangement absolutely places a certain number of pupils in a worse condition than if entirely deprived of their hearing sense, and in consequence a great many of them find their way into deaf-mute schools. Thus it will be seen that the classification in both the day and deaf-mute schools is defective, and that in any attempt to improve matters we are at once met by a most perplexing dilemma; thus, owing to the long-continued practice of forcing all deaf pupils into either a totally deaf or good-hearing class, we find that some of the former and all of the very deaf and partially deaf have been relegated to the hearing schools, while other very deaf persons are classified with the totally deaf and taught as deaf-mutes.

The disadvantages arising in deaf-mute institutions from the want of classification show themselves in many ways; thus, where no useful perception of sound has ever been experienced by a pupil, as in most congenitally deaf persons, there is probably an entire inaptitude for the development of the perceptive function, and while efforts to arouse this dormant function must not be too early abandoned in doubtful cases, yet it is well to consider how much labor can be profitably devoted to the task of teaching such pupils to converse orally. The discouraging results in such cases has doubtless been the means of establishing a preference for teaching the sign language, since in overcrowded deaf-mute institutions this method has the advantage of being inexpensive—an important item where the corps of instructors is small. It has been estimated that about 10 per cent. of deaf-mute pupils belonging to this class cannot learn to speak intelligibly unless much more attention is given to their instruction than is practicable in any public school.

The mediocrity of results attained is further increased by the mental inertness of deaf-mute pupils either admitted when too old to adapt themselves successfully to study, or retained too long after reaching adolescence.

*The duty of the State in respect to the education of the deaf.*—The opponents of the proposed reform for teaching these defectives in the public day-schools assert that the policy of the State is to exclude all who cannot be regarded as having *average* mental and physical qualifications; but no one has ventured to define this standard. Indeed, it would be difficult to do so; and were all of the *average* pupils selected, what should be done with the remaining pupils? This question has thus far been only tentatively met by the attempt to separate all pupils into good hearing and totally deaf classes.

By many it is held that our public-school system has for its principal object the prevention of illiteracy among the poor, and if this view be correct it can scarcely be regarded as consistent on the part of the advocates of educating the average child only, to oppose a scheme for the promotion of the interests of a needy but uninfluential class, while fostering expensive institutions for the free education of the better-to-do, and going so far even as to expend large sums of money in giving *special* instruction in German, French, music, etc.

This was certainly never contemplated by those who founded the common-school system. Nor is it humane to leave the care of this defective class to the uncertainties of philanthropic aid. The State already has ample facilities for the care of all the deaf-mutes who cannot be educated in connection with the day system of public schools, and inasmuch as these institutions will soon be overcrowded by the natural increase of this class, it would seem that facilities should be provided for them in the day-schools without delay. There are already 17,000 deaf and dumb persons of the school age in the United States, according to the census of 1880, only 5,000 of whom were in institutions. As has been stated, there are already in operation in various sections of the country eleven day-schools for the deaf, nine of which, at least, are under control of the local boards, and a bill is now before the Wisconsin legislature to authorize boards of education to take charge of deaf-mutes and place them in the day-schools.

*The expense of educating the deaf in day-schools as compared with their education in institutions.*—The question of reform in the education of the defective in hearing is to a certain extent a question of expense; that they must receive educational facilities will not be denied.

Let us consider the result in this regard of transferring to the day-schools what may be regarded as their legitimate share of work. The outlay by the State would probably be lessened, so far as the deaf-mutes are concerned, and, on the other hand, it would be slightly increased were proper methods introduced for the instruction of the very deaf and partially deaf.

At the present time it costs the State to support and instruct deaf-mutes in its seven asylums \$250 per capita annually. It will thus be seen that were classes of ten formed in the public schools, which is a smaller number, I believe, than in asylum classes, and a teacher secured at the rate of \$800 per annum, there would be a saving of \$170 per pupil. Where smaller classes of children were formed, as might be done in the country, the saving would be less. I have no exact figures upon which an estimate of the number of partially deaf can be based. I know of but one extensive examination in this direction, besides my own; this was made by Weil, of Stuttgart, and published in the *Archives of Otology* for 1882. It embraced the results of an examination of the ears and the hearing of school children of different social grades. In some schools the percentage of those who heard badly was as high as 30 per cent. My own examinations, embracing 570 pupils, were made in

the intermediate and primary grades and included some in the Roman Catholic parochial and in the colored schools of this city. It has already been stated that about 13 per cent. of these had greatly diminished hearing, but it would be impossible to estimate the number whose hearing required teaching by special methods without a careful and extensive examination being made. From the large number met with in practice, however, I believe the number to be considerable. These, however, could be taught in classes of twenty, and the increased expense would not be great; such pupils are at present taught, if they attend school, in classes with hearing children, and the increased expense in reducing the size of classes to accommodate them may be easily computed.

There need be no expense for new buildings, the structures at present in use for school purposes being sufficient, since it is thought best not to separate one class from another entirely any more than the different grades are now taught apart. Some instruction would be common to all.

*Teachers of deaf pupils.*—Many teachers have already fitted themselves for this work, and it is a significant fact that the growing demand for better instruction of the deaf has enabled them to find ready employment either in families or in conducting small private day-schools, since parents are willing to incur this extra expense rather than place their children in deaf-mute institutions. Where this expense cannot be borne, and parents are unwilling to send their children away from home, it seems that to exclude them from the advantages of day-schools is to disregard their rights.

*The examination of pupils in the public schools with a view of determining their hearing power.*—It will not be denied that these disabilities among pupils should be known to teachers in order that instruction may be made more successful, and it therefore becomes important to adopt some plan for correctly determining the hearing power of all school children, so that where any defect exists pupils may be placed under the best possible advantages. While teachers are known often to fail to discern marked departures from the normal standard, and children themselves cannot always give reliable information, yet much could be accomplished by principals and teachers were they assisted at the start by an expert in such matters, especially so far as the majority of pupils are concerned; but where it becomes important to ascertain the exact state of the transmitting apparatus of the ear, and the condition of the nerve-tract connected with audition, an expert examination would be required.

*The importance of early training for deaf children.*—Too much stress can scarcely be laid on the value of results obtainable in this way if early made, since the perceptive power may be much quickened by training in many instances, even where the middle ear apparatus is defective. It would appear to be on the development of the perceptive tract, rather than on any change in the transmitting mechanism, that mental improvement depends in the very deaf who are taught aurally. The expert himself finds it no easy task to get at the facts in certain cases, especially in young children who have already been instructed as totally deaf, since they soon come to disregard the hearing sense entirely, and it remains to be determined in such cases how much the auditory nerve has deteriorated from disuse. The professed indifference to hearing should never prevent some attempts being made at instruction through the hearing organs, since a surprising amount of hearing may thus be found to exist. How many children one meets with who are backward in learning to talk, but finally on getting to be three or

four years old gain their speech! Such children would get on much faster in many instances, it is believed, if regarded as partially deaf. While treating such children professionally I have seen beneficial results from the use of conversation-tubes, or the employment of the voice at close range. This practice cannot be too early commenced. I have observed good results in children as young as eighteen months. In observing these cases one cannot but be impressed with the importance of normal hearing in the ready acquirement of speech, and that however imperfect the hearing may be, it has its uses in acquiring language.

*The hearing that remains after injury of the ear-drum.*—Often after great impairment or destruction of the transmitting apparatus of the ear-drums, a very efficient passage of sound to the auditory nerve remains; but as this becomes more and more difficult, it deteriorates in quality, especially for long distances, until finally its rendition in the very hard-of-hearing becomes so crude and indefinite that interpretation by the perceptive tract is difficult or even impossible. Now, when sound ceases to be transmitted in this manner, hearing may take place by means of the passage of sound up through the tissues of the head to the perceptive tract as propagated by means of the otacoustic fan placed on the teeth, or the conversation-tube placed in the mouth. In the former instance sound passes more directly along bone structure from the teeth, while in the latter it ascends to the vault of the resonating chamber at the top of the pharynx and thence up through the tissues of the head. Voice-sounds imparted to a pupil in the manner just mentioned are of very great value in certain cases, because of their tones being natural, and the pupil's own voice is even more effective in this respect since it is propagated upward with much energy by his own vocal efforts against the moist and highly receptive pharyngeal vault.

*The classification of the future.*—No time should be lost in taking steps in this direction; a little classification must necessarily pave the way to improvement in the education of the deaf of every degree. It should be kept in mind, however, that in a certain proportion of the partially deaf the defectiveness is transient and variable; and that in some of the more difficult cases among the very or totally deaf repeated examination will have to be made when any doubt as to the diagnosis remains.

Before quitting this subject I desire to mention Bell's useful device for testing the hearing.

*The audiometer arranged by Professor Bell.*—This instrument, for all practical purposes in testing the hearing power of the different classes of deaf persons, answers almost every requirement, and its introduction will very much facilitate the work of classification when used by an intelligent and trained examiner.



# EDUCATION OF THE BLIND IN THE PROVINCE OF ONTARIO.

BY ALFRED H. DYMOND,

*Principal of the Ontario Institution for the Blind, Brantford, Ont.*

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A description of the educational system of the Province of Ontario would be incomplete without some reference to the means provided for the education and instruction of the blind.

In a liberal, but just and necessary application of that term, are included, not only those young persons between seven and twenty-one years of age who are sightless, but all who, within those limits, by reason of blindness or defective vision, are unable to receive an education by the ordinary methods at the public schools. Nor does the duty of an institution for the education of the blind end when it has secured for the blind pupil a more or less thorough knowledge of the subjects covered by the public school curriculum. His moral and religious training, the ground-work of character and of success in life, must engage the constant and careful attention of his teacher. Where the intellectual capacity of the pupil will admit of it, accomplishments, such as music and the higher branches of literature, must be added to the studies of the public school. And for pupils whose circumstances require it, an industrial training, suited to the case of those who are entirely dependent on the senses of touch and hearing to guide their operations, has to be provided.

An institution for the education of the blind, then, must be a public school, and something more than a public school,—a home, and something more than most homes,—a workshop with appliances which no ordinary workshop can supply. But, with all this, let it never be forgotten, when we come to ascertain results, that no teaching, however skillful or devoted, can absolutely compensate for the loss of sight. No instruction, however ingenious, can ever fully atone for the absence of the educating power and functions of the eye. The eye is, to a large extent, an involuntary teacher, but it is an ever present and ever active one nevertheless. It may be wonderful that the blind can be taught so much, but it should be an ever active stimulant to efforts to teach them all they can acquire, to know how little with the best help they can, as compared with the seeing, know and do after all.

It is not easy to ascertain the precise number of young persons in this Province eligible for admission to the Ontario Institution for the Blind. The census returns have been found almost useless in this respect, and very misleading. For the gross number of sightless persons enumerated will, on the one hand, include many who from mental and physical defects are necessarily excluded, while, on the other, they will not represent some whose sight is partially defective, but who are nevertheless admissible under our rules.

Somewhat diligent inquiry, however, leads me to believe that the number of those who might properly claim admission, but have failed to do so, is not large. I doubt if, at the present time, there are thirty young persons between seven and twenty-one years of age in the Province, eligible as pupils, who are, without some reasonable cause, deprived of the privileges this Institution offers them. There are now 135 (71 males, 64 females) on our register, but these include several over twenty-one years of age, whose attendance is a matter of special favor and who could be excluded if accommodation were demanded for juniors. It may therefore be safely alleged that, in a building capable of accommodating 150 without crowding, and which has accommodated 180 at one time, the Province has fully provided for the education and instruction of its youthful blind population.

The leading idea of the Institution is to create a spirit of independence and self-helpfulness in its pupils, and thus to enable them to face the world with a resolute spirit and reasonable prospects of success in competition with the seeing. It must be admitted, however, that even in the effort to accomplish this praiseworthy object, good and evil forces come into very close juxtaposition. Those who know by what a slow process, by what patient, continuous effort the blind pupil is taught, will readily understand that, to educate the blind child from his first alphabet card or "reader" in embossed type until he finally graduates with a well-informed mind and accomplished in any single profession or branch of industry, must occupy a period of many years. During all that time his every want is supplied, his every reasonable wish is gratified. A building with wide and lofty corridors, three hundred feet in length, warmed by steam throughout; large and airy dormitories and class rooms; workshops equally comfortable; well-spread tables furnished to a minute three times a day, with all needful attendance; warm baths; every appliance for studies accessible to the blind; officers always at hand to whom the idea of repelling or resenting a request for help from a pupil never occurs; grounds eighty-five acres in extent, with broad walks for recreation; a hall (or chapel) with its grand pipe-organ for divine service at such times, or under such circumstances, as may make it more suitable than the city churches,—all these become so familiar, are so much a part of the blind pupil's every-day existence, are so closely associated with his habits and pursuits, that it is not surprising if many cling to what has been so long their home, even when they should remain no longer, or are ready to succumb to the trials and discouragements they are called upon to face on leaving it to make a start in life. Nor is it easy to see how the difficulty, thus unavoidably created, is to be altogether overcome.

One point always enforced here is, that the pupils are in no sense objects of charity. Gratitude to the good and gracious Father of All is a sentiment that, of course, cannot be too zealously fostered; but, as entitled in common with the whole youth of the State to its paternal care in the matter of education, the blind claim their education not as a benevolence but as a right. That they are admitted without fee to an institution supported by the public revenue does not place them on a different footing, so far as their claims are concerned, from seeing youths who attend public schools also maintained by taxation. Originally a charge was contemplated in the case of those who could afford to pay, but the difficulty of discriminating was too great, and the exceptions were too numerous, to make a continuance of the attempt advisable, and, for several years, board and education have been free. With the further view of inducing the blind as far as possible to forget that any

distinction exists between themselves and the seeing, blindness with us is never spoken of as an *affliction*, but rather as a *defect*, for which we are endeavoring to provide a substitute or compensation.

Again, when not under instruction, pupils are left, as a rule, dependent on their own resources. The Institution lies about a mile distant from the business portion of the city of Brantford. Male pupils, in couples, are allowed to resort thither as often as weather permits, and thus not only mingle with the outer world, but transact little matters of business on their own account. They are also familiarized with current events and human experience generally by hearing read the most interesting portions of the daily newspapers. Not a few are keen politicians and take a deep interest in public affairs. Then, again, spare moments in the three months summer vacation are profitably utilized by our willow-workers, who make up bundles of willow granted them into baskets, for which they usually find a ready market, to be expanded when they finally graduate. A piano-forte tuner, too, during the holidays will often borrow one or two implements, that he may keep his hand in while absent from the Institution and perhaps make a few dollars among his neighbors who are willing to trust him to tune their instruments. By these and other means we seek to lessen the trial attendant on altogether new and unaided efforts.

The literary course of instruction is that followed by all the larger institutions for the blind on this continent, attention being perhaps rather more prominently directed to British than American history and literature, as in the case of our friends to the south of the line. At the same time we are more than debtors to American literature, and to American public and private liberality and enterprise. We have no author dearer to our blind boys and girls than Whittier, and should be almost without a library if we had not the privilege of access to the productions of the great printing houses for the blind at Boston, Louisville (Ky.), and Philadelphia. The selections, too, compiled by these publishers, are usually made with rare judgment—a most important circumstance when the limited field it is possible to cover is taken into account.

Let me appeal to all who rejoice in the priceless blessing of sight, to further this good work of providing literature for the sightless. Let me remind them that, while the Book of Books complete can be purchased at any of the society's agencies for a few cents, the Bible as a whole can only be enjoyed by a blind reader in the form of eight bulky volumes, costing in the aggregate twenty dollars. There is not a city of any proportions in Canada or the United States to-day without a free, or at all events a cheap, lending library of many thousands—in some instances hundreds of thousands—of books. The whole library accessible to the blind does not exceed one hundred and fifty books at the outside. For transcribing letter-press or music, or for communicating by letter with one another, our pupils use the "New York Point," brought to its present state of perfection by my friend Mr. W. B. Wait, the able superintendent of the New York City Institution for the Blind. In this connection I may say that our point print guides are A1 in point of quality and adaptability. They have been perfected by our engineer, Mr. Thos. Harrison, and inquiries from all parts of the continent respecting the Harrison guide, as it is popularly called, are frequent. We claim, however, no exclusive right in their manufacture.

Our music course is both theoretical and practical. It includes studies in harmony and counterpoint, as well as instruction in vocal music, the pipe-organ, reed-organ, piano-forte, and violin.

For our female pupils the industries taught consist chiefly of such light employment as bead-work and fancy work, in addition to thorough instruction in hand-sewing, hand-knitting, and the use of the sewing-machine, with all its attachments, and the knitting-machine. The latter is an important factor in our pupils' calculations of future livelihood.

Of the male pupils a limited number whose natural gifts mark them as suitable are instructed in piano-forte tuning, with most satisfactory results.

Our industrial specialty, however, is the willow-work manufacture, carried on with the assistance of sectional blocks or models, or iron frames, invented by our Trades' Instructor, Mr. Thomas Truss. The patterns of the goods included in the willow-workers' course of instruction are from forty to fifty in number. When a pupil can turn out the whole of these in a workmanlike manner he graduates, an outfit being presented to him of models, tools, and material, to the value of from \$80 to \$100. Pupils receive no money for their labor in the shops, our arrangements being, in this as in all other branches, devised with an eye to educational results alone, and not to financial returns. The willow industry is particularly well adapted for our pupils, who usually come from small centers or the rural districts. Land for the growth of a willow crop is easily procured, and the product of labor is easily marketed. Broom-making and mattress making, which are staple industries in many institutions, are not suited to our needs. Chair-making and basket-making offer not only a greater variety of openings for trade, but a larger opportunity for the exercise of the pupils' ingenuity.

The Ontario Institution for the Blind was erected by the Government of the Province in 1872, on a singularly beautiful and healthful site close to the city of Brantford and overlooking the Grand River. No small recommendation to the situation was the abundant supply of the purest water from a natural spring which, in the whole twelve years or more that have elapsed since the choice was made, has never shown signs of failure or even diminution. The Institution is strictly undenominational in its arrangements, the only distinction being made in favor of the Roman Catholic pupils, who attend morning and evening prayers conducted by an officer of their own persuasion, while the members of other churches unite collectively in their devotions in the hall. The staff of the Institution consists of a principal, bursar, physician (not resident), matron, seventeen teachers and instructors, and a number of other persons employed on the farm and in the mechanical departments as well as domestics. The expenditure on the grounds and buildings on capital account has, up to the present time, amounted to about \$250,000. For its maintenance the Provincial Legislature votes about \$32,000 annually. The authority of the Government over the Institution is represented by an inspector in charge of government institutions generally. Since the opening of the Institution in 1872, 375 pupils have been admitted to the enjoyment of its privileges. An annual examination of the literary classes is made by two educationists of high standing, and of the music classes by a professor of eminence. I trust that these talented experts may ever be able to report that the Ontario Institution for the Blind is worthy to form a part of the noble educational system of our Province.

## THE PRESENT CONDITION OF THE INDIANS.

BY MAJ. J. M. HAWORTH,  
*Late Superintendent of Indian Schools.*

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The educational work among the Indians is at this time attracting more attention and promising better results than at any previous period, and this brings within the orbit of public interest the entire Indian question.

For many years, during which this vexed question received but little attention except in an official way from the Government, the importance of Indian elevation was almost overlooked or but indifferently provided for, even in a missionary point of view.

The great missionary zeal of our country has been largely extended to the heathen of other lands, while those of our own have received but limited attention. True, a few noble-hearted missionaries, Catholic and Protestant, have for many years been devoting their lives to mission work among the American Indians, and it is mainly due to their influence that a willingness has been evinced by a part of the Indians to receive the white man's education as well as his religion.

The practical as well as the sentimental interest in the Indian has rapidly increased. Men who a few years ago were of the number who regarded "the dead Indian as the only good one", are to-day among the most urgent in securing legislation in his behalf. Within the last two years a National Indian Aid Society, composed of many of the most gifted, intellectually and financially, of Philadelphia's best citizens, has been organized, and has established auxiliaries in most all the important cities of our country. This society has exercised an important influence, not only in molding public opinion, but in framing legislation and providing means for advancing the cause of the Indian. Not less potent have been the industrial schools of Carlisle, Penn., and Hampton, Va., which have so forcibly attracted public attention to Indian possibilities, both intellectually and industrially.

While these truths had in fact been demonstrated years ago, and the Indian's capabilities had ceased to be a matter of speculation among those who knew him best, the attention of the public at large had not been attracted in that direction until the establishment of the institutions above named. To them has been allotted the double duty of educating the Indian, and proclaiming to the white people that the Indian's abilities were on a par with their own.

These schools have done and are doing a good work for Indian education, and I take pleasure in bearing testimony in favor of the able management of the Superintendents, Captain Pratt and General Armstrong.

Since the inauguration of the industrial schools at Hampton and Carlisle, others have been started in different States; the first, at Forest

Grove, Or., has been in successful operation for three years, and has done for the Pacific coast what Carlisle and Hampton have done for the East. Within the last year three others have been organized,—one at Genoa, Neb., one near Arkansas City, Kan., designated as Chilocco, and one the Haskell Institute, at Lawrence, Kan. About seven hundred pupils are now attending the three last named. Another, independent of Agency control, is located at Albuquerque, N. M. This school is managed by the Presbyterian Church under contract. Another very important industrial school is located near the Santee Agency, in Nebraska. It is partly supported by the Government, but the buildings belong to the American Missionary Board, and the school is managed by the Rev. A. L. Riggs, than whom no more successful educator is found in the Indian Service.

In addition to the schools named, we have placed at schools in various States about six hundred Indian children. These schools are also attended by white children, and the contact very materially assists the Indian child in obtaining a knowledge of the white people's language and ways. This experiment has only been in operation about two years, and the result is very satisfactory. A few children have been placed out among white people, and are living as members of the family.

At most all the Agencies boarding or day schools have been established, and in some cases both; of the former there are 81, of the latter 76. This number does not include the schools of the New York Indians, which are conducted under State authority and without expense to the Government, nor those of the five civilized Nations of the Indian Territory, who control their own educational interests under their own laws, without expense to the Government. They are very liberal in their educational provisions, and have colleges, academies, and district schools comparing very favorably with those of the neighboring States. The New York Indians have two boarding and thirty day schools. Over twenty schools besides those named are conducted by missionary labor, without expense to the Government.

The capacity of the various schools denominated Government schools is, boarding and industrial schools 6,635, and day schools 3,330, a total of 9,965; to which, if we add the New York schools with capacity for 2,456 and 23 missionary schools with capacity for 993, we have, outside of the five civilized tribes, facilities for 13,414.

Additional facilities are being added the present year. The enrollment for the last year was within 865 of the full capacity, and the average attendance of the boarding schools was 71 per cent., and of the day schools 60 per cent.

The increase in pupils and average attendance for the past two years has been at the rate of 30 per cent. per annum over the previous years. The increase for the current year cannot be correctly ascertained until the reports are received and consolidated at its close.

Each class of schools has an important place in the work. The day school, generally regarded as of little consequence and almost as money thrown away, is a very important agent in opening and preparing the way for the others. Experience demonstrates that it is much easier to obtain children for outside schools from Agencies where the matter of education has been brought before the Indians, even though the object lesson may have been only a day school.

But these difficulties are becoming less each year, though there is still a strong opposition among some tribes to sending their children away to school, or even placing them in Agency schools. The roots of the opposition reach far back into the past. Their own traditional and

religiously received ideas are all against a departure from the ways of their fathers, and he is a brave spirit indeed who in the face of such opposition can set it aside and start out in the white man's way.

The important part in the work of Indian education is and has been in pioneering the way and overcoming their prejudices. This has been a work of slow, but nevertheless sure, progress. The opposition encountered is stubborn, but is being gradually vanquished by persistency. To those on the outside unacquainted with the difficulties to be overcome, the progress of the work may have appeared much slower than it actually has been.

There is not much difficulty experienced now in securing the attendance of the boys, but a strong unwillingness exists against sending the girls to school. The Indian estimate of the female sex does not give her equal privileges with the male. She is the hewer of wood and the drawer of water. All the burdens are to be borne by her, and she accepts the situation cheerfully as one of honor, regarding it as much more appropriate that she should perform menial offices than that her husband, son, or brother, should have so far to forget his dignity as to work with his hands. Although she is not exactly regarded as purchasable in the light of bargain and sale, she yet commands a property value which justifies the parents in demanding and receiving a large and valuable consideration in ponies, or other material, from one desiring to make their daughter his wife. This transaction or ceremony often takes place while the girl is yet very young, often before she has reached ten or twelve years of age, and without her preferences being consulted. She is sometimes transferred to a man older than her father, who installs her in his family as wife No. 2, 3, or 4.

As the opportunity for an education is afforded this system vanishes. The education of the girls is certainly not less important than that of the boys, and its influence for good upon the tribe is even greater.

But the great changes wrought in the last few years have not been without some influence in this respect, and I sincerely hope that the day is not far distant when among all the tribes these early marriages, voluntary or coercive, shall cease, and as many girls as boys attend the schools, the education and civilization of the sexes advancing together.

The rapidly advancing columns of civilization have come upon the Indians from the west as well as from the east, and that imaginary line designated the frontier has ceased to exist. The Indian is surrounded by the evidences of civilization, and anxious feet are treading on the very lines of the reservations, eager to pass over and possess the lands. Not much longer will even the bayonets of the army avail to keep back the intruders. Reservation lines will give way before the pressure, and the Indian will have to accept civilization or go to the wall. The signs of the times clearly indicate that this is inevitable. It will not delay until the children can be educated.

The work of teaching must be extended to the old as well as the young. Never in the history of our country has the invitation gone out with greater force, from the condition of the Indians, to the Christians of the land to come and point out the true way, than at this time, and never has there been a time when such grand opportunities for successful work for the Master's cause among the Indians were offered to the churches. Will they heed the call and enter more largely upon the work? Congress is liberal and the managing power wise, but the Government in its management cannot be expected to take the place of, and do the missionary work of the churches. Upon the churches of America rests

the responsibility of the elevation to Christian character of the American Indian.

While our efforts in behalf of the education of the children should extend to all the number, and we should see to it that facilities sufficient are provided, our efforts should not be confined to the children alone; much can and ought to be done for the adults. The close observation and study which I have given the matter during the twelve years in which I have been connected with Indian affairs, convinces me that labor bestowed upon the adult Indian is not lost.

While we cannot expect to develop in him as high a type of civilization as in the school-boy, we will find him ready to respond favorably to any effort we may put forward in his behalf. While we may not be able to give him the advantages of intellectual education, we can with proper teachers and teaching demonstrate the fact, that the wildest Indian may soon be brought up to the plane of an industrious self-supporting man.

He must be prepared for citizenship and become a factor in the management of the affairs of the Nation. He will become a citizen and be absorbed into the body politic, or he may become a vagabond and constant charge to the Government until he ceases to exist. In educational matters and the general ways of civilization he is quick to respond.

The children learn rapidly, and, considering the fact that they have to learn the English language as they progress in education, their advancement compares well with that of white children.

Including the Indians of Alaska, our entire Indian population is less than three hundred thousand, of whom not more than forty-five thousand are of school age. For more than half of these provision has been made. As already said, the pioneer work, which is the most difficult, has been done. That which remains to be done, though it is great, can be accomplished much more rapidly, and the day need not be far distant when the Indians as a body will be lost to view by commingling with, or being absorbed by, the stronger races, and thus the Indian question be of the past.



## EDUCATION OF THE INDIANS IN THE DOMINION OF CANADA.

BY SAMUEL WOODS, M. A.,  
*Principal of Ottawa Ladies' College.*

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I find from a letter written on November 15th, 1685, by the Sieur de Denonville, Governor of Canada, to the minister for the colonies under Louis XIV, that there had been established at Quebec two schools for the education of the Indians. In the first of these, young Indians were trained with a view to their entering the Church; and in the second they were taught the useful arts, together with such instruction as they were found capable of receiving to qualify them the better as artisans, farmers, etc. (Parkman's Old Régime, p. 438, *Archives de la Marine à Paris*.)

It is now nearly two hundred years since that letter was written, and the policy announced in it has been the rule and guide of the Roman Catholic Church ever since. In carrying out this plan the Jesuit fathers have willingly offered their lives on the altar of duty, and such names as Lalement, Massé, Bréboeuf, Noirot, De La Nouë, and hundreds of others, have won and worn the martyr's crown in endeavoring to carry the news of a crucified Redeemer to the dusky sons of the forest. Through the generations that have since passed, wherever the Church has found willing or unwilling auditors, whether on the banks of the Frazer, the Peace, the Saskatchewan, the Abbittibe, or the Saguenay, alongside of the church have been found the mission school and the swarthy children gathered there, learning first of all the wondrous story of the son of Mary, and then, but in a far secondary place, the elements of a secular education.

This policy, uniformly pursued in Acadia, in the older Provinces of Canada, and throughout the regions of the Far West, has been a most valuable auxiliary in instilling into the minds of the Indians, wherever they came in contact with the "Black Robes", a respect for the usages of civilized life, and a desire, not once but many times expressed, to know more of the means by which the white man advanced with resistless step, and finally supplanted the aborigines in their own hunting grounds.

I have mentioned the noble efforts of the Roman Catholic Church first among the educational advantages enjoyed by the Indians of the Dominion, because she is the oldest factor in the work, and because her power and influence have as a consequence exercised the largest amount of good upon the Canadian tribes; and to show that the old spirit is not yet dead, but that the zeal which sent Marquette and Robert Cavalier de La Salle beyond the confines of civilization in the long past still survives, I quote from a petition of Sœur M. U. Charlebois presented to the

Rt. Hon. Sir John A. Macdonald, Superintendent-General of Indian Affairs, in 1882. She says:

The petitioner now humbly submits to your kind consideration the following statement of the different houses consecrated to the instruction of the Indian and half-breed children in this part of the North-west:

The "Asile Youville" at St. Albert's, established in 1859, clothes, feeds, and instructs 60 children.

The "Hospice St. Joseph" at Île à la Crosse, established in 1866, 40 children.

The "Hospice St. Joseph" at Lac La Biche, established in 1862, 38 children.

The "Hôpital du Sacré Cœur" at Mackenzie River, established in 1866, 36 children.

The "Convent des Saints Anges" at Athabaska, established in 1874, 28 children.

Thus under the Arctic Circle the good work advances under these self-denying enthusiasts, and the education of these semi-savages is carried on with sorely inadequate means.

But on the Pacific coast a new factor in the education of our Indians is found. In 1841, Dr. Pickering, of the United States exploring vessel the *Vincennes*, thus writes, contrasting the then unbroken solitudes of that wild coast with the eastern side of the continent: "Scarcely two centuries ago our New England shores presented only scenes like that before me, and what is to be in the lapse of the third?" Well, less than sixteen years after, the beautiful city of Victoria was rising out of the primeval forest, emigrants from all lands were rushing to the new El Dorado, and among these were found the officers of the London Mission Society and of the Society for the Propagation of the Gospel in Foreign Parts, with their wide views for the preservation and education of the Indian. Schools were opened at the chief tribal centers, and every effort made to educate the young Indians by these societies, which adopted the rule that success could be gained in these objects only by inducing the young to embrace the doctrines of Christianity. To accomplish this desirable end they opened four principal schools, and the one at Metlakatla has been so successful that annually for some years it has received a grant from the Dominion Government of \$500. The Roman Catholic Industrial Mission School at St. Mary is in receipt of a like sum.

In Manitoba and the North-western Territories, alongside of the Roman Catholic and in harmony with him, the Methodist and Episcopalian have gone hand in hand in the good work, and for many years and amid many discouragements Rev. Geo. Macdougall and Bishop MacLean were planting the seed which shall bear good fruit, now that the Government has succeeded to their work.

It may seem somewhat strange that I should call attention to these incidents, but I do so for the reason that the ground was thus prepared for the wide and general diffusion of education among the Indians during the years since Confederation.

And while the Church was thus preparing the way, there were other influences also at work which cannot be omitted in giving even the faintest outline of the education of the Indian.

#### TREATIES.

It is now over one hundred years since the first treaty was made with the Canadian Indians by Britain for the quieting of Indian titles and the surrender of the lands, and yet in all this time no drop of white blood has been shed by an Indian because of a broken treaty, and the reason is plain: the Indian saw himself regarded as an equal in all the treaties made, and the rights and privileges guaranteed to him have been observed to the very letter. Confidence is a plant of slow growth,

but it has taken deep root among the Canadian Indians, who have learned that the pledged word of the Great Mother, or her lawful representative, is a bond that will not be broken. If reserves are set aside, they are secured for all time to their Indian owners; and so, in the very richest and most valuable territories of Ontario, the Six Nation Reserve at Brantford, the Mohawk of Quinté, the Ojibbewey of Lake Huron, and the Moravian on the Thames, are held by the sons, grandsons, or great-grandsons of the Indian signatories of the respective treaties. For it must always be remembered that in Canada the policy of "removal farther west" has no advocates. In every treaty the Indians are allowed to select their own reserves on the surrendered lands, and they are guaranteed free hunting and fishing privileges over the whole lands covered by the treaty so long as the title remains in the Crown. When the land passes into private hands all such privileges cease. Hence, in the wealthy Province of Ontario, there are twenty-seven reservations, on which there is a settled Indian population of nearly 19,000. In Quebec there are seventy-one reservations with over 11,000 inhabitants. In Nova Scotia fourteen reservations have 2,250; and in New Brunswick there are eleven with about 1,500 resident Indians upon them. In Manitoba, Kewaydin, Assiniboin, Albuta, and Saskatchewan, there are included in the surrendered territories nearly 35,000 Indians permanently settled on reservations, among whom, now peaceful and happy, are bands of Sioux, the survivors of those who in Minnesota in 1859 carried slaughter and desolation to the homes of so many peaceful settlers. In British Columbia there are about 17,000 treaty Indians on the various agencies, and in all these wide-spread territories law and order run together, and white man and red man live and have lived in peace.

And just here let me pause to call attention to one fact which shows perhaps better than any other the strict adherence to treaty stipulations on the part of the Canadian Government. The far famed Thousand Islands is an Indian reserve. If the Government at any time during the past ten years had so desired it, an immense revenue might have been derived from the sale of these lands. But no amount of argument or entreaty can prevail upon them to break the treaty, among the very oldest. And so while the islands on the American shore are gradually becoming denuded of their sylvan beauty and in some cases reduced by fire to barren rocks, no sale can take place on the Canadian side. Leases may be granted, and are granted at a fixed rental and for short periods, but only under the strictest regulations regarding the cutting of timber, lighting of fires, etc.; and as the lessee is liable for all such damage the probabilities are that the paradise of beauty on the Canadian side will long remain a standing and most powerful proof of the faith of the treaty guaranteed to the red man in the years now long past.

#### LAWS REGARDING LIQUOR.

But I have not yet exhausted the indirect educational influences which have served to render the Indian problem a source of pride and gratification to every Canadian. In every license law which has been passed by either the Dominion or Provincial Parliaments, one clause has ever been found, inflicting the heaviest penalties upon the man, be he hotel-keeper, trader, or any one else, who sells liquor to the Indian. Nay, so determined has the Dominion Government been to protect the Indian, that a most strict Prohibitory Liquor Law prevails in all the unorganized Territories of the North-west, and one of the special orders to the mounted

police is to seize and confiscate all liquor entering the territory, even in the small quantity generally known as the "pocket pistol." It is no unusual thing to read in the police reports about the staving in of whisky kegs, and the utter destruction of their contents, and the trader whose stock is thus ruthlessly destroyed will think twice before running the risk not only of the loss, but of imprisonment besides, if found guilty of a second offense.

#### THE HON. HUDSON BAY COMPANY.

Another educational agency must not be omitted. In 1643, England's unfortunate king, Charles I, granted to his nephew Prince Rupert and others a charter under the name of the "Honorable Company of Merchants and Adventurers trading to the Hudson's Bay." This company soon after established its posts on Hudson's Bay, and thence spread southward to Lake Superior, northward to the Yukon, the Mackenzie, and the Coppermine, eastward to Labrador, and westward to California, Oregon, and the Pacific. At the junctions of all large streams, on the shores of nameless lakes, in mountain valleys whence rushed down the waters of rivers that swept the fertile plains of the North-west, under arctic snows where the aurora was the only light for months, the factors of this company were found, and honorable men like Mackenzie, Ross, Simpson, Harmon, McTavish, Ballantyne, and others taught the uncultivated savage that a certain amount of work would yield a certain return, and thus was inculcated the first feeble beginning of a civilization which only in our day is giving all the indications of bearing good fruit. For to the credit of the Honorable Company it is noteworthy that its factors were sincere Christians in nearly every case, and often in cathedrals paved with living green, and having God's own vault for nave and transept, the sublime ritual of the old mother Church has been reverently read to the servants of the company and the Indians assembled for that express purpose. And how reverently this would be done can easily be imagined when it constituted almost the only bond that vividly held them to the old land with its many happy associations.

Nor, last but not least, must I omit to mention the influence of the Indians on each other. The oldest reserves found themselves treated exactly as they had agreed, saw themselves becoming more wealthy year by year, sharing the prosperity of their white neighbors, and enjoying the protection of laws framed in a most liberal spirit for their benefit. Even in the reverend synods and conferences of the land they saw the Indian admitted to an equal place and an equal voice in all deliberations. They saw the courts of law opened to a chief of the Six Nations, and a lucrative business largely made up by white men flowing into the office of a pure-blooded Indian. They saw many of the members of these tribes educating themselves and going out among their white brothers and building up remunerative practices as medical men. They saw all such men enfranchised and enjoying the full rights of British subjects, honored and respected. They saw further their own schools taught by Indians. And when such tales, together with what accords with the Indian idea exactly, the prompt payment of all annuities, were told upon the plains, Crees and Salteaux and Chippewas were only anxious to settle, give up their wandering habits, and, accepting the liberal offers of the Great Mother, determine that they too would share in the privileges already acquired by the tribes in the eastern Provinces of the Dominion.

Such are the leading influences which had been at work among the Indians, when in 1867 they all passed from the various Provincial Governments into the power of the Dominion, or General Government. They were not savages. In the remotest regions of our wide Dominion they had met the white man as a friend and brother; had smoked the peace pipe, and had learned to trust him implicitly. The change was imperceptible to the wards of the nation, and would not have been worthy of notice were it not that from that time a uniform system of management was organized, and the affairs of the Indians placed under the direct control of a Dominion cabinet minister.

As soon as possible after Confederation steps were taken for a more vigorous Indian policy. In almost all the Provinces and territories the churches had been doing a noble work, and the Government wisely determined not to interfere with the plans which the experience of many years had amply justified. The schools conducted by the various denominations (see Appendix A) at once became public schools in this sense only,—that the income hitherto contributed by churches and private individuals or companies was supplemented by government grants in no case exceeding \$12 per pupil per annum for public schools; but the Government reserved the right of contributing to the establishment and support of industrial schools in as liberal a manner as they might see fit.

It shall now be my pleasing duty to indicate as clearly as possible what was the condition of Indian education in the various Provinces at the date of their entry into Confederation. The record is one of which any nation might well be proud, and the progress may be looked upon as phenomenal, since the schools qualified to receive government aid have increased from 41, with an attendance of 1,716 pupils, to 150 with 4,306 pupils. When such encouraging results have been achieved in seventeen years, are we not justified in concluding that the future, with the experience gained from the past, will show returns equally as gratifying?

#### ONTARIO.

When the first return of Indian schools was received from this Province in 1867-'68, there were found to be only 38 in active operation and qualified to receive the government grant. Now there are in all 69 schools, and the attendance has increased from 1,409 to 1,930. In all these there has been a very gratifying increase in secular knowledge, so much so that within late years the subjects of dictation, composition, drawing, and French have been added, while in the industrial schools pupils are taught algebra, Euclid, and in rare cases Latin and Greek. Throughout the Province the schools are regularly inspected by the county inspectors, and reports upon their standing and progress are periodically received by the Department.

These Ontario schools take high rank, because our system of public school education is probably equal to, if not in advance of, any other country in the world, and in every progressive step made by these schools the Indians have shared. Our public school system dates from 1844; but I find in an old book published in that year, "Facts concerning the North American Indians and Hints for their Future Advancement," an account of the work done by some self-sacrificing Methodist ministers, which shows that even before our public school system came into being the problem of Indian education had been partially solved,

and the policy adopted by those old Christian Fathers has found its latest development in the industrial schools now so actively supported in Ontario, British Columbia, and the Territories. I quote as follows :

Another means of accelerating their improvement would be to establish schools for the instruction of the children and youth. Already we have schools on every mission station, which have done much good ; but the thing to which I now refer is to establish schools of a superior order. Manual labor schools would be excellently adapted to their circumstances \* \* \*. A portion of those annuities from each tribe might under the direction of the government agent be apportioned to their support. Perhaps a portion of their money could not be better, nor to themselves more advantageously expended. By methods of this nature, the Indian would be gradually and permanently advanced in the scale of civil society ; his migratory habits and fondness for roaming would be cured, and an interesting class of our fellow men rescued from degradation.

It may be incidentally mentioned that in 1839 a report to Lord Glenelg, still in manuscript in the archives of the Indian Department, prepared by the late Hon. Sir James Macaulay, recommends the opening of similar schools, so that when the industrial schools were first opened in Ontario we were but advancing along the line advocated by the old French Fathers, Sir James Macaulay, and the Wesleyan minister, Rev. Benjamin Slight, quoted above.

And so in this Province there are now four large industrial schools. The "Mohawk Institution" at Brantford is the oldest, and in it the pupils receive a thorough education, so much so that it is not unusual for them to enter the collegiate institutes and high schools side by side with the whites, and advance thence through the colleges of the Dominion, taking high rank in the classes there. And while attention is thus paid to mental training, many of the pupils are carefully instructed in industrial trades, such as shoemaking, tailoring, blacksmithing, plastering, carpentering, and printing. In Appendix B I have indicated the present condition of many of these pupils, from which it will be seen that the instruction afforded is bearing excellent fruit. A similar institution, called the "Mount Elgin Institute," exists in the Munceytown Reserve ; here special care is devoted to the female department, which is by no means neglected at Brantford, and for \$60 per annum any girl of Indian parentage can procure board, education, and careful training in household duties, such as washing, laundry work, knitting, sewing, spinning, cooking, and baking. The boys are trained similarly to those at the Mohawk Institute. The Mount Elgin Institute dates from 1867. At Sault Ste. Marie, and at Wikwemikong on the north shore of Lake Huron, two similar institutions have been organized and set forth upon a prosperous career. The former, the "Shinwauk House," is under the charge of the Episcopal Church, and the latter of the Roman Catholic. The aim of all these institutes is to train the Indian to give up his old ways, and to settle among his white brethren on equal terms and with equal advantages.<sup>1</sup>

#### NOVA SCOTIA AND NEW BRUNSWICK.

These were two of the original contracting Provinces in the Confederation, and although the oldest in point of settlement, had done very little for the Indian beyond giving him a hazy notion of the outlines of Christian faith. There were no reserves specially set apart, and I find in the Report of the Hon. H. L. Langwin, in the very first year after

<sup>1</sup> See Report (in the following Paper) on the condition of the Indian Schools of Ontario for the year 1884.—J. G. H.

Confederation, a recommendation that \$1,000 per annum should be set apart for each of these Provinces, and the reason assigned is :

They [the Indians] have no means of acquiring the education necessary to enable them hereafter to share the blessings of civilization, and it would, in my opinion, be expedient to grant a sum of \$1,000 to each of the two Provinces to procure for them this advantage. [Report, 1867-'68.]

Let us see the outcome of this policy. In 1872 the Hon. Joseph Howe, Superintendent of Indian Affairs, reports as follows :

In Nova Scotia and New Brunswick I regret to have to acknowledge that much less has been done. \* \* \* Ashamed of the condition to which the Micmacs had been reduced in my own Province by the neglect of the Government and the indifference of the whites, in 1840 I had an Act passed under Lord Falkland's rule making partial provision for the Micmacs, and gave two years of life to their service. I traversed the country, visited their villages, slept in their camps, had their lands surveyed and divided, educated some of their children, and without reward or the hope of it, did my best to set an example of devotion to the good work, which the pressure of other duties shortly after compelled me to relinquish. These grants were continued down to Confederation but were never increased. \* \* \* On coming into this superintendency, my first care was to increase the grants annually voted for Indian Affairs in the maritime Provinces, to appoint local agents, and to change the system and objects of expenditure; in short, to introduce, so far as the funds would enable me, the (old) Canadian system. Up to this time the results are encouraging, and I trust the work will not be neglected by those who may come after me, and who ought never to forget that the crowning glory of Canadian policy in all times past, and under all administrations, has been the treatment of the Indians.

Such were the small beginnings. It will be seen from a previous part of my report that the Indian population of these Provinces is about 3,750, and to provide for the wants of these there have been established ten schools supported entirely from the consolidated Indian funds of the Government. In these schools there are 225 pupils receiving instruction in reading, writing, spelling, arithmetic, grammar, and geography. The work is regularly inspected by the officers of the public schools, and while irregularity of attendance is frequently complained of, still favorable advancement is reported.

#### PRINCE EDWARD ISLAND.

This Province has a very small Indian population, under 300, settled since 1870 on Lennox Island, Richmond Bay, on the north shore. The reservation contains about 1,300 acres of good land, and was purchased for the Indians by the London Aborigines Society. A school was first opened on this reserve in 1873, but it enjoyed a very precarious career until about three years ago, when the Indians suddenly developed a desire to make more use of it. The last report gives an attendance of 15 pupils on the average, and the usual subjects taught. The school is supported entirely by government funds.

#### QUEBEC.

Although there are seventy-one reservations in this Province, schools have been opened at only fifteen different localities. But it must not be supposed that the interests of education are neglected at all the others. The Roman Catholic Church still pursues its way, still cares for the orphan and the destitute, and only where there are a sufficient number of children to form a school has it been deemed advisable by the Government to open one. These fifteen schools, then, have an attendance of 467 pupils, the largest number maintained being at Caughnawaga, where there is an average daily attendance of 86. These pupils are all instructed in the

usual branches, with grammar, history, and music added. The Dominion Government grant is \$2,880 per annum, and the reports of the various schools are found on the whole very satisfactory. Unfortunately in this Province the religious difficulty occasionally crops out, and more schools might be opened if a basis of agreement could be ascertained. With a view of meeting the question fairly, the Indian Act contains a clause defining the rights and powers of the Indians in such cases. As soon as it is found that sufficient children can be collected to form a school, by a majority vote it is decided whether the school shall be Catholic or Protestant; but in any case if a sufficient minority wishes it, a second school and a second teacher will be supplied. As this enactment only came into force recently, it is fully expected that in many places it may be found practicable to do more than is now attempted. In this, as well as in every other enactment for the advancement of the Indians, the Government, under its present enlightened and vigorous management, is found providing a remedy so soon as the difficulty becomes apparent. And still there is much to do for our Quebec Indians.

#### BRITISH COLUMBIA.

As regards this Province I find in the report of the Minister of the Interior for 1874 the following:

With regard to the education of the Indian youth in this Province, three schools established with this object have been brought prominently under the notice of the Government, toward which grants corresponding to the respective attendance and the character of each have been made. These institutions consist of—

1st. The industrial school at St. Mary's, under the care of the Roman Catholic Church, whereat forty-two children are boarded, the boys receiving instruction in farming, and the girls in housewifery, needle-work, etc. Grant, \$350 per annum.

2nd. A similar but still larger institution at Metlakahla, under the supervision of Mr. Duncan, supported by the Church Mission Society of London, having an attendance of three hundred and four children. Grant, \$500 per annum.

3rd. A day school at Nanaimo with fifty pupils, under the superintendence of the Wesleyan Methodist Society. Grant, \$250 per annum.

There has also been authorized the payment of \$300 per annum to each of seven such other schools as may already or shall hereafter be established, in accordance with the wishes of the Indians and the approval of the Indian Commissioner, and having each an attendance of not less than thirty pupils.

The extension to British Columbia of laws already in force for the government of Indians in the older Provinces of the Dominion, and the passage last session of a stringent law to put a stop to the liquor traffic among the Indians, are notable circumstances in the year's transactions.

This was in the first report after the entrance of British Columbia into the Confederation, and it is gratifying to find that not only were these seven schools established, but they have ever since been maintained, and the last report shows an attendance at them of four hundred and eight pupils, studying the usual public school branches, and though the attendance is less regular than in the other Provinces, still very pleasing evidences of progress are reaped. To counteract this irregularity one inspector recommends the extension of the principle of the industrial schools to the whole Province. As yet, however, the expense of such a step would involve too great an outlay.

#### MANITOBA AND THE NORTH-WEST.

The first school established under government control in these Territories was opened in 1873, and although only eleven years have since passed, there are now forty-four schools with an attendance of nearly



1,300 pupils. Like everything else in this new country these schools are active, vigorous, and aggressive, and owe their rapid increase to the fact that the Government bound itself in every one of the treaties surrounding the territory to maintain a school on each reservation, or more than one if more were required. In addition to these there are three boarding and industrial schools which have been recently opened at Qu'Appelle, at Battleford, and at High River near Calgary, on the same plan so successfully tried in the older Provinces. Here, too, the Government found a few religious schools, but for the most part the soil was virgin, and is destined to produce a return incalculable by any human means in the social elevation of the many thousand Indians scattered over the fertile reserves guaranteed to them *forever* by the faith of treaties which will never be broken.

#### REPORT FOR 1884.

Just while I was collecting the above data the Superintendent-General's Report for 1884 was announced as soon to be issued, and I have been permitted to make some valuable extracts from it. These are of the most favorable character, as will be seen by the following :

The erection at the expense of the funds at their credit of more commodious school-houses, the repair and improvement of the old buildings, and the supplying of modern school furniture, books, and materials for the better education of their children, afford proof of increased interest in the important matter of education. \* \* \* Schools for the higher education of Indian youth should be established in the Provinces of Quebec, New Brunswick, and Nova Scotia, in which the brightest and most promising pupils of the day schools might be trained in industrial pursuits, the knowledge of which would eventually enable them to rise in the social scale to an equality with the white artisan or husbandman. \* \* \* The progress of Indian children at day schools, however efficiently conducted such institutions may be, is very greatly hampered and injuriously affected by the associations of their home life, and by the frequency of their absence and the indifference of parents to the regular attendance of their children at such schools. \* \* \* I would suggest in order to give practical effect to the above ideas that two schools of the industrial type, with accommodations for at least eighty pupils in each, should be established in the Province of Quebec, and one of such institutions in each of the Provinces of Nova Scotia and New Brunswick, and that into either of the latter institutions Indian children from Prince Edward Island be also admitted; the number of schools to be hereafter increased, should the success of those first established justify such augmentation.

It will be seen from the above extracts from his Report, that the Rt. Hon. the Premier, who is Superintendent-General of Indian Affairs, does not intend to pursue a policy of masterly inactivity in the treatment of the Indian Problem, but, recognizing its very great importance, he proposes to deal with it in a statesmanlike manner and in accordance with the traditions of the Canadian Indian policy.

In this rapid manner, for I regret to say that the time at my disposal, aside from my college duties, for the proper treatment of so large a subject was very limited, inasmuch as the request to prepare the paper was conveyed to me only twelve days before it was to be handed in, I have endeavored to overtake the more salient outlines of a system of education unique from its inception and growth, and commanding respect from its highest recommendation—*success*. I have thrown some additional items of information into the form of appendices to which I would refer, and in the preparation of which I have to acknowledge the great assistance afforded by the Deputy Superintendent-General for Indian affairs, L. Vankoughnet, Esq., who kindly placed at my disposal, on the request of the Rt. Hon. the Premier, every available means in his office in order to obtain as full details as possible.

But the educational facilities afforded by the Government have not

yet been exhausted, and the policy of placing the Indians on reservations having been deliberately adopted, it was thought that something more ought to be done. And so seed was provided, agricultural implements supplied, cattle, hogs, sheep, and even horses in many instances, were furnished, and competent men appointed to instruct the Indians in the use of them. In the northwest twenty-six such agencies of an educational kind are at work, and the returns are something wonderful, if we remember that this method of instruction has been in operation only four years. In Appendix D I have given the latest returns from these farms or reserves, from which it can easily be seen that the Indians are becoming very fast a self-supporting class of people, and that they hold in their own hands the means of making themselves wealthy and respected. Their nomadic life, is gradually becoming a thing of the past; their wars are no more heard of; their epidemics of smallpox and other zymotic diseases are gradually yielding to the preventive measures so cheerfully and amply supplied by the Government. Their wild, untutored, and hence suspicious nature is gradually becoming tamed, and under the combined influence of paternal government and mutual esteem they are fast qualifying themselves to become useful citizens.

So fully is this grand result shared by the authorities of the Indian Department, that in the last session of the Dominion Parliament an Act was passed under which the Indian either at once becomes enfranchised, or may acquire municipal rights of self-government, and become, on certain conditions, entitled to all the rights and privileges of citizenship without many of the burdens incident thereto. See Appendix E.

But it may naturally be inquired by some: All this costs money, and whence comes that most needful commodity for these various purposes? In reply to this question I submit Appendix F, from which it will be seen that the Indian Department is more than self-sustaining, and that in the far-off future, when the Act of 1884 shall have been adopted by all the tribes, there will be an amount available for the posterity of these nomads of the forest, in value beyond their wildest dream. Nor can we doubt that the wisdom which during the past century has created a fund of more than three million dollars, will when that time comes fail to find a proper use for it in connection with still further measures for exalting the social, spiritual, and intellectual status of the Red Men of the Dominion of Canada.

## APPENDIX A.

*List of Schools supported entirely or in part by the religious denominations at the date of Confederation, with the numbers attending each.*

Province.	Name of tribe.	Reserve.	Denomination.	No. of pupils.
Ontario	Munsees and Oneidas	Muncceytown	Wesleyan Methodist	52
	Wyandots	Anderdon	do	51
	Chippewas and Pottawatomies <sup>1</sup>	Walpole Island	Church Mission Fund	51
	Chippewas	Saugeen Island	Wesleyan Methodist	56
	Mississaugas	Alnwick	do	40
	do	Rice Lake	do	25
	Chippewas	Cape Crocker	Episcopal	40
	do	Christian Island	Wesleyan Methodist	28
	do	Rama	do	43
	do	Snake Island	do	18
	do	do	do	13
	Mohawks	Quinté	do	34
	Ojibbeways	Shawanegan	do	16
	Six Nations <sup>2</sup>	Grand River	do	31
	Manitoulin Indians	Manitowaning	do	57
	do	Wikwemikong	Roman Catholic	156
	do	Little Current	Wesleyan Methodist	...
	do	Shesheganing	Congregational	...
	Garden River Indians	Garden River	Episcopal	33
Quebec	Indians of Two Mountains	Deux Montagnes	Séminaire de Montreal	30
	do	do	do	30
	do	do	do	32
	Abenakis	Lac St. François	Col. Church Society	25

<sup>1</sup> There were many other small schools at the various mission stations; but unless the average attendance was over 20 no return was made of them.

<sup>2</sup> School No. 9 on this reserve.

SAM'L WOODS.

OTTAWA, February 14, 1885.

## APPENDIX B.

*Showing present condition of many ex-pupils trained in the various Indian schools of the Dominion, particularly at the industrial schools at Brantford and Shingwauk, together with a specially prepared Report by R. Ashton, Esq., Superintendent of the Mohawk Institute, Brantford.*

Joseph Esquimau, school-teacher and catechist at Neepegon Bay.

William Riley, school-teacher at Henvey's Inlet.

Adam Kiyoskh, working at his trade as carpenter at Sarnia.

Edward Jackson, working at his trade as carpenter at Wallaceburg.

John Wigwans, boot and shoe maker at the Shingwauk House.

Margaret, Kate, and Floretta Maracle, Clabren Russell, and P. H. Martin, teachers in Indian schools, and Jeanne Osborne, governess pupil at a Toronto Young Ladies' College.

Thomas Green, matriculated at McGill University, Faculty of Applied Science. In 1882 graduated in science, B. Sc., studied civil engineering, and is now a Provincial Land Surveyor attached to the Dominion Land Office at Ottawa.

Anna Jones in 1879 passed the best examination for public-school teacher, second class, out of eighteen candidates, she alone being an Indian.

Here is a record of 78 pupils of the Mohawk Institute not included in the above or any subsequent return:

Farming independently or on shares.	5
Farming at hire or for their parents.	32
Working at trade or in factories	9
Domestic service with Indians	6
Domestic service with whites.	16
Teaching school.	8

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I now have much pleasure in appending a copy of a letter received this day, and written in response to one of mine asking for information :

MOHAWK INSTITUTE, February 13, 1885.

PRINCIPAL WOODS :

DEAR SIR—I much regret that I was unable to reply earlier to yours of the 7th inst. The Mohawk Institution was founded in or about the year 1823, first as a day school for the Mohawks, and gradually developed into a school specially for teaching handicrafts. In 1831 the Institution comprised, besides a mechanic shop, two large rooms for teaching the girls spinning and weaving, and two for teaching the boys tailoring and carpentry. In 1833 it was opened as a boarding-school for ten boys and four girls. Subsequently it was greatly enlarged, till in 1844 it contained between forty and fifty boys and girls. In 1859 a new brick building was erected for sixty pupils, and this building has been enlarged from time to time, and now accommodates ninety pupils, forty-five of each sex, and since 1880 it has generally been full.

On my taking charge of the Institution in 1872, candidates for admission were first required to pass an examination in reading the Second Book, and in the simple rules of arithmetic. This rule has been the means of greatly increasing the efficiency of the day schools, and of enabling us to send out teachers better qualified for their duties. Candidates are now required to read Third Book. Eight schools on this reserve are taught by pupils from this Institute, who have all successfully passed the examination for entrance in the high schools, and received here six months' special training for teachers.

Since 1875 twenty-nine pupils have passed the entrance examination to the high schools, and twice they have stood first. At the Christmas examination, 1884, at the Brantford Collegiate Institute, out of 75 candidates and a total of 620 marks, our pupils passed as follows: Willis Tobias (Delaware), No. 3 with 471 marks; Christopher Monture (Delaware), No. 7 with 460 marks; Robert Hill (Seneca), No. 9 with 443 marks; Ellen Reed (Mohawk), No. 13 with 434 marks; John Lickers (Mohawk), No. 16 with 432 marks; Charles Anthony (Delaware), No. 19 with 425 marks; and Mary Monture (Delaware), No. 29 with 407 marks.

The New England Company, who chiefly support these schools, has decided that this Institution shall be an industrial and normal school, and this year established ten scholarships at the Brantford Collegiate Institute for enabling Indian teachers to obtain provincial certificates.

*Former pupils :*

Rev. Isaac Barefoot (Episcopal) has first-class provincial certificate, was master at this Institute for several years, attended Huron College, London, has charge of a *white* congregation at Point Edward, Ontario.

Rev. Albert Anthony (Episcopal), Assistant Missionary to the Six Nations.

Dr. Oronhyatehka, Physician, London, Ontario, P. M. Grand Register Canada, Past Grand Workman of the United Order of Workmen, Grand Chief Forester, etc., enjoys a splendid practice, altogether among whites.

Dr. George Bombury (deceased) was Assistant Physician to the Six Nations.

Miss Jessie Osborne, second-class provincial certificate, governess Mohawk Institute. Of those who have regularly graduated, fourteen are teaching Indian schools; one has taught school several years, and is now studying medicine; three are bookkeepers, eight are attending collegiate institutes, one is clerk in the Indian Department at Ottawa, one is Government interpreter to the Six Nations. There are also several acting as interpreters for missionaries, and others who by their educational advantages have been elected as chiefs, secretaries, etc., among their own people, whilst others are farming successfully, and several are with the Canadian contingent in Egypt.

I remain, dear sir, yours very truly,

R. ASHTON,  
*Superintendent.*

OTTAWA, February 18, 1885.

## APPENDIX C.

*Statement showing the progress made by the various Indian schools established throughout the Dominion of Canada for the benefit of the Indian youth, from the year 1863 to 1884, inclusive.*

Provinces.	Year.	Number of schools.	Total number of pupils attending.	Remarks.
Ontario .....	1863	30	874	Several schools with small attendance not reported.
Ontario .....	1864	31	887	
Quebec .....	1864	2	85	Mission schools with small attendance not reported.
Ontario .....	1865	34	987	See remark opposite 1863.
Quebec .....	1865	11	386	See remark opposite 1864.
Ontario .....	1866	32	915	
Quebec .....	1866	10	392	
Ontario .....	1867-8	38	1,409	Mount Elgin Industrial School, established at Munceytown under the auspices of the Methodist Missionary Society with 52 pupils in attendance.
Quebec .....	1867-8	13	305	
Ontario .....	1869	38	1,320	
Quebec .....	1869	13	305	
Ontario .....	1870	42	1,275	The boys attending the Mount Elgin Industrial School taught trades and farming; the girls housework, tailoring, &c.
Quebec .....	1870	14	526	
Nova Scotia .....	1870	3	.....	No reliable returns received.
New Brunswick .....	1870	2	24	Returns incomplete.
Ontario .....	1871	42	1,701	No. 1 School on Six Nation Reserve, near Brantford, has been a boarding school many years. It is now made an Industrial school, and named the Mohawk Institute.
Quebec .....	1871	11	519	Returns very unsatisfactory.
Nova Scotia .....	1871	3	.....	Do.
New Brunswick .....	1871	2	.....	And partial returns from other schools.
Ontario .....	1872	45	1,787	
Quebec .....	1872	12	401	
Nova Scotia .....	1872	4	47	Partial returns from three schools only.
New Brunswick .....	1872	2	.....	Partial returns only.
Ontario .....	1873	45	1,516	
Quebec .....	1873	11	517	
Nova Scotia .....	1873	4	.....	No returns received.
New Brunswick .....	1873	4	517	Schools closed.
Prince Edward Island .....	1873	1	28	
Manitoba and Northwest Territory .....	1873	2	120	
Ontario .....	1874	45	1,701	
Quebec .....	1874	11	497	
Nova Scotia .....	1874	11	497	Not heard from.
New Brunswick .....	1874	1	2	A private school. The Department is trying to open schools.
Prince Edward Island .....	1874	1	.....	School temporarily closed.
British Columbia .....	1874	8	640	Industrial and boarding schools at St. Mary's and Metlakatla.
Manitoba and Northwest Territory .....	1874	4	120	No returns from two of the schools.
Ontario .....	1875	46	1,762	
Quebec .....	1875	13	441	
Nova Scotia .....	1875	2	79	
New Brunswick .....	1875	2	79	No schools heard from.
Prince Edward Island .....	1875	1	79	No returns.
British Columbia .....	1875	9	1,159	
Manitoba and Northwest Territory .....	1875	13	480	No returns received from some schools.
Ontario .....	1876	50	1,857	Weaving, needle-work, mental calculation, English, and French taught in some schools in addition to the regular studies.
Quebec .....	1876	11	394	
Nova Scotia .....	1876	2	68	No report.
New Brunswick .....	1876	.....	.....	Not heard from.
Prince Edward Island .....	1876	1	30	
British Columbia .....	1876	9	497	
Manitoba and Northwest Territory .....	1876	3	106	No return from ten schools.
Ontario .....	1877	52	1,985	Scripture, singing, and catechism taught in many schools.

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*Statement showing the progress made by the various Indian schools, &c.—Continued.*

Province.	Year.	Number of schools.	Total number of pupils attending.	Remarks.
Quebec .....	1877	12	489	Scripture, singing, and catechism taught in many schools.
Nova Scotia .....	1877	2	79	
New Brunswick .....	1877	2	79	No reports.
Prince Edward Island .....	1877	1	30	
British Columbia .....	1877	6	402	Some schools not heard from.
Manitoba and Northwest Territory ..	1877	11	415	Do.
Ontario .....	1878	53	1,824	Dictation and drawing taught in some schools.
Quebec .....	1878	10	320	Dictation and drawing.
Nova Scotia .....	1878	3	79	
New Brunswick .....	1878			Not heard from.
Prince Edward Island .....	1878	1	27	
British Columbia .....	1878	9	648	Scripture and singing taught in some schools.
Manitoba and Northwest Territory ..	1878	16	501	Catechism and Scripture taught in some schools.
Ontario .....	1879	53	1,695	Catechism, Scripture, singing, &c.
Quebec .....	1879	10	326	Do.
Nova Scotia .....	1879	2	78	
New Brunswick .....	1879	3	78	No reports.
Prince Edward Island .....	1879	1	25	
British Columbia .....	1879	11	615	In the industrial schools boys are taught farming and trades, and girls sewing, &c.
Manitoba and Northwest Territory ..	1879	17	590	
Ontario .....	1880	58	1,939	Industrial arts taught in some schools.
Quebec .....	1880	12	376	English, French, and composition taught.
Nova Scotia .....	1880	3	83	
New Brunswick .....	1880			
Prince Edward Island .....	1880	1	15	
British Columbia .....	1880	8	544	Several not heard from.
Manitoba and Northwest Territory ..	1880	16	517	Do.
Ontario .....	1881	59	1,907	Object lessons.
Quebec .....	1881	13	404	
Nova Scotia .....	1881	4	107	
New Brunswick .....	1881	2	47	
Prince Edward Island .....	1881	1	18	
British Columbia .....	1881	9	652	
Manitoba and Northwest Territory ..	1881	26	971	
Ontario .....	1882	60	1,965	Catechism, dictation, and composition taught in nearly all the schools in addition to the regular studies.
Quebec .....	1882	14	497	
Nova Scotia .....	1882	4	99	
New Brunswick .....	1882	2	57	
Prince Edward Island .....	1882	1	12	
British Columbia .....	1882	9	166	Returns very defective.
Manitoba and Northwest Territory ..	1882	29	762	No returns from several schools.
Ontario .....	1883	66	1,919	Object lessons, music, and drawing taught.
Quebec .....	1883	15	402	Do.
Nova Scotia .....	1883	4	79	Do.
New Brunswick .....	1883	3	71	Do.
Prince Edward Island .....	1883	1	11	Do.
British Columbia .....	1883	13	1,180	Do.
Manitoba and Northwest Territory ..	1883	36	672	Do.
Ontario .....	1884	69	1,930	Object lessons, drawing, music, mental arithmetic, dictation, composition, and catechism taught in nearly all the schools in the various Provinces, and most of the schools regularly inspected by the local inspectors of public schools and reports sent in to the department.
Quebec .....	1884	15	467	
Nova Scotia .....	1884	5	107	
New Brunswick .....	1884	5	118	
Prince Edward Island .....	1884	1	15	
British Columbia .....	1884	11	408	
Manitoba and Northwest Territory ..	1884	44	1,261	

OTTAWA, February 14, 1885.

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SAML WOODS.

# APPENDIX D.

*Showing the agricultural and industrial statistics of the Indian farms throughout the Dominion of Canada, extracted from the Annual Report of the Rt. Hon. the Superintendent-General of Indian Affairs for 1884.*

Province.	Indian population resident on the reserves.	Quantity of land cultivated.	New land made in 1883-84.	Fish, value.	Furs, value.	Other industries, value.	Houses or huts.	Barns or stables.	Plows.	Harrows.
		<i>Acres.</i>	<i>Acres.</i>							
Ontario .....	15,451	60,620	1,024	\$47,415	\$28,360	\$34,985	3,075	1,750	1,301	963
Quebec .....	4,443	3,892	90	1,189	33,140	30,395	568	196	98	81
Nova Scotia .....	2,088	1,423	63	7,178	5,433	13,231	389	60	20	20
New Brunswick .....	1,150	2,074	22	2,250	2,729	3,613	227	76	17	26
Prince Edward Island .....	892	125	8	340	10	5,500	67	6	3	4
Manitoba .....	10,206	1,510	162	60,695	45,563	4,560	1,876	496	263	242
Northwest Territory .....	20,650	7,327	2,196	23,485	81,180	9,985	2,317	459	509	324
British Columbia .....	34,617	3,744	295	849,826	136,029	28,977	2,193	520	149	78
Total .....	88,897	80,724	3,860	984,378	332,435	131,246	10,712	3,563	2,360	1,738

Province.	Wagons.	Fanning-mills.	Threshing machines.	Other implements.	Horses.	Cows.	Sheep.	Pigs.	Oxen.	Young stock.
Ontario .....	1,055	344	33	3,569	2,504	1,997	1,500	4,154	663	2,246
Quebec .....	73	9	12	552	174	270	53	511	41	203
Nova Scotia .....	30	.....	.....	550	30	68	74	43	11	60
New Brunswick .....	10	1	.....	20	24	29	15	60	1	62
Prince Edward Island .....	1	.....	.....	58	4	.....	.....	3	2	3
Manitoba .....	167	2	1	5,164	213	518	17	113	330	665
Northwest Territory .....	243	29	1	8,813	748	790	.....	96	730	951
British Columbia .....	72	1	.....	1,153	3,535	1,045	174	2,309	215	1,097
Total .....	1,651	386	47	19,888	7,322	4,717	1,833	7,289	1,993	5,287

Province.	Corn.	Wheat.	Oats.	Peas.	Barley.	Rye.	Buckwheat.	Potatoes.	Hay.
	<i>Bush.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Bush.</i>	<i>Tons.</i>
Ontario .....	8,423	33,785	48,873	12,458	26,634	1,945	439	73,706	5,392
Quebec .....	2,641	1,591	7,974	1,519	479	.....	861	10,180	1,028
Nova Scotia .....	95	181	747	54	12	30	42	7,469	469
New Brunswick .....	42	147	2,365	20	.....	.....	1,190	6,980	190
Prince Edward Island .....	2	84	340	.....	.....	.....	.....	1,200	46
Manitoba .....	296	2,053	615	6	944	.....	.....	47,272	4,009
Northwest Territory .....	803	18,775	3,369	183	20,022	.....	.....	59,913	5,268
British Columbia .....	.....	6,930	3,004	1,561	97	.....	.....	33,485	2,048
Total .....	12,302	67,546	67,286	15,801	48,188	1,975	2,532	240,205	18,551

OTTAWA, February 14, 1885.

SAM'L WOODS.

## APPENDIX E.

*Acts relating to enfranchisement and municipal privileges.*

Section 99 of the Indian Act of 1880 makes provision for any Indian, male or female, by which, on a satisfactory report to the Superintendent-General, he or she may become at once enfranchised.

The same clause also provides that any Indian who may be admitted to the degree of M. D., or to any other degree, in any university, or who may be admitted as an advocate, barrister or counselor, or solicitor or attorney, or notary public, or who may enter Holy Orders, or who may be licensed to preach by any denomination of Christians, may, on application, *ipso facto*, become and be enfranchised under this Act.

Section 106 provides the machinery by which a whole band may become enfranchised, and under it the Wyandot Indians of Auderdon are now enjoying the full franchise as citizens.

## INDIAN ADVANCEMENT ACT OF 1884.

This Act was passed for the purpose of preparing the Indians, by the organization of municipal offices among the tribes, for the full discharge of all the duties pertaining to them as future citizens.

It provides, *inter alia*, for a general meeting of the tribe for the election of councilors, defines the duty of such when elected, and lays down their powers to make by-laws for the following purposes: Schools, making due provision for minorities when Catholic or Protestant; health; decorum at meetings; moral offenses; subdivision of tribal lands; trespass by animals; construction of roads and bridges on the reserves; water-courses; raising funds by assessment, which cannot exceed in any one year one half of one per cent.; application of funds so raised; imposition of penalties and enforcement thereof before any magistrate.

It was expected that several of the bands would apply under this Act, particularly the one at Rama. However, none have so applied as yet, because the more advanced bands were, many of them, endeavoring to qualify themselves under section 106 of the Act of 1880, quoted above.

SAM'L WOODS.

OTTAWA, February 16, 1885.

## APPENDIX F.

*Analyzed balance sheet, showing the condition of the Indian Fund on the 30th June, 1882, the additions thereto and deductions therefrom during the year, and the balances of the various tribes and funds on the 30th June, 1883.*

Name of tribe.	Balance to credit June 30, 1882.	Receipts from interest, land, timber and stone sales, rents, fines, &c.	Expenditure.	Balance to credit June 30, 1883.
Batchewana Indians .....	\$12,636 03	\$3,269 07	\$3,971 41	\$11,933 69
Chippewas of Beausoleil .....	56,245 49	3,086 87	2,881 44	56,450 92
Chippewas of Nawash .....	309,721 03	23,028 97	31,122 70	301,627 30
Chippewas of Rama .....	52,448 26	2,700 72	1,532 91	52,616 07
Chippewas of Sarnia .....	184,457 77	12,344 35	12,636 02	184,146 10
Chippewas of Saugeen .....	240,415 98	20,155 27	26,765 23	242,805 62
Chippewas of Snake Island .....	24,781 82	1,450 91	1,512 98	24,719 75
Chippewas of Thames .....	69,400 06	3,826 65	3,533 62	69,693 09
Chippewas of Walpole Island .....	62,831 71	11,307 09	4,113 23	70,025 57
Fort William band .....	1,062 61	229 25	151 15	1,140 71
French River Indians .....	899 80	58 48	71 04	887 33
Garden River Indians .....	30,103 26	3,989 12	4,491 92	29,600 46
Henvey's Inlet Indians .....	1,975 04	3,124 80	381 72	4,718 18
Lake Nipissing Indians .....	10,804 75	1,971 14	1,456 38	11,319 51
Mamtoulin Island .....	330 14	207 77	153 33	381 58
Manganottewan Indians .....	353 35	114 89	7 28	461 26
Mississaugas of Alnwick .....	81,437 17	5,592 36	11,975 21	75,054 32
Mississaugas of Credit .....	121,028 62	6,937 81	7,212 46	120,753 97
Mississaugas of Rice Lake .....	56,997 56	3,155 20	2,854 13	57,298 63
Mississaugas of Scugog .....	11,882 68	1,497 00	1,069 18	12,310 50
Mohawks of Quinté .....	116,275 22	8,143 41	6,679 82	117,738 81
Moravians of Thames .....	159,354 33	7,857 18	7,904 63	159,306 88



*Analyzed balance sheet, showing the condition of the Indian Fund, &c.—Continued.*

Name of tribe.	Balance to credit June 30, 1882.	Receipts from interest, land, timber and stone sales, rents, fines, &c.	Expenditure.	Balance to credit June 30, 1883.
Munsees of Thames .....	\$2,692 34	\$133 64	\$128 82	\$2,697 16
Ojibbeways of Manitoulin .....	104,366 88	17,977 89	16,884 72	105,460 05
Ojibbeways of Lake Huron .....	53,094 27	8,693 52	10,972 06	50,815 73
Ojibbeways of Lake Superior .....	42,637 41	6,054 36	7,808 17	40,883 60
Ojibbeways of Mississauga River .....	3,893 93	459 71	242 30	4,111 34
Oneidas of Thames .....	637 68	236 78	253 60	621 46
Parry Island Indians .....	39,440 85	2,564 51	1,922 43	40,082 93
Pottawatomes of Walpole Island .....	3,992 23	2,904 63	555 16	6,341 70
Serpent River Indians .....	1,366 46	383 63	149 67	1,600 42
Six Nations of Grand River .....	811,927 64	48,518 38	37,745 09	822,700 93
Shawanaga Indians .....	5,377 31	1,181 98	347 22	6,212 07
Spanish River Indians .....	2,868 00	234 74	249 06	2,853 68
Thessalon River Indians .....	10,022 05	1,143 68	1,051 07	10,114 66
Tootomenai band .....	913 67	54 60	54 64	913 63
Whitefish River Indians .....	2,284 84	122 81	136 37	2,271 28
Wyandots of Anderdon .....	68,851 99	4,397 77	4,010 29	69,239 47
Abenakis of St. Francis .....	2,782 76	1,399 83	566 41	3,616 18
Abenakis of Beacour .....	365 84	467 44	34 70	798 58
Amalictes of Isle Viger and Verte .....	1,751 27	78 80	10 00	820 07
Golden Lake Indians .....	23 62	1 04	20 00	4 66
Hurons of Lorette .....	564 79	101 88	14 59	652 08
Iroquois of Caughnawaga .....	21,573 45	1,888 89	6,155 58	17,306 76
Iroquois of St. Regis .....	29,991 70	2,989 58	2,856 06	30,124 62
Lake St. John Indians .....	1,153 68	235 86	266 73	1,122 81
Lake Two Mountains Indians .....	1,237 55	40 86	133 35	1,165 06
Nepessinguas of Upper Ottawa .....	3,421 83	153 96	.....	3,575 79
River Desert Indians .....	32,708 77	2,615 94	1,922 82	32,801 89
Indians of British Columbia .....	6,066 70	1,034 98	182 72	6,918 96
Indians of Manitoba and Northwest Territory .....	2,646 67	1,906 20	596 99	3,955 78
Indians of Nova Scotia .....	153 92	693 16	173 74	673 34
Indians of New Brunswick .....	2,035 95	753 22	72 80	2,716 37
Tobique Indians .....	3,970 59	870 16	350 28	4,490 47
Indians of Prince Edward Island .....	28 92	1 30	.....	30 22
Clench, I. B. .....	1,185 92	51 12	.....	1,187 04
Maitville, Nancy .....	2,531 65	113 90	120 24	2,525 31
Manace, James .....	1,518 99	68 34	72 14	1,515 19
Wabnick, William .....	2,025 31	91 12	96 18	2,020 25
Province of Quebec Indian Fund .....	48,653 80	6,744 48	8,962 64	46,435 64
Indian Land Management Fund .....	72,342 61	24,658 10	19,094 30	77,902 41
Suspense account .....	5,336 68	240 12	837 28	4,739 52
Indian School Fund .....	132,755 95	16,107 02	18,262 24	130,600 73
Survey account .....	3,000 00	.....	583 15	2,416 85
<b>Total .....</b>	<b>3,148,574 94</b>	<b>.....</b>	<b>.....</b>	<b>3,153,049 94</b>

*Summary showing state of the Indian Fund on 30th June, 1884.*

Balance at credit of fund June 30, 1883, \$3,153,049.94, less \$2,521.19 .....	\$3,150,528 75
Interest accrued during year on money in hands of Dominion Government .....	\$153,816 74
Collections on account of land sales, timber dues, dues on stone quarried, rents, fines, and fees, during the year .....	203,723 38
Government grants .....	33,980 00
Entry warrants .....	1,319 65
<b>Total .....</b>	<b>392,839 17</b>
<b>Expenditures during the year .....</b>	<b>3,543,367 92</b>
<b>Balance at credit of Indian fund on 30th June, 1884 .....</b>	<b>3,271,910 02</b>

The quantity of land sold during the year for the benefit of the Indians was 24,175½ acres, and the sales of these lands amounted to \$14,610.28.

The approximate quantity of Indian lands now in the hands of the Department for disposal is 473,910 acres.

SAM'L WOODS.

OTTAWA, February 16, 1885.

## REPORT OF THE CONDITION OF INDIAN SCHOOLS IN ONTARIO, 1884.

BY HON. ADAM CROOKS, LL. D.,  
*Minister of Education for Ontario.*

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[In addition to the foregoing very comprehensive and valuable report on the Education of the Indians in the Dominion of Canada, I append the following extracts from the Report of the Honorable the Minister of Education for Ontario, showing the condition of the Indian schools in that Province during the year 1883-'84. The information is more in detail, and, in some respects, more recent than in the report prepared by Mr. Woods and embracing the Indian schools in the various Provinces of the Dominion.—J. GEORGE HODGINS, *Deputy Minister of Education, Ontario.*]

### REGULATIONS FOR INDIAN SCHOOL INSPECTION, 1884.

1.—*Regulations on the Subject of Indian Schools and their Inspection, approved by the Minister of Education for Ontario and the Department of Indian Affairs.*

The Department of Indian Affairs for the Dominion having expressed a desire to place the Indian schools in Ontario under the inspection of the public school Inspectors for the Province, the following Regulations have been adopted :

1. The teachers are required to have a speaking acquaintance with the Indian language, and are, consequently, likely in most cases to be Indians; but the instruction should, as soon as practicable and as far as possible, be given in English.

2. Teachers shall receive their certificates from the County or District Boards of Examiners, who shall be granted discretionary powers as to the attainments required; it will be found, however, for some time to come, that the standard of "high school entrance" will be quite as high as is attainable.

3. The subjects of study in these schools need not at present embrace more than the following, viz: Reading, writing, object lessons, elementary drawing (from cards), elementary arithmetic (the four simple rules), elementary geography (the maps of the world and Dominion of Canada), spelling and grammar (formation and analysis of simple sentences).

4. The Indian Department will furnish all text books and apparatus for use in the schools.

5. The schools shall be placed under the inspectoral supervision of the County Inspectors in conjunction with the Indian Agent, who shall together also have a controlling influence in the selection of teachers, except in the case of such schools as are established by any religious denomination under the Regulations of the Department of Indian Affairs, and in such schools the selection of teachers shall continue to be made as heretofore; but each of the Inspectors shall state, in his reports of inspection, his opinion on the competency of the teacher of each denominational Indian school inspected by him.

A fee of six dollars (\$6) per visit shall be paid the Inspector, and legitimate traveling expenses allowed for two visits per annum.

APRIL 19, 1884.

*Schedule of Denominational Indian Schools, as reported by the Indian Department.*

## CHURCH OF ENGLAND.

Lower Muncey.	Shingwauk Home.
Mohawk Institute.	Wawanosh Home.
Mud Lake.	Garden River.
Oneida, No. 2.	Eight Schools on the Six Nations' Reserve,
Walpole Island, No. 1.	viz: Nos. 2, 3, 5, 6, 7, 8, 9, and 10.
Tyendinaga, No. 2.	

## ROMAN CATHOLIC CHURCH.

Fort William (Boys).	Sheshegewaning.
Fort William (Girls).	Serpent River.
Wikwemikong Indust'l Institute (Boys).	White Fish Lake.
Wikwemikong Indust'l Institute (Girls).	Sagamok.
Red Rock.	South Bay.
Wikwemikongsing.	Mississauga.
Buywaks.	Mattawa.
Sheguiandah.	Garden River.
West Bay.	Cornwall Island.

## METHODIST CHURCH OF CANADA.

Alderville.	Red Line.
Hiawatha.	Oneida, No. 1.
Georgina Island.	St. Clair.
Rama.	Stony Point.
Christian Island.	Walpole Island, No. 2.
Saugeen.	Cornwall Island.
Stone Ridge.	Mount Elgin Industrial Institution.

*Schedule of Indian Reserves in Ontario.*

Reserve.	Name of inspector.	Residence.
Tyendinaga	John Johnston	Belleville.
Alnwick	Edward Scarlett	Coburg.
Rice Lake	James C. Brown	Norwood.
Mud Lake	do	do.
Snake Island	David Fotheringham	Aurora.
Rama	James McBrien	Myrtle.
Saugeen	W. S. Clendening	Walkerton.
Cape Crooker	do	do.
Christian Island	Peter MacLean	Milton.
Manitoulin Island	do	do.
Tuscarora	M. J. Kelly, M. D.	Brantford.
Kettle Point and Sauble	Charles A. Barnes, B. A.	Forest.
Sarnia	John Brebner	Sarnia.
Walpole	do	do.
Back Settlement	J. S. Carson	Strathroy.
River School	do	do.
Bear Creek	do	do.
Moravian	E. B. Harrison	Ridgetown.
(1) Parry Sound	Peter MacLean	Milton.
(2) Parry Sound	do	do.
Shawannaga	do	do.
Henvey's Inlet	do	do.
Garden River	do	do.
Fort William	do	do.
Golden Lake	R. G. Scott, B. A.	Pembroke.
Cornwall Island	Alex. McNaughton	Cornwall.

2.—*Extracts from Reports of Public School Inspectors on Indian Schools.*

A. McNAUGHTON, ESQ., INSPECTOR, COUNTY OF STORMONT.

*Indian School, Cornwall Island.*

I visited the Indian school in connection with the Methodist Church, on Cornwall Island, on the 20th day of June.

The school is under the charge of Miss Catharine Maracle, a young lady of Indian descent, possessing a good English education, having been instructed in the Institution in Brantford, and holding a certificate of qualification for teaching an Indian school. She speaks the Indian language and is therefore capable of explaining everything to her pupils in their own dialect.

The number of pupils present at the time of my visit was five, classified as follows: Third Class, one; Second Part of First Book, two; and the remaining two in the Primer.

The pupil in the third class was able to read easy sentences, to spell with accuracy ordinary words occurring in the lessons, but had not sufficient command of English to answer questions on the literature of the lesson; she was also able to recite the multiplication table, and to work examples in the simple rules; she also wrote from dictation on the blackboard. The other pupils were learning to read and to spell, to acquire a knowledge of the English words in the lessons, the cardinal numbers, and also to write on their slates and on the blackboard.

The school-house is pleasantly situated, spacious, and of elegant appearance, and would be well adapted for the purpose, if completed. At present it is finished externally, and lathed but not plastered in the interior. The teacher stated, however, that she and her pupils had not suffered much inconvenience from the cold during last winter. It is furnished with a good coal stove.

The pupils were seated on narrow benches, without desks in front, or support for their backs. Copybooks were exhibited, showing fair specimens of penmanship: but for want of desks, facilities for acquiring skill and dexterity in that art were entirely lacking. The number of pupils on the roll was 22.

There were three maps, viz: British Isles, Canada, and New Brunswick; there was a good supply of text books, but no tablet cards.

The most urgently needed requisites are a teacher's desk, common school desks for about twenty-four pupils, and tablet lesson cards; a map of the hemispheres and maps of the continents should also be procured.

On the same day I visited the Indian school on Cornwall Island, organized in connection with the Roman Catholic Church, under the charge of Miss Annie Baldwin, who holds a letter of recommendation from the Roman Catholic Board of School Commissioners of Montreal. She has been successful in getting her pupils interested in their studies, and imparting to them some knowledge of English. She does not possess a knowledge of the Indian language, and consequently her pupils are compelled to learn everything in English. I found, however, that her pupils had acquired a more ready command of English than those instructed by a teacher conversant with both languages.

The number of pupils present on the occasion of my visit was fifteen, classified as follows: Third Class, one; Second Class, two; and the remainder in the First Class.

The pupils in the second and third classes were capable of working examples in the simple rules and reduction; to read and spell with a considerable degree of accuracy, and to recite and apply the tables of weights and measures; they also had some knowledge of geography, being able to point out the principal physical features and boundaries of the continents on a map of the hemispheres, and also to designate the countries of Europe and North America, and their capitals; they also wrote sentences on the blackboard from dictation. Several of the pupils in the first class were able to read and spell easy words, to count and add in English, and had made some progress in learning the multiplication table; they were also learning to write.

The school is tolerably well supplied with desks and other conveniences. There is a blackboard, but it is too small. A good supply of books and lesson cards had recently been received, and were found very useful.

I had previously visited the school on the 24th of April, and I found that during the interval the pupils had made very satisfactory progress.

I also visited the school on the 28th of June, on the occasion of the public examination, when the Rev. Father Mainville, the priest in charge of the Indian mission, and several of the parents and friends of the pupils attended. Among other proceedings, the pupils, led by one of their friends, sang an Indian hymn.

JUNE, 1884.

I again visited the Indian school on Cornwall Island on the 28th November, and found it in operation under the tuition of Miss Catharine Maracle.

The number of pupils present was seven, one of whom was reading in the Third Book, and working examples in simple multiplication; two were reading in the Second Part of the First Book, spelling words of one syllable, and learning to add numbers; the remaining four were learning to read in the First Part of the First Book, and to count in English.

Although the pupils have not made great progress, yet considerable improvement was manifested, and particularly more facility evinced in pronouncing and understanding the words of the lessons, and in the use of English.

I found the school-house better furnished; a teacher's desk and four desks for pupils, each capable of accommodating two, having been procured.

The specimens of writing were carefully executed.

The school in connection with the Roman Catholic Church is without a teacher.

NOVEMBER, 1884.

JOHN JOHNSTON, ESQ., INSPECTOR, SOUTH HASTINGS.

*Indian Schools, Mohawk Reserve.*

School No. 25, in the eastern end of the Reserve, taught by Miss Pearce, who holds a third class certificate, was thoroughly examined the afternoon of May 8th.

There were present ten white and twenty-two Mohawk pupils. I might here state that in two of the four schools the whites are allowed to send their children by paying half of the teacher's salary and other running expenses of the school. Very little of the land is worked by the Indians, nearly all of it being leased for terms of five years to the whites. The Mohawks have built and own all the schools.

This school is built of brick, is comfortable and quite well furnished with blackboards, tablets and maps; it is also well and comfortably seated. Since 1871 it has been carefully examined twice each year, a half day being spent at each inspection; it has generally been well taught, as the whites always took a deep and lively interest in it, and were able to secure the services of a very fair teacher. The school at present is not as efficient as formerly, as the white people or myself have had nothing to do in selecting a teacher.

Recent regulations of the Indian Department at Ottawa require that all the teachers must be of the Church of England faith; a regulation which has been to the detriment of the schools, as it was impossible for me to get such teachers. The result has been that very inefficient teachers from other parts were obtained; teachers who have no certificates, and were unacquainted with any good method of teaching.

The scholars in Part 1, were only middling in reading. The reading of those in the Second Book was also middling, while the spelling was good. The reading of those in the Third Book was middling; spelling, middling; arithmetic, good, and the geography was middling. The order and attention good, and the writing middling.

School No. 3, about five miles west of the former school, and on the old stage road, was examined from 9 to 12, May 19th, in the presence of the Indian Agent, Matthew Hill.

To this school the whites are allowed to send by paying half the teacher's salary and other expenses: there is a neat frame building built by the Indians a few years ago when the school was efficient, and taught by teachers trained and taught in South Hastings. The school was dirty and the scholars very backward in all the subjects.

The scholars in the Second Book were bad; the reading bad; spelling very bad; no writing; arithmetic bad; and geography very bad. The reading, spelling, and arithmetic of those in the Third Book, bad; the writing middling. The writing of the one in the Fourth Book was good, while the arithmetic was bad; the grammar very bad, and the geography middling.

Western Mohawk School, taught by Miss Johnston, who holds no certificate, was examined in the afternoon of May the 19th, in the presence of the Agent, Mr. Hill.

There were thirty scholars present, all Mohawks. The reading of the nine in Part First of the First Book was bad; there were no scholars in Part Second; there were twelve in the Second Book, but the reading was very bad; the spelling, worse; writing, middling; arithmetic, worse than bad, and no geography is taught them. The reading of the nine in the Third Book was very bad; spelling, worse than bad; writing, bad; arithmetic worse, and geography very bad.

This house is a neat frame building, built by the Indians a few years ago.

Mission School was examined July 2d, in presence of the Agent; it is a good frame building on a nice site; it was built by money collected in England by Chief Sampson Green. This school gets a grant from the New England Company. It is taught by Miss Maracle, who was educated in the Indian School on the Grand River Reserve; she is a Mohawk and is a very fair teacher, considering her opportunities; she had twenty-six present; the room was clean and in good order, and I always found it in this condition.

The reading and spelling of those in Part First, numbering four, was good. Three in Part Second, reading, spelling and writing, good to middling; while the arithmetic was middling. Of the two in the Second Book, the reading was middling; spelling, good to middling; writing, good, but the arithmetic was bad. There were two classes in the Third Book, three in one and six in the other. The reading was middling; spelling, good; writing, good; arithmetic, middling, and geography middling. There were five in the fourth class; the writing was good; arithmetic, bad, and the geography middling. At former visits I have found this school in a better state of efficiency, but the teacher told us that she had not been well for some time, and was unable to do the work properly. In the past she has done very good work in the school.

Nos. twenty-five and three I have inspected regularly for the past thirteen years, and they were fairly efficient schools till the past two or three years. At the request of Chief Sampson Green, I examined the other two schools several times previous to this year; but, had not I received the letter and circular from you last May, I did not intend to inspect the Upper Indian School any more, or as long as the present teacher was in charge.

Something must be done to prevent these schools from being placed in charge of such inefficient teachers. It is all right to have them of the same faith as the Indians, but they should be persons who know how to teach all the subjects included, as high as the fourth class at any rate. Many of the Mohawks don't know and don't mind what kind of a teacher is in charge.

OCTOBER, 1884.

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JAMES MCBRIEN, Esq., INSPECTOR, COUNTY OF ONTARIO.

*Indian School, Township of Rama.*

The equipment of the Indian School in the Township of Rama consists of a map of the world, a twelve-inch globe, a calculator, and books, stationery, slates, and pencils, supplied by the Methodist Missionary Society. The average attendance for the last quarter was 94. The attendance of the pupils is extremely irregular. They are allowed to do as they please, as their parents do not attach much value to our education; they think it spoils them for fishing and hunting. The subjects taught are reading, writing, arithmetic, and geography. The pupils appear to possess great ability to learn some things, but lack application. They learn to write with great facility. They are quite ingenious in drawing. Their mathematical ability appears to be next to nothing. The school is taught at present by the Rev. Kennedy Creighton, the missionary in charge; he says there will be a regular teacher by the first of July. The school-house is of the most primitive description.

The following are the books used:

Six Geographies (Cornell's).	Five sets of Copy Books (Beatty's).
Seven Arithmetics (Kirkland & Scott's).	Fifteen slates, pencils, pens, etc.
Eight Table Cards.	Ten First Books (Canadian Series).
One Mental Arithmetic (McLellan's).	Twelve Second Books (Canadian Series).
One Spelling Book.	Two Third Readers (Canadian Series).

DECEMBER, 1884.

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DAVID FOTHERINGHAM, Esq., INSPECTOR, NORTH YORK.

*Indian School, Georgina Island.*

Respecting the Indian school on Georgina Island, in the inspectorate of North York, I reached the lake shore opposite at 10 a. m., of the 29th May, but owing to a rise in the wind was unable to reach the island till 2 p. m. I spent the afternoon in the school and paid a friendly visit to the Chief, Charles Big Canoe, in the evening. The following is a copy of my notes:

*School House.*—Log, twenty-one feet wide, twenty-five feet long and eight feet high; very cold in winter. A new one, frame, to be erected this season by the Indian Department.

*Grounds,* alongside and in rear of Mission Church: not enclosed, but surrounded by woods. Graves in close proximity to school-house and church.

*Appliances.*—Very limited. One small and poor blackboard, a map of the world only, with some old tablets, donated by trustees of No. 1 Georgina School; some pews from church the only desks, with a few benches for seats, neither comfortable nor suitable; text books furnished by Mission Society of C. Methodist Church, under

whose auspices the school is carried on; books in use, the authorized Readers and Gage's.

*Subjects Taught.*—Reading, writing, arithmetic, and a little grammar and geography, all in English, though the teacher, Robert Mayes, can speak in their own language, Ojibbeway.

*Order and Spirit.*—All I could desire.

*Work.*—Reading, creditable, fairly intelligent, and with good accent and pronunciation. Writing, superior, both as to being uniform and free. Few schools in North York equal in writing. Intelligence and knowledge of subject read, fair. Characteristic slowness in replies, though not to be complained of under the circumstances. Singing, better than in most public schools, not only in sweetness of voice, but in expression and training.

Having had many inquiries to make of the teacher, I was unable to enter upon other studies at this visit, but trust to a future visit to give better opportunity.

Number of pupils present, ten boys and eleven girls. On the island, about thirty children and one hundred adults.

The teacher, Mr. Robert Mayes, I found earnest, gentle, firm, intelligent, and devoted to his calling. He devotes his time on Sunday to the spiritual improvement of the Indians, as he does through the week to their social, intellectual, and moral advancement.

He holds no certificate of qualification, though otherwise seeming well adapted for his work.

Our County Board, after hearing my recommendation that he be advised to attend the entrance examination, either in July or December next, agreed to that proposal with the understanding that a certain percentage should not be rigidly exacted.

The house in which the teacher and his family live is not at all what it should be. I understand, however, that some improvements are in contemplation this summer.

I should recommend that the school be supplied as soon as possible with:

1. Maps of the continent and Canada.
2. A globe.
3. Tablet reading lessons.
4. A numeral frame.
5. A limited number of object lessons.
6. Drawing cards and handbook for teacher.
7. Modern desks and seats.

JUNE, 1884.

I again succeeded in reaching the island on the 9th of October. I found a new, comfortable, and fairly commodious school-house on the same site, but in front of the old one, which will now be used for council meetings. The desks, blackboards, stove and pipes are also all new, so that few of the public schools in North York are more comfortable, though many are larger. The size of this, however, is quite adequate to the number of Indian children—about 30—on the island.

On the day of my visit, 13 boys and 7 girls were present, and acquitted themselves creditably in their studies in all the branches prescribed.

Mr. Robert Mayes, the teacher, as I noticed on the occasion of my former visit, seems to be well adapted for his position, being kind but firm, methodical and laborious. The wonder is with the hitherto very poor accommodation, small remuneration, and isolation from associations to which he must have been accustomed, he should be willing to labor so devotedly where he now is. His residence has been undergoing considerable improvement, however, and hardships in that way will be reduced.

DECEMBER, 1884.

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M. J. KELLY, Esq., M. D., INSPECTOR, COUNTY OF BRANT.

*Indian Schools, Township of Tuscarora.*

These Indian schools are not all under the same management. One, known as the "Thomas School," one and a half miles from the Council House, is a band school, *i. e.*, under the sole control of the Council of the Six Nations; three others, viz, the "Red Line School," the "Stone Ridge School," and the "New Credit School," near Hagersville, seem to be under the management of the Wesleyan Conference; while the remaining eight are known as "Board Schools," being managed by a Board appointed in 1878, and consisting of three Indian chiefs, the two Church of England missionaries resident on the Reserve, the Superintendent of the Mohawk Institute near Brantford, and the Superintendent of Indian Affairs in this vicinity, *ex-officio*. For four years the New England Company, of which I shall presently have something to say, contributed to the support of those eight schools \$1,500 per annum. In 1882 this

grant was reduced to \$1,000 per annum. The Six Nations Council contributed for the same purpose \$1,500, and the Indian Department at Ottawa, \$400 per annum. Teachers' salaries are uniform over the whole Reserve, one school excepted; male and female, without distinction, receiving \$250 per annum. The average attendance at the schools, and the standard of attainments of pupils, as reported by the Board last year, were good and improving. As the New England Company has done so much here and elsewhere for the moral and intellectual elevation of the Indian tribes of North America, a brief sketch of its history may not be amiss in this preliminary report. The company was first established by the Long Parliament, in 1649. The first Pilgrim Fathers reached America in the "Mayflower" in 1620. The celebrated John Eliot followed in 1631. Through the work of Eliot and the publication of his eleven tracts, the wants of the North American Indians became known in England. The result was the original establishment of the company now known as the "New England Company." Long distinguished as the "Apostle of the North American Red Men," this zealous missionary was a graduate of the University of Cambridge, and commenced life as a schoolmaster. On the flight of Hooker, the head master of the school in which he was assistant, Eliot, who was also of the Puritan way of thinking, sailed with Governor Winthrop's family and other emigrants for Boston, where he at once entered upon the work to which he devoted his life.

The royal charter for establishing the colony had declared that: "To win over and incite the natives of that country to the knowledge and obedience of the only true God and Saviour of mankind, and the Christian faith, in our royal intention, and the adventurers' free profession, is the principal end of the Plantation." The colonial seal, too, represented an Indian with a label in his mouth, inscribed, "Come over and help us." Having acquired a knowledge of their language, Eliot procured the establishment of schools, to which he induced the Indians to send their children. To aid him in his work he wrote his eleven tracts, in which he appealed with much force to the liberality of Christian people in England, and which led to the formation of the New England Company. The quaint wording of these tracts, as shown in their headings, is characteristic of the period. I transcribe some of the shorter headings. Tract II.—"The Day breaking, if not the Sun rising of the Gospel with the Indians in New England. London, 1647." Tract III.—"The clear Sunshine of the Gospel breaking forth upon the Indians of New England. Thos. Shepard, London. 1648." Tract IV.—"The glorious prayers of the Gospel amongst the Indians in New England. Edward Winslow, London, 1649." Nearly £12,000 stg. were forthwith collected by voluntary subscriptions throughout England and Wales, and out of this £11,430 were expended in the purchase of landed property at Eviswell, in Suffolk, a farm at Plumstead, in Kent, as well as several houses in London.

The corporation at home at once appointed commissioners and a treasurer in New England, who, with the income transmitted them by the authorities in England, paid itinerant missionaries and school teachers amongst the natives.

At the Restoration (1660), the corporation created by the Long Parliament became defunct; for a while the income ceased; but by the influence of "the excellent Robert Boyle," son of the Earl of Cork, and one of the founders of the Royal Society, an order of Charles II in Council was obtained 10th April, 1661, for a new charter of incorporation, vesting in the company then created (and now subsisting), the property which had been given or bought for the purposes of the late corporation. Robert Boyle was the first governor of the company, which included, among other noblemen, the famous Lord Chancellor Clarendon. In 1822 the company transferred its operations from New Brunswick to other parts of British America, and has since established stations at various times and places, one of the most important being among the Mohawks and other Six Nation Indians settled on the banks of the Grand River, between Brantford and Lake Erie. In the year 1823, after a preliminary investigation on their behalf by the Rev. John West, and with the concurrence of Capt. Joseph Brant, the New England Company adopted resolutions respecting the placing fit persons, either individually or in mission families, at eligible stations in those parts of America in which the trusts of the company could be carried on. Accordingly, the company, in concurrence with Captain Joseph Brant, and with his assistance as a sort of lay agent, before 1827 commenced operations under the Rev. William Hough, as its first missionary, on the Grand River, and built two school-houses near the Mohawk Village (about one and a half miles from Brantford), as well as a parsonage for the church there. This church possesses the communion plate and Bible presented by Queen Anne to the Indian church in the Mohawk Valley, which the Indians had been obliged to abandon. The Rev. Robert Luggar succeeded the Rev. Wm. Hough, as missionary, in 1827, and was in turn himself succeeded, ten years afterwards, by Archdeacon Nelles, who still officiates at the Mohawk church every Sunday, having as the principal part of his congregation, the boys and girls of the Mohawk Institute. The first grant of the New England Company for Indian school purposes, was made to Captain John Brant, son of the great chief, in 1822; this was for the erection of the two school-houses before referred to. In 1832, at the time of



Captain John Brant's death, the New England Company supported seven schools on the Reserve. In 1830 the "Mohawk Institute" was established for teaching handicraft trades; in 1833 it became a boarding-school for ten boys and ten girls; rebuilt in 1859, it was subsequently enlarged, and it has for many years accommodated forty-five boys and forty-five girls, who are all boarded, lodged, clothed and educated, free of charge. The institution is entirely supported by the funds of the company, the net cost of each pupil annually being about \$60. Attached to the institute is a farm of 250 acres, and adjoining it the glebe belonging to the Mohawk church, all of which is Indian land held under a conditional tenure. There are in the institute two teachers with the superintendent, all of whom reside in the building. The boys and girls in relays receive instruction in the literary classes for two days, and work the third.

I paid my first visit to the schools on the Reserve, the 3d of June, being accompanied by Mr. Ashton, the Superintendent of the Mohawk Institute; examining in the forenoon "Thomas's School," where we found the Indian commissioner and Mr. Allen Clegborn of Brantford, awaiting us. Thirty-two pupils' names on the roll; twenty-one pupils present, of whom two were white. Teacher John Miller (white) teaching on an expired Third Class Certificate. Pupils, arranged in three classes, first, second, and third, were examined in reading, spelling, arithmetic and geography; doing fairly, though much inferior to white children of same grades in our public schools. House, frame, badly furnished; floor dirty; no trees or water-closets on grounds. Globe, small, and numeral frames needed, also maps of world, Canada and States, ink and pens, crayons, blackboard, reading books and desks. At noon met with the chiefs of the Six Nations in Council House where they had assembled, and explained to them my mission on the Reserve. In the afternoon, visited the "Red Line School," under the W. M. Conference: found enrolled twenty-six pupils; present, nine. Teacher, Miss Annie Cross, an intelligent young lady, daughter of the resident missionary, holding a recommendation for certificate from the Rev. Dr. Burns, Principal of the Young Ladies' College, Hamilton. The pupils were all in the first class, and knew very little of the work even of that class. The house is a small frame one, and the furniture is nearly nil: desks are arranged around the walls, on which hang maps of the world and Ontario: there is no school yard. This school needs a small globe, a numeral frame, tablets, blackboard, map of Dominion, new desks, also walls plastered and whitewashed.

June 9th, with Mr. Ashton, visited board school No. 3, ten miles from Brantford; a frame school-house painted white: neat grounds, half an acre, out-houses and some trees. Found here a clock, blackboard, maps of the Dominion and hemispheres, zoological chart, ten commandments, time and limit tables, good desks and seats. Rev. D. J. Caswell, B.D., Anglican Missionary, and Chiefs Moses, Martin and John Hill, were present during the examination. Thirty-one children present, arranged in five classes, and for the most, fairly well dressed. Teacher, Sarah Davis (Indian), who passed the entrance examination four years ago. Children were examined in reading, dictation, writing, arithmetic, very elementary grammar and geography, and did fairly well. In the afternoon visited board school No. 7: David Hill (Indian), teacher: house, log, clapboarded; ground inclosed by wire fence; no trees; desks, etc., same as in No. 3. Same visitors present, with a considerable addition of females. Thirty-three children present in four classes. Examination of much the same character as in No. 3.

June 12th, visited board school No. 10. Peter Martin (Indian), teacher. Same visitors as on the 9th June, with the addition of the Indian Commissioner, Lieutenant-Colonel Gilkison, and Rev. Mr. Anthony (Indian). The school-house, a neat brick structure, was erected last year. It has a double porch with separate entrances for boys and girls; a neat bell-tower, and in the front is placed a marble slab inscribed, "Six Nations S. S., No. 10, 1883:" the foundation is stone, and the cost of the building was \$1,000. The school-room is furnished with double desks, a raised platform with teacher's desk, cupboards, a large slate blackboard, seven by three feet, with chalk troughs, etc. The house is situated in a pleasant grove, and there are two good water-closets. Within the school-room are a nice clock, small globe, numeral frame, natural history cards, maps of the world and Canada, and a zoological chart. Number of pupils present, forty-one, in five classes. The examination showed this the best school I inspected on the reserve.

In the afternoon (an excessively hot one), paid a visit to the "Stone Ridge School," under C. M. Conference. A log house without grounds and water-closets. The teacher, a son of the Rev. Mr. Cross, C. W. Methodist missionary, was absent. The children had been apparently trying to scrub the floor, but on our approach (there was a train of four or five buggies and democrats), they hastily decamped. Everything here was of the most premature sort: forms around the walls, no desks: floor broken in several places: a raised platform for the teacher, about three feet above the floor and railed in: on the walls a map of the world and the ten commandments. Though the "school-master was abroad," there was little evidence of "sweetness and light" in the school.

On the 13th of June, the board school No. 5, on the township of Oneida boundary,

was visited: new frame building, large and airy, well furnished. Miss Bella Latham, (white), teacher. Nineteen children present in five classes, one only in the fourth and in the fifth classes; result of the examination, middling. It was impossible to reach any other school that day.

June 20th, examined in the morning, board school No. 2, near the Council House; Miss Floretta Maraké (Indian), teacher; an active, painstaking and energetic manager of a school. Brown frame house, plastered and whitewashed inside: grounds enclosed by a wire fence: good outhouses: no trees: good clock, maps etc.: floor clean: everything in good order. Thirty-five pupils present, arranged in five classes, one in the fifth and five in the fourth. Reading, dictation, arithmetic and grammar, satisfactory; order good. Two chiefs and Mrs. Elliot and Miss Ray, present. Afternoon of same day, examined board school No. 8. Frame house in a pleasant pine grove, opposite Kanyauga Church (Episcopal), Miss Maggie Davis (Indian) teacher; passed entrance examination a year ago last Christmas. Inside, plastered walls quite white; floor very clean; porch, large; clock, small globe, etc., in good order. Twenty pupils present, in four classes; proficiency fair.

June 23d, in company with Mr. Ashton, and the Indian commissioner, I visited the New Credit School (under Band and C. W. Conference) of the Mississaugas, an Ojibewaway tribe. This school is about twenty miles from Brantford, and as the morning was extremely warm, we were late in reaching our destination. The land, nearly all the way from Brantford—a mile or so of a low sand level on the Reserve excepted—is a fine clay loam. Six miles south of the city, at Burch's Corners, you turn to the east and the road is straight thence all the way. About two and a half miles from the town on the Cockshut road, the Tuscarora boundary is reached, when you pass through the very garden of the Reserve. Such wheat fields, hay fields, and spring crops as lined the road on either hand, one does not often see. The reserve of 44,000 acres held by the Indians in Tuscarora is, for the most part, the very best of land, much of it being of alluvial formation, generally level, but shorn of its primeval forest trees, the bush having now a frousy, scrubby appearance. The commissioner has for years done his best to prevent the destruction of the forest, but the cupidity of the white man and the need of the Indian have been too strong for him. Scarcely a tree is to be found anywhere along the roads for shade or shelter, and wells are almost unknown. The highways are nearly impassable—indeed, altogether, I believe in the spring and fall—and are now even seamed with deep ruts. Food for horses as well as men must be taken along.

The New Credit School is supplied by the Bahd, *i.e.*, the Mississauga tribe, which makes it a grant of \$300 per annum, and this is supplemented by a grant of \$50 from the Indian Department. The teacher in charge is Mr. John Scott (white), who holds a permit from the Indian Office, Ottawa: his salary is \$350. The house is frame, twenty by thirty feet with porch: grounds are not inclosed. The school room is not in a satisfactory state; the desks are poor, the floor broken, plaster off walls; needs an entirely new equipment. Fourteen pupils present, in four classes; proficiency middling. Doctor Peter Jones, of Hagersville, chief of the tribe and son of the late Rev. Peter Jones, of Brantford, was present during the examination.

Afternoon, examined board school No. 9. Claybourn Russell (Indian), teacher. Small frame school-house with porch; equipment the same as in other board schools; grounds enclosed with wire fence; no trees; access to the grounds in all the board schools is by stile and not by gate. All the houses are furnished with large bells. Twenty-eight children were present, clean and neat in dress and appearance. Many visitors of both sexes. Five classes examined with fair results.

In my opinion the schools known as "board" on the Tuscarora Reserve, have better equipment, are under better management, and are doing better work than the others. This is due, no doubt, to the interest taken in them by the members of the board, and especially by the commissioner and the superintendent of the Mohawk Institute. It would be well if all the schools were placed under the same management. As to the supply of teachers, I think the Indian youth, trained in the Mohawk Institute, ought to have the preference: after passing the entrance examination they might be trained for three or five months in the art of teaching, under the direction of the superintendent of the Mohawk Institute, and for this extra work the Indian Department might reasonably be asked to pay a small amount.

AUGUST, 1884.

W. S. CLENDENING, ESQ., INSPECTOR, EAST BRUCE.

*Indian Schools, Saugeen Reserve, with Cape Croker.*

*First visit.*—There are three schools in the Saugeen Reserve, known as (1) Indian Village, (2) French Bay, and (3) Scotch Settlement. The school-houses in the two latter localities are excellent, and in the former, fair.

In 1st, Margaretta Spence, teacher, holds a third class, and is learning the Indian language; there was no privy or play-ground.

In 2d, Alexander Madwayosh, teacher, is an Indian, and holds a district certificate granted at Collingwood: he has only been here about two weeks, and being ill at the time of inspection, his classes were not examined.

In 3d, Maggie Robertson, teacher, holds a third-class certificate.

In the two schools examined, I found 18 scholars in Part I, 2 in Part II, 5 in the second, 4 in the third, and 1 in the fourth class. I found the classes too far advanced, and the amount gone over not thoroughly prepared.

I would recommend a numeral frame for each school, also the maps of the world and Canada. The schools were inspected on June 17th and 18th.

AUGUST, 1884.

I visited Saugeen Reserve again on November 18th and 19th, and Cape Croker, October 28th and 29th.

I noticed considerable improvement at Saugeen on the occasion of my second visit, and was pleased to see that some new maps had been provided. I found 15 scholars in each of two schools, and 26 in another. One is a missionary school, and the teacher holds a third-class certificate; and one of the other schools is also taught by a third-class teacher, the other by an Indian.

At Cape Croker I found 7 scholars in one school, and 18 in another. The teacher of the third school was absent at the time I visited the Reserve: one teacher is a young lady of entrance standing, the other two were Indians.

Two Indians from Cape Croker, and one from Saugeen, attended an examination at Wiarton, and certificates have been granted them by the county board. The teacher who was absent from his school failed badly at the examination, and he is unfortunately too fond of spirituous liquors: the other Indian is doing good work in his school. I found scholars as far advanced as the fourth class, but it was a mistake, as they were quite unfit.

DECEMBER, 1884.

#### JOHN DEARNESS, ESQ., INSPECTOR, EAST MIDDLESEX.

##### *Indian Schools. Oneida Reservation.*

ONEIDA No. 1.—Teacher, Miss Mary E. Beatty (white).

*Success.*—She takes much interest in her work; adopts some good methods. She seemed to lend an attentive and willing ear to all my suggestions for the improvement of her school, or of her methods of teaching or government.

*Order.*—Middling, while I was present. She says her pupils take advantage of a visitor's presence. Her inability to address them in their native language makes it more difficult for her to arrest their attention and to reprove them for disorder.

*Salary.*—Her salary is \$250. She thinks if the Indians were required to contribute to a part of the salary, they would take more interest in the school and try to send their children more regularly.

*Pupils.*—Fifty-six registered; average for last quarter, twenty-nine; nineteen present on the 26th; they are irregular and tardy. Although 9 a. m. is the hour of opening, school is usually not called until a quarter or half-hour past nine a. m.

*Subjects of study.*—They are fairly proficient in writing, drawing, and spelling. I advised more teaching of oral and written English composition. In many cases I find them reading sentences meaningless to them.

*School-house.*—A neat small frame building, poorly seated with long wooden benches, only four of which have desks. The house needs "banking up" before winter. The blackboard needs blackwashing. The only apparatus in the school is a map of the world. It needs a map of the Dominion of Canada and a small globe. The younger pupils ought to be supplied with slates—say, two or three dozen.

ONEIDA No. 2.—Teacher, John T. Scuyler, Indian.

*Certificate.*—He promised to write at the H. S. entrance examination; he was educated at the Mohawk Institute.

*Success.*—Methods, crude; management and order, fairly good; I think he will be much benefited by my suggestions to him concerning the importance and methods of teaching the children to speak English.

*Salary.*—Two hundred dollars; \$50 from the natives, and \$150 from the English Church Missionary Society. If Mr. Scuyler were to prepare to pass the examination, and improve his methods of teaching, I would recommend the Indian Department to make a grant of \$50 a year to the school.

*Pupils.*—Registered, 43; average, 25; 14 present on the 27th inst.

*Order.*—Good, pupils not well supplied with text-books.

*School-house.*—A good building, poorly seated. No maps or other apparatus.

ONEIDA, No. 3.—Teacher, Elijah Sickles, Indian. Educated at the Mohawk Institution, bears thence most excellent testimonials. He promised to write at the H. S. entrance examination.

*Success.*—I can highly recommend Mr. Sickles and his school to the Department. I have seldom met a teacher more earnest and zealous than Mr. S.; he maintains good order, teaches with energy, and listens eagerly to every suggestion.

*Salary.*—The Department pays him \$106, and the patrons of his school paid him last year \$120; the year before, \$144. \$250 a year is not enough for such a teacher as Mr. Sickles.

*School-house.*—Good frame building costing \$1,200. It was built by Mr. Sickles: he was not only the carpenter, but chiefly instrumental in collecting the means to build it: there is yet a debt of \$200 on it for which he is personally responsible. I would be glad to hear that the Department could assist in paying the debt.

*Apparatus.*—A blackboard, map of the world, small globe and three or four dozen slates are needed.

<sup>1</sup> JULY, 1884.

#### J. S. CARSON, ESQ., INSPECTOR, WEST MIDDLESEX.

##### *Indian School,\* Township of Caradoc.*

*First visit.*—The Mount Elgin Institution seems to bear a relation to the other Indian schools, somewhat similar to that of our high to our public schools.

The room for teaching is not well furnished, the desks are neither adapted to the size nor the comfort of the pupils, and the interior is wanting in that bright cheery appearance so congenial to both teacher and pupils: a little painting, whitewashing and a few pictures, with the necessary maps, would remove the objection.

Thirty-six pupils were present, and I was informed others were working on the farm or in the house: during my visit, attention was paid to the character of the teaching in order that I might estimate the probable progress of the pupils under existing circumstances: the grand difficulty is to reach the pupils' minds through the English language. The teacher holds a third class certificate, and appears to be energetic and painstaking. In my opinion he does not possess the requisite skill and tact to teach this school well: there should be in charge one of our best second class teachers; his selection should be made with special reference to the requirements of the institution. If the teachers of the other schools are to be trained here, it is of the first importance that the teaching, discipline and management be of a high order: these can only be secured by the employment of a thoroughly competent instructor.

The schools taught by Messrs. Fisher, Henry, Timothy and Miss Scott are so much alike that one description would do for all. I may remark that Mr. Timothy was absent on the day of my visit, and his wife had charge.

The children read and spell words, but have not the slightest acquaintance with their meaning and use: there is no systematic attempt to teach English, nor will there be, till the teachers see their work from a different standpoint. To infuse life and energy into these schools will demand time, thought and exertion: the teachers need training, and the children should be made to attend with some measure of regularity.

I intend to have a meeting of the teachers, and spend one or more days with them in visiting the lowest rooms of the Strathroy school. I may add, there should be in each room a map of the world, one of Ontario, also tablet lessons, plenty of blackboard, and a numeral frame.

The following table gives the attendance at each school on the day of inspection:

	Pupils.
Joseph Fisher's .....	16
John Henry's .....	20
Charles Timothy's .....	9
Mary J. Scott's .....	2

I would recommend that some of the most promising children be selected and trained, with a view of becoming teachers either at the Institution, or, better, at some of our best public schools: with such an incentive they would work with pleasure and be fairly well prepared to teach the elementary branches.

JUNE, 1884.

*Second visit.*—The school-houses, which are not at all as comfortable as those used for public school purposes, are not so bad as one would expect under the circumstances. With one exception—the Church of England school-house—they provide reasonable shelter from cold and wet. A small expenditure on each would make them better than many houses in back settlements.

<sup>1</sup> For second visit see page 343.

In most cases there is lack of blackboard accommodation. I do not think the present teachers feel the want as keenly as if they were better qualified for teaching. The desks and seats are of a rude pattern; still, for an Indian child, it is possible they may appear the perfection of comfort. There are some maps, but very little use is made of them: some schools have numeral frames.

The teachers are the same as those in charge when my first visit was made. With the exception of Mr. Whiting, teacher in the Mount Elgin Institution, none of them holds a certificate. I am of opinion it would be useless to ask them to prepare for passing even the entrance examination to a high school. Some of the teachers talk of resigning; if they carry out their intention, it may not be difficult to fill their places with Indians who are qualified under the regulations. It is almost needless to remark, a change for the better is very desirable.

The attendance is small, sixteen pupils being the largest number present in any of the schools on the day of inspection. In the institution there were twenty-eight, besides a large class doing work on the farm.

In reference to the teaching, it is fair in the institution, and very inferior in all the other schools. Reading, writing, spelling and arithmetic are attempted. For the most part, the Indian tongue is used in the play-ground, and by the teacher to give explanations. It is not unusual to find pupils who can spell and recognize words, without the slightest idea of what they mean. The writing is middling, but the arithmetic is very low indeed. In one of the schools, I found two pupils who could do addition well, and were reading in the Third Book. There is a pressing necessity for better teachers for these children.

The school in the institution is soon to undergo extensive repairs: to this school we must look for the teachers who will succeed those on the Reserve. This summer two passed entrance to the high school, and at the Christmas examination others may succeed. If these would spend a few weeks in a good public school under the instruction of the teacher, they would suit very well to take charge of the schools on the Reserve.

Early next year I propose having a conference with the Indian agent, Mr. Gordon, and the leading Indians, to determine what can be done, if anything, to promote the progress of these schools. The question is perplexing me, and unless improvement can be made, I fear the money paid for inspection cannot be considered a wise expenditure. I am anxious to learn to what extent the Department is likely to be influenced by my suggestions regarding these schools. I especially desire better teachers, and hope for means to brighten the school-house inside. These are reasonable expectations, and there may be other means to gratify them.

DECEMBER, 1884.

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E. B. HARRISON, ESQ., INSPECTOR, EAST KENT.

*Moravian Indian Reserve.*

The Moravian Indian Reserve was visited by me on the 20th May. I found two schools established there for the education of Indian children.

The one on the Mission Farm at the river, is under the auspices of the Moravian Church, and has been in operation (so I am informed), for a period of upwards of ninety years; it was formerly located at a short distance from the present site, and in the old Moraviantown, on the north side of the river Thames. The number of pupils, whose names are entered on the Register, and during the current year, is twenty-two; the average attendance during the winter quarter was fourteen; but as it is not mentioned in the list of the denominational Indian schools, as reported by the Indian Department, I presume it was not the intention of the said Department that it should be inspected; consequently it was not inspected by me.

The other school is situated at a distance of about one mile from the former school, and in the center of the Reserve, and as the Reserve is two miles square, all the children can attend without any difficulty, so far as relates to distance. I visited it on the day hereinbefore mentioned, viz, 20th inst., and now present the following particulars: The name of the teacher is Daniel Edwards; he is forty-two years of age; he formerly held an old county board second-class teacher's certificate, and taught in a satisfactory manner in this county during a period of seven years, in the public schools; he was compelled by ill health to abstain from teaching for a few years; after recovering his health he was placed in this school as teacher, and has occupied this position for upwards of five years; he has not a speaking acquaintance with the Indian language, but is able to make himself understood by the children through the medium of the elder pupils, who generally understand the English language sufficiently well to know what the teacher says; and also by his own knowledge of Indian words and phrases, acquired partly from having resided near them before he commenced to teach, and partly during the time he has been with them.

Only a daily register is kept, and at the end of the quarter forwarded to the Indian Department.

The general condition of the school as to the organization is fair; discipline, good; efficiency, middling. A short time previous to my visit, the teacher recommenced his labors, after an illness of about three weeks; this most likely had an effect on the efficiency of the classes.

Object lessons and music are taught; in the latter the pupils are not taught to read music.

The proficiency of the pupils is tested principally by oral examination.

From 1875 to 1883, inclusive, I have visited this school periodically, except on two occasions; once when they had the small-pox in the Reserve; and once when the building was occupied by the council; my other duties and the bad state of the roads prevented me from making a second attempt. I have never reported to the Indian Department, but have to the chiefs.

Irregular attendance has prevented satisfactory progress on the part of the pupils. The council should make attendance compulsory during certain months of the year, and fine those who would not comply.

At first I endeavored to obtain the services of a teacher who could speak the Indian language, but was unable to find one who was otherwise suitable.

The school site contains about an acre of land, and is fenced. There are privies, one for each sex, but they require new doors; the present ones being made from elm lumber, are so warped as to be useless. I have no doubt this matter will be attended to, as I have sent a report to the chief.

Last year a very neat, commodious and comfortable (except the ventilation) school-house was erected; it is a frame building and well painted; the room for cloaks and other garments of the children is large, and the same may be said of the teacher's room.

The building is furnished with a sufficient number of excellent desks and seats to accommodate forty pupils; the blackboards are good, but more are required; there are three maps, viz., an old map of the world, a map of the Dominion, published in 1876, and a map of Palestine. They require a new map of the world, a map of North America, and a numeral frame. After vacation it would be advisable for the Indian Department to furnish the school with a new series of readers; those now in use, the old authorized ones, not being suitable. The copy-books, purchased at different places by the parents, are in many instances unsuitable; these, with such stationery as is required, should also be provided for them.

The old school-house is now used for a council room, and I trust also for their feasts. There is a log house on the same site for the teacher; but as the present teacher has his own house to live in, it is now occupied by the janitor.

Proficiency is marked thus: 1. Excellent. 2. Good. 3. Middling. 4. Inferior. 5. Bad.

QUESTIONS.	ANSWERS.—Classes.					
Subject of instruction.	I.		II.	III.	IV.	Total.
	Part I.	Part II.				
Number of pupils enrolled during 1884, in each class.	16	17	11	6	1	51
Number of pupils present during my visit, in each class	7	10	2	2	.....	21
Proficiency in reading .....	3 and 2	3 and 2	3	2	Not present during my visit.	Two pupils included in the 21 were not Indian children, but were not included in the 51, the latter being all Indians.
Proficiency in spelling .....			2 and 3	2		
Proficiency in writing .....			{ Slates 2 Books 3	Slates 2 Books 2		
Proficiency in arithmetic .....		{ Counting numbers 2	Addition. 2	Simple rules. 2		
Proficiency in singing <sup>1</sup> .....						

<sup>1</sup> The whole school = 2. Articulation, good and distinct.

C. A. BARNES, Esq., INSPECTOR, No. 1, LAMBTON.

*Indian Schools at Kettle and Stony Points.*

The school at Kettle Point is at present conducted by Miss E. Royle, who came from England about nine months ago, and has been engaged teaching since February last; she has no certificate of standing in this country, and as her engagement terminates the 1st of October, I did not think it necessary to ask her to attend the examinations.

There were nine pupils present at the time of my visit, in the first, second and third classes; the reading in the third class was fair, although somewhat monotonous.

Spelling fair; multiplication tables to nine times, very good. The writing in all classes was very good; in fact, I was very much gratified to find it so good.

The supply of copies was somewhat scarce, but the term being so near its close, accounts for that being the case, but I have no doubt a supply will be in readiness at the opening of the school after vacation.

Miss Royle also teaches singing and knitting, thus giving variety to her work.

I would suggest that maps of the County of Lambton and the Dominion of Canada should be provided as soon as possible, in order that geography may be taught intelligently.

As soon as the question of readers is finally settled, I think tablets should also be supplied.

The building at present used as a school is also used for church purposes.

A new church is in course of erection, and when complete, the present building will then be used altogether for school purposes, when I hope a larger supply of black-board will also be provided.

The school at Stony Point is also kept in the church, and is conducted by Mr. Moses Waucosh: the number of pupils present was six: the supply of ink and pens was very limited, but I was informed afterwards by the Rev. Mr. White that Mr. Waucosh could have had these by asking for them, as he (Mr. White) keeps a supply of school requisites on hand.

Reading, spelling, arithmetic, geography, grammar and writing are taught, but in all these subjects the knowledge is exceedingly limited.

AUGUST, 1884.

JOHN BREBNER, Esq., INSPECTOR, WEST LAMBTON.

*Indian Schools on Walpole Island, and Sarnia Reserve.*

*First visit.*—No. 1, WALPOLE ISLAND.—Wm. Peters (Indian), teacher. Has only taught eight days, the former teacher having gone to Saugeen Reserve.

*Attendance.*—Thirteen boys and twelve girls.

Senior Second Book, two boys and one girl; reading indistinct and without proper pauses, know the words; spelling, very good; writing very good; arithmetic, simple rules, well done.

Junior 2d, one boy; reading indistinct, knows the words fairly; spelling only middling; writing fair; arithmetic poor.

Part 2d, 1st book, two boys and one girl; reading better than in 2d, utterance more distinct, and more attention to pauses; spelling, good; writing, good; arithmetic, addition and subtraction, good.

First Part, three boys; reading, fair; spelling, good; printing, good. All the other pupils only learning the alphabet.

Teacher appears energetic and anxious to do well: he got his education at the Mount Elgin Institute, but has passed no examination.

*Equipment.*—Good school-house, fairly furnished with pine desks, etc., map of the world, ten commandments and the Lord's prayer on tablets, black-board too small, numeral frame.

*Requisites.*—First Book tablets, chalk (I have sent a box of crayons), and hope the former will be provided as soon as possible.

No. 2, WALPOLE ISLAND.—Rev. William Stroud, teacher, First Class certificate.

*Attendance.*—Nine boys and two girls, also three daughters of the teacher (not reported).

Third Book, one boy; reading, middling, monotonous; spelling, good; writing, not very good; arithmetic, simple rules, fair.

Second Book, two girls, one boy; reading, indistinct, know the words; spelling, not very good; writing, fair; arithmetic, addition and subtraction, not well done.

Second Part First Book, three boys; reading, good but indistinct, can pronounce the words, but I doubt if they know the meanings; spelling, poor; writing, good; arithmetic, middling.

First Part, four boys; reading, fair (simultaneous); writing, very good; arithmetic, (mental), fair.

*Equipment*.—Good school-house, seated with pine desks, map of the World, tablets, numeral frame and a small blackboard.

JULY, 1884.

*Second visit*.—WALPOLE ISLAND, No. 2.—William Peters (Indian), teacher. Visited October 29th, 10 to 12.30. Fifteen boys and fifteen girls present.

Too little blackboard; slate pencils needed.

First Part, First Book, eight boys and twelve girls; many just beginning to read, but a few read middling and spell on books well; no writing except figures; some fair printing; arithmetic, only a little mental.

Second Part, First Book, six boys and two girls; reading fair; spelling good; arithmetic good, only two failing to get all the examples correct; writing good.

Second Book, one boy and one girl; reading, middling; spelling by boy, good, by girl, poor (very nervous); all examples in arithmetic correct; writing good; geography, bad.

Since my last visit this school has sent three boys and one girl to the Shingwauk Home, and three boys and three girls to the Mount Elgin Institute; so that there is now no Third Class left in the school.

WALPOLE ISLAND, No. 1.—Rev. Wm. Stout (white), teacher. Visited October 29th, 1.30 to 3.30. Owing to the prevalence of a troublesome skin disease, only three Indian children were present (lowest hitherto, six), besides these there were six white children, two boys and four girls; three of the latter being Mr. Stout's own, the others coming from the saw mill.

Second Part, First Book, two boys. Reading good, distinct; spelling good; arithmetic (addition) bad; writing, very good.

Second Book class, one girl. Reading good, except slight lisp; spelling, very good; arithmetic (addition and subtraction) only middling; writing not so good. Pupil often absent.

School-house fairly furnished: more blackboard needed.

*White children*.—Fourth Class. One girl, reading, poor; spelling, not good; writing, fair; arithmetic, fair; grammar, only begun: should be in the third class.

Third class, one boy and two girls. Reading, good; spelling, good; grammar, very good; did not examine in arithmetic; writing, very good.

Second class, one girl. Reading, middling; spelling, good; arithmetic, fair.

First class, one boy. Reading, good; spelling, good; arithmetic, none.

SARNIA RESERVE (St. Clair).—Andrew Jacobs (Indian), teacher. Visited November 19th, 10 to 12. Present, twelve boys and fourteen girls.

First Part, First Book. Alphabet, three boys and one girl. Reading, five boys and ten girls, read fairly, but indistinctly; children appear to understand what they read, and can spell on the book; no arithmetic has yet been taught them, indeed they can scarcely count a dozen.

Second Part, First Book, three boys and two girls. In reading, know all the words, but name them monotonously and without expression; spelling, good; arithmetic (addition and subtraction) done correctly; writing good.

Second Class. One boy, reads distinctly, spells well; does multiplication fairly; writing, good.

Third class. One girl, reading, good, understands what is read pretty well; spelling, good; arithmetic, poor; writing, very good; geography, poor; grammar none.

Pupils now attending, 11, 12 and 14 years of age. Some have gone to Shingwauk and Mount Elgin Institutes, but exactly how many Mr. Jacobs could not tell.

The furniture in this school is poor and not well arranged: too little blackboard, which is too little used: school-house not plastered, only lined with matched stuff, must be cold now.

I think some pressure could be brought to bear on Indian pupils in connection with their annuities to secure more regular and punctual attendance. A minimum number of days for each half-year might be fixed, and some rewards or prizes given for continuous punctual attendance, while a prospective deduction for irregular or tardy attendance might stimulate the careless.

SARNIA RESERVE.—Andrew Jacobs (Indian), teacher. No certificate.

*Attendance*.—Eleven boys and fifteen girls.

First Part, First Book, six boys and fourteen girls; reading, very indistinct, don't open their teeth enough to let words out; spelling, none; writing, fair; arithmetic, none.

Second Part, First Book, five boys; reading, fair; spelling, good; writing, very good; arithmetic, middling.

Second Book, none present; writing in their books good.

Third Book, one girl, bright, intelligent child, age thirteen (attended No. 14, Moore); reading, good; spelling, good; writing, good; arithmetic, middling.



*Equipment.*—School-house not good, too high from the ground, only wainscotted, cold, very poor desks, etc.

In such a school, tablets are indispensable; map of the Dominion should be in every school, with numeral frame and calculator, as these are needed.

The teacher lacks energy, and I doubt if much work is done some days.

NOVEMBER, 1884.

P. MACLEAN, ESQ., INSPECTOR, DISTRICT OF ALGOMA.

*Indian Schools, Algoma.*

GENERAL REPORT.

*First visit.*—I visited fourteen of these schools, and with the exception of the industrial schools at Wikwemikong, Sault Ste. Marie and Fort William, they are in a very low state, scarcely deserving the name of schools.

*Teachers.*—The teachers are for the most part native females, with scarcely any education, and having but a very imperfect knowledge of English. In several cases the teachers were quite unable to understand me when asking little points of information about their schools, etc.

*The Pupils.*—The pupils generally have but very little idea of the meaning of their reading lessons, and in very many instances cannot give the English names of the commonest objects of life, or even such as are around them in the school room. I found them reading in every book from the First to the Sixth; not the Ontario readers, but denominational readers of several varieties; the reading is not by any means good, still I am surprised how good it is in some cases, when I consider how little of it they understand.

The spelling is usually very good, and the writing excellent. The arithmetic is very poor; the teachers in the majority of cases knowing nothing about the subject themselves. Some of the pupils are neat, clean and tidy in their persons, but in too many cases they are very filthy.

*School-Houses.*—The school-houses are, generally speaking, very poor, small, unfurnished, and dirty. In several instances the teacher resides in the school-room; has her bed, cooking-stove, cradle, wash-tubs, pots, etc., all around the room, with a few benches in one corner for the pupils.

*Irregular Attendance.*—The teachers all complained to me of the very irregular attendance of the pupils. They appear to go to school when it suits their own whim, and stay at home when it pleases them to do so, the parents seeming to care little or nothing whether their children go to school or not. Many of the schools have but five or six pupils present, where there might be twenty or over. I would in this connection suggest for the consideration of the Indian Department, whether some regulation may not be passed to remedy this evil; such, for instance, as making the payment of the annuity for all children between the ages of seven and fourteen, conditional upon their attendance at school for at least four or five months in each year; or what might be better still, grant a small yearly bonus to every child so attending.

*School Requisites.*—The majority of the schools are entirely lacking in even the most ordinary school requisites. My detailed report contains a list of what requisites I consider necessary for each school at present, and I would recommend that they be furnished to the Indian agents with instructions to distribute to the schools. I would also recommend the preparation of a set of reading tablets with graded lessons for the use of the schools. The first few lessons should consist of a few English names of common objects, a pictorial representation of the same, and the Indian word for each: this might be arranged on the tablet in three parallel columns. These lessons might then be followed by short exercises intended for the slate, namely, a few Indian names to be written out in English, and *vice versa*, English words to be written down in Indian. In this way they would soon be in possession of quite a number of English words and their meaning.

In conclusion, I would respectfully submit, that in my opinion the Indian schools will never give satisfactory results until there is a radical change in the present staff of teachers; the majority of whom hold no certificates, and never passed any examination; but were appointed to their respective positions by the denominational authorities of the churches to which they belong.

DETAILED REPORT.

1. *Wikwemikong (Boys).*—There are two male teachers, Joseph Richard and Stephen Dufresne, both educated in the Church schools, and who speak English fluently: they appear to be doing their work intelligently and well.

Number of pupils enrolled since 1st January, 1884, sixty-two: number present at my visit, thirty-nine.

The pupils read well, and had a very fair knowledge of the meaning of the lesson; spoke English well in answer to my questions; the spelling and writing, very good, had a fair knowledge of addition and subtraction mechanically, and some understood multiplication and division.

The subjects taught in the school are reading, writing, spelling, arithmetic, geography, grammar, map-drawing, composition, singing, church catechism and sacred history. The classification of the pupils was First Book, Part I, twenty; Part II, six; Second Book, six; Third Book, five; Fourth Book, two. The readers used were those of the Christian Brothers.

Blacksmithing, shoemaking, and carpentry are taught to any of the older boys who wish to learn trades. I saw some well made boots and shoes turned out from their shop. The school-room is neat, clean, and commodious, but the desks are very unsuitable.

2. *Wikwemikong* (Girls).—There are two lady teachers—Miss Lucy Haessly, the Principal, educated at St. Mary's Orphan Asylum, Cleveland; and the Assistant, Miss Rosa Kintz, educated at St. Joseph's Academy, Fordham, New York.

Number enrolled since 1st January, 1884, 87: number present at my visit, 53, classified as follows:—First Book, Part 1, 7; First Book, Part 2, 18; Second Book, 6; Third Book, 6; Fourth Book, 6; Fifth Book, 4. The readers used were the "Metropolitan" series. The classification of the pupils is entirely too high. The reading, writing, and spelling were not good. The girls' school is behind the boys' school in the literary subjects, but much of their time is taken up with the industrial subjects. The school-room is much too crowded, and the desks and seats unsuitable. By far the most important work in this school is the industrial knowledge given to the girls, who are to be the future Indian wives and mothers, and which must have its civilizing influence upon the race in due time.

The girls are taught spinning, weaving, knitting, sewing, laundry and kitchen work. There is a clean, airy, comfortable dormitory, where each girl is expected to keep her own cot in order. I was very much pleased with this school.

3. *Buywaks School*.—Teacher, Miss Agatha Gabow, taught at Wikwemikong Girl's School. Number enrolled this year, 20; number present at my visit, 18. Classified, First Book, ten; Second Book, eight. Subjects taught, reading, writing, spelling, and a little addition.

School-room very small—about 12 by 18 feet. No blackboard, no maps, no copies, no desks. All the requisites consisted of 12 books and 8 slates.

Children very much crowded. The teacher lives and has her bed in the school-room. Teacher has very considerable difficulty in comprehending English.

4. *Wikwemikonging*.—Teacher, Miss Catharine Gabow, educated at Wikwemikong: has scarcely any knowledge of English; could get but very little information from her, as she scarcely understood a word of what I said.

Number of pupils enrolled, 20; number present, 10. Classified, First Reader, six; Second Reader, none; Third Reader, four.

The pupils, I may say, have not a word of English: heard them read and spell, which they did surprisingly well, considering that they knew nothing of what they were saying: their writing was good. The school-house is a fair log building used at present for a church: the teacher lives in it.

5. *Sheguiandah* (Church of England).—The teacher is Mr. Fred. Frost (white), who was educated at the Grammar School, Ware, England, and is a clergyman of the Church of England. Mr. Frost was absent at the time of my visit, being in Toronto for medical advice. Mrs. Frost had charge of the school during his absence.

Number of pupils enrolled, 31; number present, 16. Classified, First Book, four; Second Book, two; Third Book, ten. Subjects taught are reading, writing, spelling, arithmetic, geography and Church catechism.

6. *Birch Island*.—At the request of Mr. Phipps, Indian Agent, I examined Miss Martha Esquimo, a young Indian woman, sixteen years of age, with a view to ascertain her fitness as a teacher for an Indian school on Birch Island. She got her education at the Wawanosh Home, Sault Ste. Marie, where she studied for four years. I examined her in reading, spelling, writing, addition and subtraction: she read very well, and her writing was good: in spelling she made sixty per cent. on my test: her arithmetic was not good. I granted her a temporary certificate for six months, until they could procure a more competent teacher.

This school has never been in operation before. The Indians on this Reserve are Protestants.

7. *Serpent River*.—Teacher, Mrs. Sophia Peltier; has no certificate; was educated at Wikwemikong, and speaks English fairly. Number of pupils enrolled, eighteen: number present, sixteen: number on Reserve about thirty. The classification was more correct than in any of the previous schools, the pupils being all in the First Reader.

Subjects taught are reading, spelling, writing and addition. Pupils are just commencing to write the letters of the alphabet; they know very little English; the teacher conducts exercises in English conversation for an hour daily. The school-house is about eighteen by fifteen feet; has no desks, but four benches, and the black-board is about thirty by fifteen inches. Teacher and her husband live in the school-house, with their cooking-stove, cradle, cupboard, &c.

8. *Mississauga*.—Teacher, Mrs. Mary Cada (white), educated at public school, Chatham. Number enrolled, sixteen; number present, six. Classified, First Reader, five; Second Reader, one. One girl, who had attended the public school at Bruce Mines, was very clever and did her work well; spoke good English: the others knew little or nothing.

The school was just commenced about a month, after having been closed about two years. School-house, a log building 18 by 24 feet, used as a dwelling at present. The furniture consists of two beds, two large trunks, a cooking-stove, cupboard, kettles, tin pails, &c.: no desks: benches resting on chairs.

9. *Garden River* (Church of England).—Teacher, Mr. Jas. H. Gallaher (white). Educated at Trinity College, Dublin; is a deacon in the church. Number enrolled since 1st January, twenty-one; number present, eight (boys); all in the First Reader.

School-house: a frame building, very much dilapidated, with four desks and a few benches; a few tablets; no maps.

The teacher appears to be faithful and diligent, and it is to be hoped the school will improve under his management. At present it is in a low condition.

10. *Garden River* (Roman Catholic). Principal, Rev. Father Ouelette; assistant teacher, Edward Ray, who holds a second-class certificate from Hammersmith Model School, England.

Number of Pupils on Reserve about.....	60
Number on the Roll.....	53
Number Present.....	35

First class; Part 1, thirteen; Part 2, ten; Second class, nine; Third class, three. Hours of teaching, 9 to 11.30 a. m.; 1 to 3.30 p. m.

11. *Shingwauk Home* (Boys).—Principal, Rev. E. F. Wilson; assistant teacher, W. H. Wotton, educated at St. George's School, Bristol, England. Number enrolled, twenty-six; number present, twenty; and two white boys, twenty-two.

Classified, First Book, eight; Second Book, five; Third Book, four; Fourth Book, five. Subjects taught: reading, writing, spelling, arithmetic, geography, grammar, composition, history, singing, and free hand drawing. Hours, 9 a. m. to 12; 3 to 5 p. m., and one hour every evening.

Examined the second, third, and fourth classes, in reading, dictionary, writing, arithmetic, drawing and singing: the classes did very well in all subjects, especially writing and spelling: they all appear to understand and speak English well—the tuition and conversation being all in English—no Indian spoken on penalty of having to write 500 words. Good comfortable school-room, dormitories and dining-room; also a shoe shop and carpenters' shop attached to the institution; appears to be doing excellent work.

12. *Wawanosh Home* (Girls).—Teacher, Miss Alexia V. Cunningham. Educated at Meaford High School, Ontario, but holds no certificate.

Number of Pupils Enrolled.....	20
Number Present.....	16
Classified—First Reader.....	6
Second “.....	6
Third “.....	2
Fourth “.....	2

The classification is too high. I heard three classes in reading, spelling, writing and mental arithmetic: the pupils did fairly well, although not equal to the boys at the Shingwauk; neither do they appear to understand English so well. The present teacher, Miss Cunningham, has been there but a short time.

Besides the literary training, the girls are also taught sewing, knitting, laundry work, and cooking.

They all live in the Home, which, like the Shingwauk, is a comfortable stone building.

13. *Fort William* (Boys). Teacher, Mrs. Jane Boucher; taught at Fort William Convent several years ago; speaks good English, but otherwise appears quite illiterate. She said herself she had scarcely opened a book in six years, and had forgotten nearly all she ever knew.

School-house, a comfortable room, well lathed and plastered, but kept in a most filthy and disorderly condition. Everything about the school indicates the unfitness of the teacher.

The school is supplied with maps of the continents and world, a fair blackboard and some desks which are not very suitable.

The number enrolled is twenty-four; out of which, four were present. The boys appear to come to school at any hour that suits them, and do just about what they please when they are there.

The teacher said she also kept a boarding-house for some men who were working on the river; and I think by all means she should be relieved of her school duties in order that she may devote all her attention to the boarding-house: I am persuaded it would be much better for both.

14. *Fort William* (Girls).—Teacher, Miss Leimame; educated in Germany; appears to be an excellent teacher, and has her school in a very creditable condition.

Number enrolled .....	30
Number present .....	30

Classified—First Reader, thirteen; Second Reader, eight; Third Reader, six, and three in the kitchen.

The subjects taught are the usual ones. Heard the third class in reading, geography and singing: class acquitted itself well. Examined the copy-books, which I found very neatly kept and well written. System and method are apparent throughout the whole institution.

The school is industrial as well as literary; the girls being taught sewing, knitting, spinning and weaving, as well as laundry and kitchen work. The pupils live in the "Home" and appear very neat, clean and tidy. The school room is at present a little crowded, but a fine new large building is in course of erection, and will soon be completed.

*South Bay*.—*West Bay* and *Sheshegewaning* schools, on Manitonlin Island, were closed at the time of my visit.

*Sagamok* and *Red Rock* I was unable to visit for want of time.

JULY, 1884.

*Second visit—South Bay*.—Teacher, Miss Theresa Akiwens, a young Indian girl, about seventeen years of age; her knowledge of English very limited indeed: answers the most ordinary questions with very great difficulty. Number of pupils enrolled, eighteen; number present, nine: all in First Reader. Pupils have no knowledge whatever of English, and the teacher is able to convey but very little to them, of the subject of their lesson.

The school furniture and apparatus consist of a stove, six or seven benches, and a few broken slates and torn books. The teacher lives in the school room.

*Buywaks*.—Teacher, Miss Agatha Gabow, who appears to be rather intelligent, and speaks English fairly, although her pupils understand but very little. Number enrolled, eighteen, and number present, nine; all in the First Reader. Furniture consists of a stove, four benches, teacher's bed, and one or two tablets. Indians promised to erect a new school-house. Pupils attend very irregularly.

*Wikwemikong*—(Boys).—Teacher, Mr. Stephen Dufresne, educated at St. Hyacinthe, speaks English fairly, but with a decided French accent. Number of pupils enrolled, forty-seven; number present, twenty-two: classified as follows, viz: two in Fourth Reader; three in Third Reader; seven in Second Reader, and ten in First Book.

Pupils read fairly well, and appeared to have a good idea of the meaning of their lessons. As usual with Indian children, they write and spell well, but have very little beyond a mechanical knowledge of arithmetic. The readers used are the Christian Brothers Series.

This school is also industrial; carpentry, blacksmithing and shoemaking being taught to such boys as desire to acquire these trades. The school is fairly well supplied with maps, books, tablets, &c.

*Wikwemikong*—(Girls).—Teacher, Miss Lucy Haessly; assistant teacher, Miss Rosa Kintz; both of whom speak English fluently.

Number of pupils enrolled, seventy-one: number present, forty-seven: classified as follows:—four in Fifth Reader; six in Fourth Reader; four in Third Reader; seventeen in Second Reader, and sixteen in First Book. The readers used are the Metropolitan Series, but the pupils appear to be classified much beyond their capacity. I consider the fifth and fourth classes should not be beyond the Third Reader.

Knitting, sewing, spinning, weaving and other branches of household economy are taught. The school-room is much too small, and the seating very badly arranged.

*Wauanosh*.—Teacher, Miss Alexia V. Cunningham, a young Canadian lady of good education and some experience in teaching. The school is under the management of the Church of England, and intended for the education of Indian girls only; it is much similar to the girls' school at Wikwemikong being industrial as well as literary. The "Home," as it is called, is a large substantial stone building in which the pupils live and board under the care of a matron. The number of pupils at the time of my

visit in October was seventeen: classified thus—ten in First Book, four in Second Book, and three in Third Book. The readers used are the Ontario Readers. The reading, writing and spelling may be called average; but the arithmetic, embracing addition, subtraction, and division, is purely mechanical, with scarcely any idea of the practical application of the rules.

*Shingwauk.*—Principal, Rev. E. F. Wilson; assistant teacher, Mr. W. H. Wotton. This institution is also managed by the Church of England, and designed for the training of Indian boys in industrial, as well as literary branches. There is a large stone building, with school-room, dining-room, and dormitories: the school-room is not well arranged, and the dormitories should be better ventilated.

The number of pupils present was thirty-one: the subjects of study are reading, spelling, writing, arithmetic, geography, grammar, composition and history. I heard classes in the first five subjects: all did well in writing and spelling, fairly in reading, and one boy did very well in arithmetic. The pupils are classified rather beyond their proper standing, and I fear the teachers attempt to teach too much.

*General Remarks.*—All the Indian schools that I have yet visited are sadly deficient in school apparatus and equipments, such as maps, blackboards, books, slates, &c. According to instructions of last April, I made out a list of requirements for each school separately, and forwarded the same with my report in July; but so far no action appears to have been taken.

With the exception of the two Protestant schools at Sault Ste. Marie, the one at Garden River, and the two Catholic ones at Wikwemikong, the teachers are all females and natives: they have little education, and hold no certificates of any kind.

The schools are not in operation over half the time; a great portion of the year being occupied with sugar-making, fishing, blueberry and cranberry picking. The parents, generally, are so careless about the education of their children, that the attendance is very irregular, even when the schools are open.

In order to make these schools more efficient, and in some measure worthy the name of schools at all, I would most respectfully recommend to the Department, the following suggestions, as worthy of consideration: I know it is a delicate question to deal with these schools, but certainly some change is urgently needed.

*Suggestions.*—The Department should insist that the Indians would provide a comfortable room, sufficiently large, and with suitable seats and desks.

The Department to supply the necessary books, slates, &c., as reported by the inspector or Indian agent from time to time.

The teachers should be obliged to pass some kind of examination, however simple, and hold certificates to that effect: I am also quite willing that the church authorities, who have established these schools, should determine what the status of such examination shall be. The great point is that the teachers should feel that they have to make some little preparation to pass the examination, and obtain certificates entitling them to teach. It is quite evident to me that the present system of appointing any person to the charge of a school, can never be productive of results, in any way commensurate with the yearly expenditure on the schools.

I think arrangements might be made whereby special classes, under the charge of competent instructors, would be opened at Shingwauk Home, and at Wikwemikong, for training Indian teachers; then all intending candidates should be obliged to attend these classes, till such time as they were able to pass the prescribed examination.

Instead of a yearly allowance being paid to the teachers as at present, I would suggest that they be paid a *monthly* salary, and only for the time actually employed: I am convinced many of them do not work half the time during the year, while drawing probably a year's pay.

I would also suggest that these schools be supplied with Daily Registers, similar to those in the Ontario public schools; and that certified returns of half-yearly attendance be made to the inspectors.

If the annuity for children between the ages of seven and thirteen, could be made conditional on their attendance at school for at least *four* months in the year; or otherwise, a bonus offered to all such, as did so attend, I believe a marked improvement in the attendance would be the result.

DECEMBER, 1884.

JOHN DEARNESS, ESQ., INSPECTOR, EAST MIDDLESEX.

*Indian Schools, Oneida Reservation.*

*Second Visit.*—On the 9th October, in company with Mr. Thos. Gordon, the Indian Agent, I visited the three schools to see how far the suggestions of my former visits had been effected.

School No. 1.—Some of the urgently needed repairs have been made; the house is embarked very nicely, and will be tolerably comfortable for the winter. The trustees assure me that they will have new desks in less than a fortnight.

No. 2.—Mr. Schnyler, teacher, did not write last July at the high school entrance examination, but promises to do so next Christmas. The desks in this school are very bad, in fact, there are only two desks; they are constructed of long boards attached with hinges to the wall; the seats are long benches without desks; the teacher asks for a half-dozen geographies, but he could do more good if he were supplied with maps and a globe. The great defect in this and the other schools is the learning of words without understanding their meaning.

No. 3.—Mr. Elijah Sickles, teacher, wrote at the high school entrance examination; failed, but promises to study and write again next December. He is working faithfully. Since my last visit he has had the interior of the school-room painted and papered—did it himself; raised the money by a tea-meeting. The school is now supplied with maps, books, a globe and increased blackboard facilities. There is yet a debt of \$250 on the building. The teacher says they have paid \$300 or \$900 on it, and feel that they have exhausted their resources. I think they deserve encouragement, and would recommend that the Indian Department assist them to pay the balance of the debt.

Observations lead me to suggest that all books furnished by the Department should be stamped, and rules should be adopted with a view to their care and preservation.

DECEMBER, 1884.

#### PARRY SOUND INDIAN SCHOOLS.<sup>1</sup>

*Schools.*—There are at present three schools under my supervision, viz, Ryerson School, No. 1 (Parry Island); Hodgins School, No. 2 (Shawanaga); and Miller School, No. 3 (Henby Inlet). Another school-house is in course of erection on Parry Island, about five miles from the site of the present one.

*School-houses.*—The school-houses are neat, substantial, hewed log buildings, capable of seating comfortably about 40 pupils each, and erected as far as possible by Indian labor, under the direction of the Superintendent of Indians, Captain Skene, whose exertions and interest in the welfare of the Indians have, more than anything else, contributed to the establishment and success of these schools.

*Interest in Education.*—To show the interest the Indians have in the education of their children, I need only mention a few facts:

(a) In 1878-'79 there was only one school in operation; in 1879-'80 there are three, with a prospect of two additional ones before the close of the year.

(b) In Parry Island School (Ryerson), the chief of the band is both a pupil and also a trustee.

(c) Chief James, of Shawanaga, writes that his people are delighted with the success of their teacher, Miss Amelia Chechock, who has commenced to teach plain needle-work to the little girls.

(d) Chief Wagemakkay, of Henby Inlet, assured me of his intense personal interest in education, and promised to do all in his power to encourage and induce regular attendance.

(e) The people of each band have voluntarily consented to have \$100 per annum deducted from the aggregate of their annuities, to assist in paying the teacher.

*Indian Teachers.*—As yet there has been some difficulty in obtaining suitable teachers. Mr. Elias, a missionary among the Indians, was first engaged to teach on Parry Island, but his missionary work interfered so materially with his school duties that it was thought advisable to supersede him by engaging Miss Eliza Tobias, who had previously attended the Munceytown Institute. The change has been beneficial. Miss Amelia Chechock, also of the same Institute, is teaching at Shawanaga with success. Mr. Enoch Monague is the teacher at Henby Inlet, but his limited knowledge of the English language will necessitate a change as soon as another teacher can be obtained. I may here remark that these teachers have no regular certificates, but I trust the time is not far distant when the Indian schools will be taught by regularly certificated teachers.

#### APPENDIX.

[The following is the report of a visit which I made to the Indian schools of the Parry Sound District three or four years ago. It details the first experiment which was made to establish Indian schools in that District.—J. G. H.]

SIR,—I have the honor to state, that having completed the arrangements relating to the establishment of the Indian schools in the Parry Sound District, I desire to report the proceedings in detail:

As directed, I last year took part in the organization of these schools. This was

<sup>1</sup> Extract from a former report.

partially done at that time with the assistance of Captain Skene, the Indian Agent at Parry Sound, and School Inspector Miller, who accompanied me to the Parry Sound and Shawanaga Reservations for that purpose. At both places the bands of Indians were called together by Captain Skene, and were addressed on the subject by Mr. Miller, Captain Skene and myself. The Indians seemed greatly pleased at the prospect of having schools established among them. At Parry Island Captain Skene (under the direction of the Indian Department at Ottawa) had a neat and substantial log house erected, in which we met the Indians. Subsequently Mr. Miller organized the school, and enrolled between 20 and 30 Indian children. They were placed in charge of Mr. Elias, an admirable Indian teacher and missionary, who had been trained for his work at the Muncey Institute. Steps were subsequently taken by Captain Skene to have school-houses erected on other reservations, so that during this year schools might be organized in them. This has been done; and at my recent visit Mr. Miller, aided by Visiting Inspector Switzer and Captain Skene, established another school at the Shawanaga Reservation, about 35 miles north of Parry Sound. Thither we went in a steam-tug, and walked five miles through the woods to the reserve. Owing to a slight alteration in our arrangements, we visited the reserve a day before the time appointed. Chief James met us at the school-house, but our coming so soon had disarranged his plans. He had intended to have received us with some little ceremony, and, with his band collected, to have had some other demonstrations in honor of the event. As it was, he received us very cordially, and sent round without delay to collect the members of his band and their children. After Mr. Miller had enrolled about 30 children, he, Mr. Switzer, myself, and others, addressed the company present. Our remarks were interpreted to the Indians by Mr. Elias; and at the close Chief James made a very hearty and touching speech, expressive of his estimate of the value of education to the Indians, and of the great pleasure which the day's proceedings had given him. With true Indian courtesy, he accompanied the party through the woods, five miles, back to the steam-tug, when, after giving him and his band three hearty cheers, we steamed away to Byng Inlet, 60 miles from Parry Sound, which we reached late in the evening. This is the headquarters of the Maganetawan Lumber Company. We were all pleased with the neat appearance of a village lying so far to the north. Although late at night, Mr. Miller and Mr. Switzer, our indefatigable inspectors, aided by Mr. J. H. Buck, the Manager of the Company, and others, organized a public school section there. We then held a very pleasant conference with the principal residents.

Next morning we started for Henby Inlet, near French River, but as the captain of our steamer was not familiar with the navigation of the place, we had reluctantly to turn back and proceed to Parry Sound. I arranged, however, that Mr. Elias should take an Indian teacher with him and open the school there this month. When this is done the whole of the children of the various Indian bands in the reserves along the eastern coast of the Georgian Bay will be placed under instruction. This is certainly a matter for sincere congratulation.

As to the result of the experiment, I have now no fears. I confess that last year, when the Parry Sound school was established, I had both doubts and fears as to the success of the scheme. With a view, however, to satisfy myself on the subject, arrangements were made that the pupils in the school on the Island should be submitted to a thorough and satisfactory test. This was done by Mr. Inspector Miller, in presence of Captain Skene, Professor Croft, of Toronto University, Inspector Switzer, and some of the local clergy. The classes were examined in natural history, object lessons,<sup>1</sup> arithmetic, grammar, spelling and writing. Making due allowance for the novelty to them of the occasion and the natural timidity of the Indian boys and girls, it was surprising to see how well the pupils acquitted themselves. Although slow and cautious in expressing their thoughts, the answers of the children were in almost every instance correct in substance or in fact. At the close of a prolonged examination by Mr. Miller and Mr. Elias, I subjected each member of one of the largest classes to an examination in writing on the black-board. They all acquitted themselves to my entire satisfaction. At the close, the examiners, Captain Skene, Mr. Miller, the clergy, and others, addressed the school and the Indians present. Replies were given by some of the leading Indians, including the old and young chiefs. The result of the experiment will, I trust, induce the Dominion Government to place the whole of the schools for the Indians of this Province under the supervision of the Education Department.

There was a fact and an incident connected with the exercises which were very gratifying. Among the pupils enrolled, was the newly elected chief of the band, who

<sup>1</sup> It was both amusing and interesting to watch the countenances of the Indian boys and girls as Mr. Miller held up for them to name the pictures of animals, birds and reptiles familiar to them. The bear, wolf and fox were recognized as old friends; and many a friendly "ugh" greeted the appearance of a snake, a frog and lizard, as well as the pigeon, hawk and crow. The beaver, muskrat, and other received instant recognition; and the answers of the children as to the names were greeted with pleased laughter by the parents, who entered quite into the spirit of the exciting and interesting examination in natural history which was held by Mr. Miller.

acquitted himself so well as to be quite noticeable. In this he showed an admirable example to all the young men of the tribe, and by his voluntary enrollment in the school he showed the high estimate which he himself placed upon education, as a means of elevating and civilizing his people. Chief James, too, in an address to Shawanaga, gave utterance to very enlightened views on the same subject. The pleasing incident to which I have referred was the modest manliness, and yet the dignity, with which the young Indian Chief delivered his maiden speech of thanks and welcome to his visitors. In this he was with much kindness prompted and encouraged by his rival, the unsuccessful competitor for the chieftainship of the band.

There was one feature of the gathering which quite interested us, and that was the general attendance from all parts of the reservation of the Indian men and women—the latter dressed in their best—and all evincing by their appearance the happiness and prosperity in which they live on their reserve. Even the Indian girls in their classes had a ribbon or some little bit of finery on their hats or dresses, designed, no doubt, to do honor to the occasion which was to them so interesting and important, as a new departure in their hitherto unintellectual life.

At the suggestion of Chief James, with the concurrence of Captain Skene, we named the Indian school at Parry Island "Ryerson School, No. 1;" that at Shawanaga "Hodgins School, No. 2;" and that at Henby Inlet "Miller School, No. 3."

Since my return and during this month Mr. Elias, the Indian teacher at Parry Island, and Mr. Switzer, have reported the completion of the organization of these schools. Mr. Elias says, under date of the 23d ultimo:—"I have organized the school up at Henby Inlet on the 16th instant, and set the teacher to his work, and have enrolled twenty-eight children. They all seem to be very much interested with the school. The teacher, Enoch Monague, is showing his determination to be useful in his labors.

"I saw the Chief Isaac, of Henby Inlet. He said he knew why we did not get there. He only was sorry that he did not stop till we started for Henby Inlet, in order to pilot us. He knew that 'captain could not find the way to go in.' He said, it was all right—he knew we could not help it."

Mr. Switzer, under date of the 3d instant, further reports:—

"I am able to report our safe return, after a stormy time, from inspecting Miller School, No. 3, at Henby Inlet. We took with us a package of books, etc., for the school, and on our arrival inspected the school through Mr. Elias, and found the pupils able to read small words, although the teacher had reached there only the week before. I held a consultation with the chief, trustees, and as many of the Indians as could be brought together, and among other things, I mentioned your regret at not being able to visit them in August, and explained the reason of the failure. The chief, in reply, stated that he would do all in his power to advance the interests of education among his boys and girls. On our way home we visited Byng Inlet, and found the interest in school matters quite as great as when you were there in August. The supply of books, etc., from the Department, is quite an acquisition to the school.

"I am now quite sanguine of getting matters in connection with Hodgins School, No. 2, and Ryerson School, No. 1, arranged to suit you. Captain Skene has *tacitly* consented to leave the matter in my hands, but there were so many persons to consult that at first I was doubtful of success. However, all is arranged now, awaiting the consent of two of the trustees who are absent, to transfer Miss Tobias to Shawanaga, and have Mr. Elias again take charge of Parry Sound School.

"After a narrow escape from being upset a few miles from Byng Inlet, we reached home (Parry Sound) on Thursday, October 30th, thankful to a kind Providence for His protecting care.

"During my recent visit to Ottawa, I personally explained to the Superintendent-General of Indian Affairs a number of matters connected with the working of the schools, and made a few practical suggestions in regard to the school-houses and the employment of suitable teachers."

I have the honor to be, sir, your obedient servant,

J. GEORGE HODGINS,  
*Dep. Min. of Ed.*

Hon. ADAM CROOKS, LL. D.,  
*Minister of Education, Toronto.*



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# SCHOOL-ROOM AIR; WITH DIRECTIONS FOR EXAMINING IT, TO DETERMINE THE DEGREE OF ITS VITIATION AND THE AMOUNT OF VENTILATION REQUIRED.

BY R. L. PACKARD.<sup>1</sup>

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The idea of making a chemical examination of the air of an inhabited room in order to discover the degree of its vitiating by the persons in the room, is said to have been first put in practice by Lavoisier, who determined the constituents of the air, viz, its oxygen, nitrogen, and carbonic acid, in the theaters and hospitals of Paris in 1785. Long after his time the significance of carbonic acid as a measure of the degree of vitiating of room air by the inmates of the room, and, therefore, as an index of ventilation, was established; and Professor von Pettenkofer elaborated a simple and accurate method of estimating that constituent of the air, which brought its determination within the reach of persons at all skilled in making chemical analyses.

As the ventilation of school-rooms has always been notoriously bad, it was not long after Pettenkofer's method of estimating the impurity of air became known before it was employed in examining the ventilation of many German schools. The complaints of the bad effects of school life on children, and of certain physical defects among adults referable to the same cause, led to a sanitary examination of the surroundings of the school population in the schools. In a military country like Germany, where all able-bodied men have to bear arms or do some form of military service, anything which detracts from the capacity for such service becomes of serious interest to the Government. The investigations of medical men, like those of Cohn on the near-sightedness of school children and its relation to the conditions of school life, drew the attention of the authorities to some of the causes which had been shown to operate unfavorably on the health of the school population, and through that on the general health of the community. The result has been that the Governments of the different German states have modified the school laws from time to time in recent years in accordance with the recommendations of their medical advisers, and regulations have been issued which give directions affecting the construction, location, arrangement, and management of school buildings in compliance with hygienic requirements. These regulations extend to architectural details, such as building materials, the size of rooms, their lighting, heating, and ventilation, the amount of floor and cubic space for each scholar, and the localities and sites of the buildings. Conformity to the requirements of law is now looked after by medical inspection, in addition to the regular supervision, and the general sub-

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<sup>1</sup> The following compilation was prepared, by direction of Gen. John Eaton, U. S. Commissioner of Education, by way of answer to inquiries received at the Bureau of Education at Washington. The subject has therefore been treated somewhat in detail, and the technical part has been written out with sufficient fullness, it is believed, to enable those interested in the matter—superintendents and health authorities—to make a practical use of the directions it contains.—R. L. P.

ject of school hygiene has come to occupy a recognized place in medical literature. The German states are mentioned for the sake of illustration, but what is true of them in this connection may also be said of other countries of Europe.

In this country there is not, of course, any systematic control or supervision of schools with which the general Government can have anything to do; but individuals and the boards of health of several States and cities have, from time to time, shown the bad hygienic condition of schools in different parts of the country, and have called the attention of the authorities to the more pressing reforms which were thus shown to be necessary. As early as 1838, or twenty years before Pettenkofer pointed out his convenient and accurate way to examine ventilation, Horace Mann, while Secretary of the Board of Education of Massachusetts, made a report<sup>1</sup> on the condition of the school-houses of the State, in which he pointed out the evil effects of the vitiated air of badly ventilated rooms on health, and suggested means of ventilation. His report contains opinions from Dr. S. B. Woodward of Worcester, Mass., and from Professor Silliman of Yale College, on ventilation, the bad effects of rebreathed air on the human system, and the amount of contamination of room air due to respiration. Nine years later a special committee was appointed to report on the ventilation of the schools of Boston.<sup>2</sup> The excellent report of this committee shows that the rooms were in a "lamentable condition in regard to ventilation," and the committee took occasion to say:

Children confined in the atmosphere of these schools soon lose the ruddy and cheerful complexion of perfect health which belongs to youth, and acquire the sallow and depressed countenances which might reasonably be expected in over-worked factory operatives, or the tenants of apartments unvisited by the sun or air. We noticed in many faces, also, particularly toward the close of a school session, a feverish flush, so bright that it might easily deceive an inexperienced eye and be mistaken for a healthy bloom. \* \* \* The condition of the pupils, depressed as they are by these influences, is constantly demanding increased exertions from their instructors, while the requirements of the age place the standard of education at an elevation sufficiently difficult of access under the most favorable circumstances. Your committee are satisfied, therefore, that the present state of the school-houses daily impairs the health of the pupils and instructors. That its continuance will produce not only immediate discomfort and disease, but, by its effect on the constitutions of the children who must pass in them [the school-houses] a large portion of those years most susceptible to physical injury, will directly and certainly reduce the amount of constitutional vigor hereafter to be possessed by that large mass of our population which now and hereafter is to receive its education in these schools.

In the course of their remarks on the vitiated air of the rooms, the committee also showed from the experiments of Lassaigue and others quoted in a paper by Dr. Wyman, that the carbonic acid of room air is equally diffused all through the room, contrary to the popular belief which is not yet dead, that because that gas is heavy it must sink to the floor of a room and stay there. This committee made some practical suggestions in ventilation which were promptly adopted by the common council of the city for some of the schools. A summary of the later reports on the subject by the boards of health in different parts of the country is given in the Report of the Commissioner of Education for 1877. Those reports, and others published since, show that the condition of school buildings, both in the cities and in the country districts in many parts of the country, is still, as the Massachusetts committee described it thirty-six years ago, "lamentable." Ventilation is gener-

<sup>1</sup> Report of the Secretary of the Board of Education on the subject of school-houses. Pamph. Boston, 1838.

<sup>2</sup> City Document No. 7. Report presented to the primary school committee on the ventilation of the school-houses of the City of Boston. Pamph. Boston, 1847.

ally deficient and the rooms are overcrowded in many cases. The medical men speak decidedly of the evil effects of badly ventilated, heated, and lighted rooms on the health of the school population, of the insufficient space allowed for each scholar (which is only another way of describing overcrowding, which again means bad ventilation), of bad sewerage, and of damp sites for school-houses. These unhealthy conditions were found in many parts of the country, in Massachusetts, Wisconsin, Louisiana, Indiana, New York, Ohio, and Maryland—in fact, wherever sanitary examinations were made. The medical examiners found that “catarrh, dyspepsia, dysentery, and zymotic diseases” resulted from the foul air of the ill-ventilated rooms, and chemical examinations of the school air were made in several cities. The determination of the amount of vitiation of room air and the relation of vitiated air to health, present tangible subjects of investigation, and the following is an exposition of the principles on which the examination of room air is based, and of the method of conducting the examination. The relation of air of ascertained degrees of vitiation to disease is a subject for medical investigation.

There are, generally speaking, three things which have to be considered in making an estimate of the healthy or unhealthy condition of a room, viz, the temperature, humidity, and purity of its air, which taken together may be called its climate, the question of sunlight being aside from the present subject. But this full idea, which should be kept in mind in discussing the ventilation of a room, is often lost sight of in practice, many persons thinking, for example, that ventilation has been sufficiently attended to when a room is kept up to a certain temperature in cold weather. Nor is what constitutes “bad” air popularly understood, and the idea of estimating the degree of deterioration of room air as ancillary to ventilation is not yet a familiar one; and yet a most important preliminary to introducing any change in the ventilation of a room would seem to be a knowledge of the usual condition of its air as to temperature, humidity, and purity. The determination of this condition would indicate what changes ought to be made in the ventilating system to bring the room air to a desired standard.

The air of an inhabited room differs in composition from the external air by containing the matter contributed to the latter by the inmates of the room, and occasionally by certain other agencies, such as gas fixtures, the heating arrangements, etc. To gain a clear idea of the invisible contents of a room full of people, it will therefore be necessary to recite briefly the composition of the external air, and show what changes it undergoes in inhabited rooms.

The atmospheric air, then, which surrounds and fills our buildings; which gives us the breath of life; which, because it is a fluid and has great pressure at the surface of the earth, penetrates everywhere, not only entering rooms in large volumes when we admit it by opening doors and windows, but forcing its way through the pores of brick work and other masonry; which presses upon and saturates the soil and the waters of the earth—is a perfect mixture of the gases nitrogen and oxygen, together with a small quantity of carbonic acid gas. This mixture contains a variable amount of watery vapor, and traces of ammonia and often other chemical compounds. Specimens of air have been collected in all parts of the world, and at various heights up to 18,000 feet, and have shown small differences in composition upon being analyzed. The mixture in the dry state contains on the average 20.96 parts of oxygen, 79.01 of nitrogen, and about 0.03 of carbonic acid gas in 100 parts by volume. These proportions are averages of a great number of

analyses and vary within small limits in different localities, the amount of carbonic acid gas, for instance, which is about 0.03 per cent. (by volume) in air remote from populous places, increasing to 0.04 and 0.05 per cent. in the ordinary outside air of cities, and to 0.07 per cent. and more in bad localities (near "middens" for example), while the proportion of oxygen decreases from the average to 20.80 per cent. and even less in bad localities.<sup>1</sup> But greater variations than these have been found where such conditions did not exist, where the air would be called pure. Thus Jolly<sup>2</sup> found the percentage of country air to vary from 20.96 and 21.01 per cent. to 20.48 and 20.53 per cent., according to the wind.

Since the statement that the air of a locality contains a given per cent. of oxygen conveys little meaning without some explanation of how the fact is known, the following outline of a method of analysis is given. The air of a place is drawn through glass tubes with drawn-out ends, holding a few cubic inches each, and after the tubes are filled their ends are closed air tight. The specimens of air collected in this way are taken to the laboratory, transferred to a graduated glass tube, and carefully measured over mercury. Hydrogen gas, in excess of the amount needed to unite with the oxygen of the air, is then introduced into the tube, the new volume carefully read, and the mixture exploded. The volume after explosion is read, and one-third of the contraction represents the oxygen. Many precautions in manipulation have to be observed, but the foregoing is enough to give a tangible idea of how the percentage of oxygen in the air of a place may be determined.

The properties of the gases which, when mixed in the above proportions, constitute atmospheric air, are now almost popularly known. Oxygen is the active agent in the air which supports combustion, hastens the corrosion of metals, and converts deleterious decaying matters into innocuous gases. It is indispensable to animal life and in the higher animals it enters the blood through the lungs, which in return for the oxygen they have taken from the air return to the latter carbonic acid gas, which is the ultimate result of the action of oxygen on the tissues. This gas, which is thus a waste product of the life processes of the higher animals, is also the result of the combustion of carbon by the oxygen of the air, and therefore increases in amount in thickly populated places. It is also given out during the processes of decay and fermentation, and its presence in excessive amount may therefore be sometimes useful as an index of unsanitary surroundings. The nitrogen of the air serves to keep the oxygen diluted to the proportion in which, within small limits of variation, it has been universally found. If the quantity of oxygen is sensibly diminished, its dilution becomes so great that it cannot perform its functions. Thus Angus Smith found that candles would not burn in air where the oxygen was reduced to 18 per cent., there being 3 per cent. of carbonic acid present at the same time. Neither nitrogen nor carbonic acid gas are respirable; either, if breathed alone, would produce death, and the latter gas is said to produce fatal results when forming as low as 10 per cent. of the inhaled air. (Parkes.)

Besides the gases of which the air is composed, a quantity of solid particles is suspended in it, the coarser kinds of which we know under the name of dust, which becomes noticeable when it has been allowed to settle in quiet places. The finer microscopical atmospheric dust has been collected on sea and land in all parts of the world, and has been

<sup>1</sup> See tables of the proportions of oxygen and carbonic acid, from a large number of analyses of the air of town and country, in Angus Smith's *Air and Rain*, pp. 24 and 52, and elsewhere.

<sup>2</sup> Jolly: *Annalen der Physik u. Chem.*, N. F. 6, 520.

frequently examined. In the neighborhood of inhabited places, which is all that concerns the present purpose, it is found to consist of both inorganic and organic matter, that is to say, of matter mineral or earthy in its origin, of the *detritus* of animals and plants, and of microscopic animal and vegetable organisms. The inorganic matter consists partly of substances insoluble in water (silicates, particles of iron, etc.) and partly of soluble compounds (certain sulphates, nitrates, and chlorides, and occasionally free acids). In large towns and in the vicinity of works of various kinds, the air becomes decidedly contaminated with these substances; the soluble salts (and acids) are brought down by the rain, and corrode metal-work and even brick-work (by attacking the mortar), and the neighboring vegetation is often killed by fumes from smelting works.<sup>1</sup>

The organic matter, which also increases to a considerable extent with the density of population, consists of the *detritus* of animal and vegetable tissue, and of organized bodies, such as the pollen of plants, spores of fungi, and living microscopic animal and vegetable organisms. The parts played by these different microscopical particles are various. In places where persons suffer from hay fever a large quantity of the pollen of certain plants has been found in the material collected from the air, and the prevalence of that complaint has been accounted for by supposing that the pollen is drawn in with the breath, and becoming fixed in the mucous membranes of the air passages sets up an irritation there. The minute particles of organic matter thrown off from human beings are looked upon as being often the source of disease. The living micro-organisms take an active part in inaugurating many pathological and chemical processes, such as certain diseases in animals, putrefaction, and fermentation. They swarm everywhere, and as soon as the death of an animal or plant occurs they fix themselves in the dead organic matter and grow there. Their growth gives rise to the chemical changes which finally cause such matter to disappear. That the irritation of fermentative changes is due to invisible organisms has been shown by exposing a liquid containing fermentable matter to the open air after boiling, and to air which had no access to it except through a filter of cotton wool, through a red hot tube, or through tubes bent in the form of the letter U. In the former case fermentation proceeded as usual, while in the latter the micro-organisms were retained by the wool, were burnt, or lodged in the U tubes, and there was no fermentation. The experiment has been varied in many ways but the results have been confirmed.<sup>2</sup>

M. Miquel, who made a study of the organisms of the air of Paris at all seasons of the year, found that the atmosphere is always charged with a considerable but very variable number of "microbes", that there are more in summer than in winter, and in wet weather than in dry.<sup>3</sup>

<sup>1</sup> Tissandier: *Les Poussières de l'Air*. Paris, 1877. R. Angus Smith: *Air and Rain*. London, 1872.

<sup>2</sup> See Tyndall: *Floating Matter of the Air*. New York, 1882; and M. Pasteur: *Histoire d'un Savant par un Ignorant*. Paris, 1883.

<sup>3</sup> Miquel: *Sur les Poussières Organisées de l'Atmosphère*; in *Annales d'Hygiène Publique*, 1879, 2. Since this publication the relation of some of these minute organisms (*bacilli*) to disease has been widely discussed. The method adopted by Miquel for estimating the number of microbes in a cubic meter was to pass a large volume of air, measured by an accurate meter of peculiar construction, through an iron tube into which were fitted a cone, having a minute hole at its apex, and a small plate coated with glycerine placed adjustably over the cone. When the meter pump worked, the entire body of air was made to pass through the hole in the apex of the cone against the glycerine-covered surface of the small plate immediately above it. The glycerine (or glycerine and glucose) retained the microbes, and their number in a fraction of the plate's surface was ascertained by counting under the microscope

He made an estimate of the number suspended in the open air, and found it to vary from about 11,000 to 42,000 in a cubic meter (or 11 to 42 per liter), besides the minute bacteria, etc., which his apparatus failed to arrest. A table which he prepared gives the number of "microbes" per cubic meter as 11,300 on the average in the autumn, 5,500 in winter, 15,700 in spring, and 28,900 in summer. An enumeration of living organisms belonging to the world of bacteria which M. Miquel collected by the use of appropriate liquids, gave the following mean results per cubic meter :

Month.	Number.	Month.	Number.
October.....	197	April.....	53
November.....	158	May.....	137
December.....	49	June.....	65
January.....	41	July.....	123
February.....	23	August.....	79
March.....	83	September.....	117

These organisms were ten times as numerous in the center of Paris as in the park of Montsouris.

Thus the external air consists essentially of a mixture of oxygen and nitrogen and a little carbonic acid gas, together with a varying amount of watery vapor, the mixture holding in suspension and carrying about a minute quantity of invisible solid particles of very different natures. When this mixture of gases is confined in a place where people are assembled, it becomes changed by the action of their lungs and skin upon it, which deprive it of part of its oxygen and give it carbonic acid gas instead, together with watery vapor and organic matter, so that the original proportions of the atmospheric gases are sensibly altered, and the composition of the air may become in this way so different from pure air as to render it unfit for further breathing.

The air of confined spaces containing a number of people has been analyzed and found to contain proportions of oxygen varying with the degree of vitiation. Thus the oxygen of the air of bad localities in some German mines was found to range as low as 1.9 per cent. and 2.29 per cent. less than in normal air, while the carbonic acid increased from 1.8 per cent. to 2.38 per cent., which would make the composition of the air 19.06 per cent. and 18.67 per cent. oxygen, and 1.83 per cent. and 2.41 per cent. carbonic acid by volume, the nitrogen remaining unchanged. This was very bad air and found in exceptionally bad places, like those in which Cornish miners informed Angus Smith they had worked when it was impossible to remain above ten minutes at a time, and when nearly every man on his turn fell down, and the candles went out. The average of 339 analyses of the air of mines gave Angus Smith 20.26 per cent. oxygen and 0.785 per cent. carbonic acid. The average of the "ends" where men were working was 20.18 per cent. oxygen, with an extreme of 18.3 per cent.

Passing to other places where the air was recognized as bad, the oxygen was found to be 20.84 per cent. and 20.83 per cent. in a dwelling room, 20.74 per cent. in the "pit" of a theater and 20.63 per cent.

after an equal distribution had been made by stirring the glycerine on the plate with a heated needle dipped in pure glycerine. From the number in this fraction the whole number on the plate was known, and consequently the amount in any given volume of air.

See also a report on the external air of Washington, by Dr. J. H. Kidder, Surgeon U. S. Navy. Report of the Surgeon-General of the Navy. 1880.



in the gallery, 20.87 per cent. oxygen and 0.08 per cent. carbonic acid in hospitals, and in a very badly ventilated law court 20.49 per cent. oxygen. In this case the air was almost intolerable to a person coming from the outer air. If we arrange the analyses of the air of confined spaces where people are breathing and which is noticeably bad we have, replacing the deficient oxygen by carbonic acid (supposing a standard of 20.96 per cent. oxygen and 0.03 per cent. carbonic acid):

	"Normal" air.	Room air.					Mine air.	
Oxygen .....	20.96	20.83	20.74	20.63	20.49	20.26	18.67	
Carbonic acid .....	.03	.16	.25	.36	.50	.78	2.88	
Nitrogen .....	79.01	79.01	79.01	79.01	79.01	78.96	78.96	
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

These figures show that there is no uniformity in the gaseous composition of sensibly "bad" air which would enable us to give its average composition, nor is there any absolute line of division between good and bad air; but there are all gradations from tolerably bad to the last specimen, which would be intolerable for any length of time. Apparently small differences in the percentage of oxygen indicate serious deterioration of air when the deterioration is due to respiration.

The air of rooms comes almost entirely from the air which surrounds the buildings. If that is pure the room air will be contaminated only by what is added to it by the occupants of the room. But if the outer air is rendered impure by admixture with other gases, for example, than those which form its normal composition, the room air will contain this impurity in addition to the exhalations from the persons in the room.

But it should not be forgotten that there is another, and sometimes a dangerous, source from which air finds its way into rooms, and that is the soil on which the building is placed. The interstices of the soil are filled with the gases of the air and sometimes other gases, and the proportion of the atmospheric gases is often different in the soil from that of the free air owing to the presence of decomposing matter in the soil. When houses have cellars or basements the air and other gases of the soil pass through the cellar walls into the basement, and so into the rooms. In winter, when the buildings are much warmer than the surrounding soil, this passage of gases through the walls is greater than in summer, because the warmed building acts like a chimney and sucks the air and gases from a considerable distance into its basement and thence into its rooms. Pettenkofer mentions cases where gas from mains traveled a distance of twenty feet through the ground and the foundations and into the warmest rooms of a house, causing sickness and death. As the gases of the soil have been found to carry the minute organisms spoken of above into the basements of buildings, they may be supposed to have introduced disease in this way from the soil or the sewers, cess-pools, etc., near the buildings.<sup>1</sup> Aside from these possible sources of contamination, school air contains only what has been contributed to it by the inmates of the room. Generally speaking, this consists of the matter given off in the breath and the perspiration. The former gives out carbonic acid in large quantity, watery vapor, and a peculiar organic matter the precise nature of which is not yet perfectly known; the latter consists largely of watery vapor, which carries with it different salts and

<sup>1</sup> Translations of Pettenkofer's popular lectures on the relation of the soil to dwellings are reprinted in Vols. XI and XX of the *Popular Science Monthly*.

volatile odorous organic substances, such as certain organic acids. The chemistry of respiration was carefully worked out for smaller animals by Regnault and Reiset, and for men by Pettenkofer in the large complicated apparatus at Munich. The mean composition of the breath when freed from watery vapor may be given as follows: Nitrogen, 80.3; oxygen, 15.4; and carbonic acid, 4.3 parts by volume. The proportion of the gases varies under different circumstances, depending on the amount of exertion, the condition of digestion, the temperature of the air, etc., but the above may be considered as representing the mean gaseous composition of expired air after drying. Compared with normal air we have, giving the percentage composition, by volume,

	"Normal" air (dry).	Expired air (dry).
Oxygen .....	20.96	15.56
Carbonic acid .....	.03	4.34
Nitrogen .....	79.01	80.10

The expired air therefore has over a hundred times as much carbonic acid as "normal" air, and less than four-fifths the "normal" amount of oxygen, much less also than was found in the worst air of mines. It is probable, therefore, that if a person were to breathe a mixture of gases having the composition of expired air he could only endure the experiment a short time. Still Regnault and Reiset found that the percentage of oxygen could be reduced far below that of the breath without causing death or insensibility in small animals, and Pettenkofer says that he was able to stay a long time in a room containing 1 per cent. of carbonic acid without inconvenience, while another observer, Förster, staid for ten minutes in a place with 4 per cent. of that gas without any uncomfortable feeling.<sup>1</sup>

There is some uncertainty as to the limit of endurance of large quantities of carbonic acid, but in any case the power of enduring an atmosphere of abnormal composition for a short time has little to do with the effect on health of a continued exposure to air whose gaseous composition varies only by a few tenths of one per cent. from the normal, and which, as shown by the analyses of room air above, is all that people are called upon to breathe under any ordinary circumstances. Besides, the mixture of oxygen, nitrogen, and carbonic acid gases is not all that should be taken into account in estimating the effect of rebreathed air. In Pettenkofer's experiment the carbonic acid was liberated in the room from bicarbonate of soda by sulphuric acid; in Förster's case the gas was that of fermentation in a wine cellar; and Pettenkofer makes a distinction when he says that the air of a room containing 1 per cent. of carbonic acid gas *due to the respiration of persons in it* would be almost intolerable. It is therefore not the lessened amount of oxygen and increased carbonic acid alone which cause the unpleasant sensations and serious results due to bad air, so that it must be the other things given out into the atmosphere of a room by the breath (and perspiration), together with the comparatively slight alteration in the proportion of the gases in room air, which produce those effects. The other things are, as has been said, watery vapor and organic matter. The quantity of the former varies considerably with the temperature and humidity of the air. Its importance in the present instance is in the effect it has of increasing the humidity of the air of a room, and in its power of aiding in the decomposition of the organic matter which it

<sup>1</sup>Regnault and Reiset: *Untersuchungen über Respiration*; in *Annalen der Chemie und Pharmacie*. Bd. LXXIII. Pettenkofer: *Ann. der Chem. und Pharm.* Suppl. Bd. II. Förster: *Zeitschrift für Biologie*. Bd. XI.

helps to convey from the lungs and skin. This "organic matter" is probably the most important ingredient of the exhalations, as far as unhealthful effects are concerned. The term is conveniently vague, but is as definite as the present state of knowledge will allow, since the actual composition of the organic matter is unknown. It has been collected and examined in various ways. It has a fetid odor, and is soon recognized by the sense of smell when many persons (or, indeed, one individual) have been long in a confined space. Its amount in exposed air has never been precisely determined, nor is it possible at present to estimate it correctly.

It must be partly suspended, and is made up of small particles of epithelium and fatty matters detached from the skin and mouth, and partly of an organic vapor given off from the lungs and mouth. The organic matter from the lungs, when drawn through sulphuric acid, darkens it; through permanganate of potash, decolorizes it; and through pure water, renders it offensive. Collected from the air by condensing the watery vapor on the sides of a globe containing ice (as by Taddei, in the wards of the Santa Maria Novella), it is found to decolorize permanganate of potash, and to yield ammonia. It is therefore nitrogenous and oxidizable. It has a very fetid smell, and this is retained in a room for so long a time, sometimes for four hours, even when there is free ventilation, as to show that it is oxidized slowly. It is probably in combination with water, for the most hygroscopic substances absorb most of it. It is absorbed most by wool, feathers, damp walls, and moist paper, and least by straw and horse hair. The color of the substance influences its absorption in the following order: black most, then blue, yellow, and white. It is probably not a gas, but is molecular and floats in clouds through the air, as the odor is evidently not always equally diffused through a room.<sup>1</sup>

The effect of the fetid air containing organic matter, excess of water, and carbonic acid produced by respiration, is very marked upon many people; heaviness, headache, inertness, and in some cases nausea, are produced. From experiments on animals in which the carbon dioxide and watery vapor were removed and organic matter alone left, Gavarret and Hammond have found that the organic matter is highly poisonous. Cases have been known in which the inhalation of such an atmosphere produced in men decided febrile symptoms (increased temperature, quickened pulse, furred tongue, loss of appetite, and thirst) for even twenty-four or forty-eight hours subsequently.

When the air is rendered still more impure it is rapidly fatal, as in the cases of the Black Hole of Calcutta, of the prison in which 300 Austrian prisoners were put after the battle of Ansterlitz (when 260 died very rapidly), and of the steamer "London-derry." The poisonous agencies are probably the organic matter and the deficient oxygen, as the symptoms are not those of pure asphyxia. If the persons survive, a febrile condition is left behind which lasts three or four days, or there are other evidences of defective nutrition.

When air more moderately vitiated by respiration is breathed for a longer period and more continuously, its effects become complicated with those of other conditions. Usually a person who is compelled to breathe such an atmosphere is at the same time sedentary, and, perhaps, remains in a constrained position for several hours, or possibly is also underfed or intemperate. But allowing the fullest effect to all other agencies, there is no doubt that the breathing the vitiated atmosphere of respiration has a most injurious effect on the health. Persons soon become pale, and partially lose their appetite, and after a time decline in muscular health and spirits. \* \* \* Of special diseases it appears pretty clear that pulmonary affections are more common.<sup>2</sup>

It is in this "organic matter" given off by human beings that the contagium of disease is to be found, currents of air being sometimes the vehicle to convey it from place to place and from one person to another.<sup>3</sup>

<sup>1</sup>Parkes' *Practical Hygiene*, p. 116. De Chaumont. Philadelphia, 1883.

<sup>2</sup>Parkes, p. 133, who quotes numerous instances of phthisis among men and lower animals due to air vitiated by respiration.

<sup>3</sup>To the non-medical mind there is something appalling in the stealthy, mysterious, deadly action of this subtle effluvium of humanity. It has produced pestilences of revolting kinds when human beings have been crowded too closely in unventilated spaces. Sometimes it has wreaked revenge in a vindictive way on those who have been instrumental in quickening it into activity, as when jail fevers have spread from the prisoners to the jailers, lawyers, and judges. The earliest mentioned instance of the kind in England was in 1414, when "the gaolers of Newgate and Ludgate died, and

With the organic matter in room air must also be reckoned the "microbes" and bacteria which are found there as well as in the outer air. The following is a curious comparison between the number of living bacteria per cubic meter found in the air of a hospital and in the outside air of Paris, by Miquel and Besançon.

	Hospital.	Outside.
March .....	10, 700	780
April .....	10, 200	870
May .....	11, 400	1, 000
June .....	5, 700	1, 540
July .....	7, 000	1, 400
August .....	6, 000	800
September .....	8, 400	800
October .....	12, 700	1, 070
November .....	15, 600	810

The figures are regarded as representing only a portion of the bacteria really present in the air. The number in the hospital is smaller in summer than in winter on account of the free ventilation through the open windows during the former season.<sup>1</sup>

The air of a room containing many persons is therefore different in composition from the outer air in the proportion of the gases which compose it, in having a different amount of watery vapor, and in containing a small quantity of organic matter which is injurious in itself

prisoners in Newgate to the number of sixty-four." At the Cambridge assize in 1521, a contagious fever spread from the prisoners, which carried off "justices, gentlemen bailiffs, and others." After this there was the famous "black assize" at Oxford in 1577, when "spreading from the jail, there arose such a dampe that almost all were smouldered, very few escaping, the jurors presently dying, and shortly after Sir Robert Bell, Lord Chief Baron. All died in forty hours, the Lord Chief Baron and 300 more." In the King's Bench prison in 1579 a hundred inmates died of "the sickness of the house." In 1586 a "sudden and strange sickness," which had appeared among the prisoners in the jail, was dispersed at their trial through the audience in court, "whereof more died than escaped." Lord Bacon, writing on the subject, characterizes "the smell of the jail" as "the most pernicious infection next to the plague. When prisoners have been long and close and nastily kept, whereof we have had in our time experience twice or thrice, both judges that sat upon the trial, and numbers of those that attended the business or were present, sickened upon it and died." In 1750, at the May sessions at the Old Bailey, the court was excessively crowded. "The prisoners awaiting trial numbered a hundred, and these were mostly lodged in two rooms, 14 feet by 7 and only 7 feet in height; but some, and no doubt all in turn, were put into the bail dock; many had lain long confined in the pestiferous wards of Newgate. The court itself was barely 30 feet square, and in direct communication with the bail dock and rooms beyond, whence an open window 'at the furthest end of the room' carried a draught poisoned with infection to the judges' bench. Of these four died," and forty other deaths soon followed.

In consequence of this state of things a committee was appointed by the corporation of London to provide pure air for Newgate. The committee erected a windmill on the prison, which pumped air from a shaft connected by pipes with the various wards. The workmen employed in fixing the tubes ran great risks, and in several cases were seized with the fever. "One man \* \* \* had been employed in opening one of the tubes of the old ventilator which had stood for three or four years. Such an offensive smell had issued from the tube that he was seized with sickness and nausea. He went home and that night fell ill with the fever." Others suffered the same fate. "One was a lad of fifteen who had been forced by his fellows to go down the great trunk of the ventilator in order to bring up a wig which some one had thrown into it. On coming up again he was immediately attacked by a violent headache, a great disorder in his stomach and nausea. \* \* \* A peculiarity in his case was, that he had been twice let down into the ventilator when the machine on the leads had been standing still, and he had suffered no ill effects; but the last time it was in motion, and the heavily laden up-draught had well nigh poisoned him and two others, who had dragged him out of the shaft."—*Chronicles of Newgate*, Vol. I. London, 1884.

<sup>1</sup> Fremy: *Encyclopédie Chimique*, Tome IX. Duclaux: *Chimie Biologique*, p. 77.

and may become dangerous as the means of spreading disease. If we add to this the temperature of the room air we have a clear idea of the usual climate of a room full of people. Occasional impurities in the air due to lighting and heating, and the possible occurrence of the poisonous gas carbonic oxide, may be disregarded.

Persons from 12 to 16 years of age give out on the average 915 cubic inches of carbonic acid per hour, which, using the average composition of the breath above given as a basis of computation, would make 12.2 cubic feet of breath per hour for each person. In a room containing 50 persons of the ages specified, 610 cubic feet of expired air would be given out per hour, and in three hours (a school session) 1,830 cubic feet of such air, containing over 79 cubic feet of carbonic acid, would be breathed into the room, together with an undetermined quantity of watery vapor and organic matter. In a room of 10,000 cubic feet contents this would make 0.79 per cent., or, in round numbers, 0.8 per cent. of carbonic acid gas, or more than twenty-five times as much as normal air contains, and the oxygen would be proportionately less, viz, 20.16 per cent., or less than in the average bad air of coal mines. If the room were gas tight this alteration in the proportion of the gases composing its air would go on increasing as long as the breathing continued, the watery vapor would also keep on increasing until the air became saturated, and the organic matter would increase in quantity and offensiveness. But there is no room where this condition exists. By virtue of what is called natural ventilation there is always some exchange of air between a room and the outside air. In Pettenkofer's experiment he stopped up carefully all cracks and fissures in the doors and windows of a room, and set free in it a quantity of carbonic acid from bicarbonate of soda and sulphuric acid. Successive determinations of the amount of gas in the air showed that its proportion steadily decreased, which, under the precautions taken, could only be due to an exchange between the outer and room air through the walls of the room; and from the data obtained in this way a formula which gives the amount of natural ventilation was prepared by Professor Seidel from the varying proportions of carbonic acid in room air. Subsequent direct experiments have shown the permeability of the walls of buildings to air, as is illustrated in the following table from Lang's "*Natürliche Ventilation*":

Material of building.	Difference of temperature outside and inside.	Cubic feet of air per hour through one square yard of wall.
	<i>Fahr.</i>	
Sandstone .....	34°	59.6
Quarried limestone .....	18.5°	81.8
Brick .....	85°	99.8
Tuffaceous limestone .....	27.5°	128
Air-dried brick .....	22°	180.7

The amount varies with the thickness of the walls, their moisture and covering, and the difference of temperature.

But notwithstanding the natural ventilation through walls and closed windows and doors, and even with special contrivances for artificial ventilation, the air of crowded rooms is usually very bad, and it becomes of importance to know how bad. In determining this question we have to consider three elements in the climate of a room, viz, the purity of the air compared with external air, its temperature, and its humidity.

Taking these in order, we have seen that the impurity, *i. e.*, the foreign matter, directly contributed to room air is the organic matter given off from the lungs and skin of the inhabitants of the room, and that the carbonic acid and watery vapor from the same source alter the normal composition of air, so that it may be regarded as deteriorated for breathing purposes. If we knew the proportion of organic matter in the exhalations, in the breath for example, and could determine its amount in the air of a room, we could measure in that way the degree of vitiation of the air by the persons in the room. But it is not known whether the organic matter of the breath has a constant definite proportion to the volume of air expired, and there is as yet no accepted and ready way of estimating the quantity of organic matter in the air of a place.<sup>1</sup> And there is a further difficulty, due to the imperfect diffusibility of the organic matter through the room air.

The experiments of Pettenkofer, Roscoe, and others have shown that carbonic acid diffuses rapidly through the air of a room; but, as shown in the summary in Parkes' *Hygiene*, the organic matter "floats in clouds through the air, as the odor is not always equally diffused through a room." Angus Smith ("Air and Rain," p. 180) says, "the carbonic acid increases constantly and regularly in a close place where men breathe. The organic matter does not do so; it deposits with moisture, it covers every surface, and we smell it when all the carbonic acid is washed out by fresh air. The air is not limited in its capacity of holding carbonic acid; it seems to be so with regard to organic matter." It is therefore impracticable at present to use the organic matter as a measure of the vitiation of room air. But carbonic acid gas not only diffuses equally through the air of a room, but is present in the breath in a constant proportion, so that we can compute how much is given to a room by a given number of persons. If, therefore, carbonic acid is not admitted to a room from any other source than the respiration of the persons in it, we have a ready measure or index of the vitiation of the air from that source. From these considerations it was selected by Pettenkofer for that purpose, and he perfected a comparatively simple and easy method of determining it, which leaves nothing to be desired in point of accuracy.

The principles on which that method is based are as follows: Caustic lime or baryta dissolved in water takes carbonic acid from the air to form carbonate of lime or baryta, which separates from the water in the form of a white insoluble deposit of carbonate of lime or baryta. By the laws of chemical combination, bases and acids do not combine with each other hap-hazard, but in definite proportions by weight, so that in a given weight of carbonate of lime (for example) there is an invariable proportion of lime and of carbonic acid. If we measure accurately into a suitable glass vessel a small quantity of lime water, together with a few drops of a fluid which is of one color in an alkaline liquid like lime water, and of another when the fluid becomes acid,

<sup>1</sup>The "organic matter" may be classified into two kinds, that containing nitrogen in its composition and that which is not nitrogenous. It has been assumed that it is the nitrogenous organic matter which is the source of danger, and accordingly a method of estimating it has been invented. It consists in spraying or atomizing the air with pure distilled water in a suitable apparatus, so as to collect all the organic matter and hold it in the water. This is then boiled with permanganate of potassium and potash in a retort, so as to convert the nitrogenous matter into ammonia, which distills over and is measured by the Nessler test. The whole operation requires great care and many precautions, and there is a doubt about its accuracy and about the inferences which are drawn from the results. See *Report on the Organic Matter in the Air*, by Iia Remsen, National Board of Health Bulletin, Vol. II, No. 11, 1880.

and add to it carefully a quantity of very dilute acid of known strength until the color just changes, we know that the lime is neutralized by the acid, and by reading off the amount of acid used, in the burette containing it, we can calculate the amount of caustic lime in the lime water, or the strength of the latter. If a small measured quantity of lime water the strength of which has thus been ascertained, is put into a large measured jar and the jar stoppered, the lime water will take up carbonic acid from the air of the jar and form carbonate of lime with it. On taking out a measured portion of the lime water thus weakened, and treating it with the acid as above described, less acid will be required than with the fresh lime water, and the difference in the two strengths enables us to calculate the amount of carbonic acid which was taken up by the lime water, and from that, knowing the capacity of the jar, another calculation gives the proportion of carbonic acid in the air of the jar, or, which is the same thing, of the locality where the jar was filled with air.

In a room containing a number of persons the proportion of carbonic acid is necessarily much greater than in the open air, and goes on increasing with the length of stay. A time soon comes when the air of the room becomes unsuited for rebreathing, although the inmates of the room may be unconscious of the fact. It becomes an object to establish some standard, or limit of impurity, measured by the proportion of carbonic acid in the air, beyond which room air is undoubtedly objectionable. After fixing such a limit it would be easy to tell how vitiated the air of a room is by determining the amount of carbonic acid in it and comparing it with the standard. The excess of carbonic acid would indicate that too many persons were breathing in the room or, which is the same thing, that the ventilation was deficient.

The standard or limit selected by Pettenkofer was the amount of carbonic acid found in room air which was decidedly objectionable to the senses, and which had produced injurious effects on health. He inaugurated a series of determinations of the carbonic acid of the air in different dwelling rooms, in some of which the air was not perceptibly bad and the inmates had never felt any discomfort, and in others where the sensations, subjective impressions, and medical experience all showed something abnormal, and also in barracks, hospitals, and prisons, in Munich. In a dwelling house in the day time the carbonic acid gas averaged 6.8 parts in 10,000, beginning with 5.4 and increasing to 8.7 parts after a few hours, while in a sleeping-room at night with the windows closed there were 23 parts in 10,000. The long list of experiments made by Pettenkofer and Oertel in prisons, hospitals etc., showed that the carbonic acid ranged from 13 to 56 parts in 10,000, and proved that 0.1 per cent., or 10 parts in 10,000, indicated the limit between bad and good room air. At 20 parts the air showed all the signs of great vitiation, that is, it was "close" and disagreeable. Pettenkofer took pains to point out that the increased amount of carbonic acid in room air is not itself the source of injury, so much as a convenient measure of vitiation; and his rule is that whenever the air of a room contains over 10 parts in 10,000 of carbonic acid due to the respiration and perspiration of the inhabitants of the room (there being no other source of that gas than the outer air with 3 to 4 parts of carbonic acid), such air is unsuitable for continued breathing. The sense of smell is indeed affected by the organic matter when a person from the outer air enters a room where the carbonic acid is 7 parts in 10,000, but 10 parts is allowed for rooms containing many persons.

Numerous experiments by other observers have confirmed these results, the most complete being those of Dr. De Chaumont, which were made with this point in view. He says:<sup>1</sup>

It is generally admitted that it is organic matter, either suspended or in the form of vapor, that is the poison in air rendered impure by the products of respiration. It is also admitted that it is the same substance that gives the disagreeable sensation described as "closeness" in an ill ventilated air space. \* \* \* Unfortunately all the methods devised for the determination of organic matter in air are both difficult and unsatisfactory, so much so that they are almost practically impossible in an inquiry with regard to ventilation. Observations, however, as far as they have gone, seem to show that the amount of organic impurity bears a fairly regular proportion to the amount of carbonic acid evolved by the inhabitant in an air space; and as the latter can be easily and certainly determined, we may take it as the *measure* of the condition of the air space. This being accepted, and general diffusion being admitted, we can easily calculate the amount of fresh air required to bring down the carbonic acid to some fixed *standard*, adopting as a datum the ascertained average amount of carbonic acid evolved by an adult in a given time. If, now, we adopt as our *standard* the point at which there is no sensible difference between the air of an inhabited space and the external air, and agree that this shall be determined by the effects on the sense of *smell*, our next step is to *ascertain* from experiment what is the average amount of carbonic acid in such an air space, from which we can then calculate the amount of air required to keep it in that condition. The sense of smell is very quickly dulled, so that in order to keep it acute each air space to be examined ought to be entered directly from the open air. For this reason I have not included in the present paper any of the observations made in prisons, as it is almost impossible from their construction to enter the cells directly from the open air.

Accordingly, De Chaumont confined his experiments to barracks and hospitals.

The sensations recorded on entering a room were entered as:

(1) "Fresh," "fair," "not close," "no unpleasant smell," etc., indicating no appreciably different sensation from the outer air.

(2) "Rather close," "a little close," "not very foul," "a little smell," etc., indicating the point where organic matter begins to be perceptible.

(3) "Close," where organic matter begins to be decidedly disagreeable.

(4) "Very close," "bad," etc., indicating the point where organic matter begins to be offensive and oppressive to the senses.

(5) "Extremely close," "very bad," indicating the point at which the maximum point of differentiation by the senses is reached. The experiments were made in both winter and summer, and included 473 determinations of carbonic acid and 247 of temperature, watery vapor, and relative humidity. The results were, as follows:

1st. Air recorded as "fresh," etc.

Mean temperature:		
Outside .....		57. 47° F.
Inside .....		62. 85° F.
Mean vapor:		
Outside .....	grains per cubic foot..	4. 285
Inside .....	do .....	4. 629
Relative humidity:		
Outside .....	per cent..	80
Inside .....	do .....	73
Carbonic acid:		
Outside .....	parts in 1000..	0. 4168
Inside .....	do .....	0. 5998
Excess inside .....		do .....
		0. 1830

Therefore *good* ventilation requires a temperature of about 63° F., watery vapor not over 4.7 grains per cubic foot, and carbonic acid due to respiration not over 0.2 parts in 1000 (or 2 parts in 10,000).

<sup>1</sup> On the Theory of Ventilation; in Proc. Roy. Soc., 1875, p. 187.



## 2d. "Rather close," etc. (where organic matter becomes perceptible).

Mean temperature:		
Outside .....		54.85° F.
Inside .....		62.85° F.
Excess of vapor inside .....	grains per cubic foot..	0.687
Relative humidity lowered .....	per cent..	7.6
Carbonic acid:		
Outside (mean) .....	parts in 1000..	0.4110
Inside .....	do.....	0.8004
Excess inside .....	do.....	0.3894

Therefore ventilation ceases to be *good* when vapor is over 4.7 grains per cubic foot, and the carbonic acid due to respiration (i. e., the excess over that in the outer air) is 0.4 parts in 1000 (or 4 parts in 10,000).

## 3d. "Close," etc. (the organic matter begins to be disagreeable to the senses).

Mean temperature:		
Outside .....		51.28° F.
Inside .....		64.67° F.
Vapor:		
Outside .....	grains per cubic foot..	3.837
Inside .....	do.....	4.909
Relative humidity lowered .....	per cent..	11.56
Carbonic acid:		
Outside .....	parts in 1000..	0.3705
Inside .....	do.....	1.0027
Excess inside .....	do.....	0.6322

Therefore ventilation begins to be *decidedly bad* when the watery vapor amounts to 4.9 grains per cubic foot, and the carbonic acid is 0.6 parts in 1000 (or 6 parts in 10,000) in excess over that in the outer air.

## 4th. "Very close," etc. (the organic matter begins to be offensive and oppressive).

Mean temperature:		
Outside .....		51.28° F.
Inside .....		65.15° F.
Vapor:		
Outside .....	grains per cubic foot..	3.678
Inside .....	do.....	5.078
Relative humidity lowered .....	per cent..	8.58
Carbonic acid:		
Outside .....	parts in 1000..	0.3903
Inside .....	do.....	1.2335
Excess inside .....	do.....	0.8432

Therefore ventilation may be said to be *very bad* where the watery vapor reaches 5 grains per cubic foot, and the excess of carbonic acid is 0.8 parts in 1000 (8 parts in 10,000).

The results under the 5th class were so nearly like those under the 4th that Dr. De Chaumont thought it best to combine the two, so that the conclusion just stated applies to the limit of differentiation by the senses. That is to say, when the carbonic acid of vitiation is 8 parts in 10,000 in excess over that in the outer air, the senses are no longer able to discriminate between such air and air which is much worse.

Collecting the results into a table we have:

No. of class.	Temperature, Fahrenheit.		Watery vapor.		Carbonic acid, parts in 1000.	
	Inside.	Excess over outside.	Inside.	Excess over outside.	Inside.	Excess over outside.
1...	62.85°	5.38°	4.629	0.344	0.5998	0.1830
2...	62.85	8.00	4.828	0.687	0.8004	0.3894
3...	64.67	12.91	4.909	1.072	1.0027	0.6322
4...	65.15	13.87	5.078	1.400	1.2335	0.8432
5...	65.05	13.19	5.194	1.319	1.2818	0.8817

From which it will be seen that there is a generally regular progression, and if classes 4 and 5 were combined the progression would be perfect. This was accordingly done, and using the carbonic acid as the measure of respiratory impurity—a selection confirmed by various calculations—Dr. De Chaumont reached the conclusion that 0.2 parts in 1000 of that gas is the limit of respiratory impurity admissible in good ventilation.

The amount of fresh air necessary to keep the impurity down to the particular limit would be determined by the formula

$$d = \frac{e}{r},$$

where  $d$  is the delivery of fresh air in cubic feet per head per hour,  $e$  the amount of carbonic acid expired per hour by one inmate, and  $r$  the limit of respiratory impurity, taken as carbonic acid per cubic foot, as ascertained by analysis. If we take  $e$  to be 0.6 cubic foot for an adult in repose, such as during sleep, we are rather under Pettenkofer's estimate, but considerably above Angus Smith's. The following table gives the amounts of fresh air which have entered the air spaces examined, computed by the above formula according to three estimates of the value of  $e$ , and using the values of  $r$  (the excess of carbonic acid over that of the outer air) obtained in the analyses which are given in the last column of the preceding table.

No. of class (as before).	Limit of respiratory impurity (excess of carbonic acid in cubic feet) = $r$ .	Cubic feet of air per head per hour ( $= \frac{e}{r}$ ), cal- culated from the amount of carbonic acid exhaled per hour according to—		
		Angus Smith, $e=0.45$ cubic foot.	Pettenkofer, $e=0.705$ cu- bic foot.	Proposed esti- mate adopted by Parkes, $e=0.6$ cubic foot.
1.....	0.0001831	2,460	3,850	3,280
2.....	0.0003894	1,155	1,810	1,540
3.....	0.0006322	710	1,115	950
4 and 5....	0.0008533	530	825	700

Dr. De Chaumont thinks that 0.6 cubic foot of carbonic acid per head per hour is the lowest limit that should be used. His conclusion is that the conditions, as the standards of good ventilation, should be, temperature, 63°–65° F.; wet bulb, 58°–61° F. (or between 4° and 5° F. difference); watery vapor not over 4.7 grains per cubic foot at 63° F., or 5 grains at 65° F.; relative humidity 73 to 75 per cent., and carbonic acid of respiration 0.0002 per cubic foot, or 2 parts in 10,000. Calling the carbonic acid in the outer air 4 parts in 10,000, this would make the limit 6 parts in 10,000 for rooms. This limit is regarded as too low for school-rooms, and it should be remembered that the amount of moisture is reckoned for an English climate and the relative humidity may be lower here.

The assumption being that ventilation ought to be sufficient to remove all sensible impurity from an inhabited room, so that a person coming directly from the external air should perceive no great difference between the room air and outside air in point of freshness, De Chaumont's figures show conclusively the inadequacy of the senses to make reliable discriminations. They mean that a person coming from the outer air into a room where the carbonic acid of vitiation is 8 parts in

10,000 cannot tell by the senses alone the difference between that atmosphere and one where the carbonic acid is as high as 20, 30, 50, or 80 parts in 10,000—an amount which has been found in the air of German schools, so that as far as his judgment is concerned, the latter air could go on doing its deadly work while being regarded as no worse than air which is not far beyond the permissible limit.

De Chaumont speaks of the tendency of the senses to become speedily dulled after a short contact with bad air, and shows that at a certain point they cease to discriminate. Not only is this so, but different persons are differently affected by the same air, some being more sensitive than others; and the same individual will have different sensations in the same air at different times, so that the senses are unreliable guides.

But a direct experiment, or rather experience, will give a more vivid idea of the inability of a person who has been for some time in bad air to judge of its quality than figures or general remarks. In the work of Dr. R. Angus Smith before referred to, that author gives a detailed account of a series of experiments he made to test this point. He had a small air-tight chamber constructed of lead (about  $6 \times 4 \times 8$  feet), which was provided with windows and a door, and a couple of small tubes were fixed in the wall air tight, through which specimens of the air could be drawn off. A table and a chair were placed in the room, and when one person was in the chamber with them there were 170 cubic feet of air. In this chamber the experimenter staid closely shut up for a considerable time, and recorded his sensations. He says:

Here I am describing feelings which to some persons may simply be faucies. The feelings are uncertain, it is said. This is not quite correct; they are to us most certain; but they register so many phenomena at once that they become uncertain guides when one only is sought after. For example, we may imagine that they tell of increased carbonic acid, whereas they may simply be telling us of diminished digestion and vigor.

The first trial of the chamber was made by simply sitting down for an hour and forty minutes. This produces about one per cent. of carbonic acid. No difference was, to a certainty, perceptible for twenty-five minutes. Then when the air was drawn from the top by means of an umbrella, it seemed like a soft wind, and had to some extent a pleasant feeling, but was entirely devoid of any faculty of cheering. A dull, cheerless air is well known. Here we had it produced at once. The air was very moist and deposited water when drawn out through a tube on taking a specimen.

After an hour the unpleasant smell of organic matter, such as is so well known in a crowded school, was perceptible on stepping rapidly from one end to the other or on moving the air rapidly.

It was very decidedly perceived, after remaining an hour, that the air was soft when made to move in this chamber. This arose from the moisture, and shows us at least that a soft air may be a very impure one. \* \* \* After staying in the chamber for 100 minutes the air had an unpleasant flavor, or smell, and I came out; three persons entered at once and pronounced it very bad; I entered after a minute and found it extremely bad. It seemed to me, however, that we are frequently exposed to air equally bad, although I have not found any in daily life so much deprived of its oxygen as this must have been—reduced, that is, to twenty per cent.

The second stay in the chamber was continued for 160 minutes. At two hours and twenty minutes it was observed that very long inspirations became frequent and more agreeable than usual. The air about that time gave a very decided feeling of closeness. Standing on a chair it was found less agreeable than below. The amount of oxygen was found to be 19.61. Immediately on opening the door two or three persons entered and again perceived how uncomfortable it was.

On another occasion, when candles were burnt in the chamber until they went out and matches refused to ignite, the persons who entered the chamber found no difficulty in breathing at first.

But a gradual feeling of discomfort appeared of a kind which is not easily described; it was restlessness and anxiety without pain, whilst the breathing increased in rapidity. Afterwards gas was lighted and burned with brilliancy. On entering after the gas had gone out, candles were extinguished as rapidly and completely as if they

had been thrust into water; nevertheless we still breathed, and although every one was anxious to go out, no very correct description of the feelings could be given. I stood on a chair, and then a feeling of incipient fainting began; but the senses were not annoyed by anything beyond a feeling of closeness, by no means so unpleasant as a school room or close-end [of a mine]. This is a very important fact, as it points again to the organic matter, of which there was little here, and of which there is much in the school room. The lungs seemed to refuse expansion without the senses being able to indicate a reason. The actual amount of oxygen when the gas went out is not known; but a specimen taken from the room after the door had been opened long enough to allow three persons to enter contained 17.45 per cent.

All these experiments tend to diminish our faith in the senses as guides under certain conditions. The senses are quite unable to measure degrees of closeness, and raise as much alarm at a state which may be represented by 0.1 per cent. of carbonic acid, as they sometimes do when there is really 4 per cent. with a diminishing pulse and a quickening respiration, or incipient gasping for breath.

After a while the air really becomes by no means proportionately worse to the feelings, but the approach of fainting in the case mentioned showed that the lack of oxygen or presence of carbonic acid was telling on the moving vital act.

It is not possible to obtain exact results with the human being at all these varying stages without going into the region of statistics, and the argument may be considered by some as dependent on that wider range of facts; but for most persons it will appear clear that if the loss of 0.2 of oxygen and its replacement by 0.2 of carbonic acid be found to make the air disagreeable and injurious to the extent which is attributed by overwhelming evidence to bad ventilation, double the loss of oxygen and double the carbonic acid will produce still worse consequences. The senses begin the argument, but it takes months or years to show the bad effects of that air which they dislike. At the other extremity the vital powers give way, and between these two we must have a gradation of effect.

This is enough to show that a person who is bathed for a length of time in air which is constantly deteriorating, loses the power of perceiving it, and that some means of discriminating with accuracy between different stages or degrees of vitiation is necessary. It has been shown that the determination of the carbonic acid of room air recommends itself for this purpose, because it really indicates vitiation due to exhalations from the lungs and skin, and because its estimation by the Pettenkofer method is a comparatively easy matter.

This method, as has been explained, consists essentially in collecting the air to be examined in a large measured jar provided with an accurately fitting stopper, pouring into the jar a small measured quantity of lime water, the strength of which is known, and then immediately stoppering the jar. The strength of the lime water is afterwards measured by a dilute solution of oxalic acid of known strength, and the difference in the strength of the lime water before and after contact with the air in the jar shows the amount of carbonic acid it has absorbed. From this amount the proportion of carbonic acid in the air is obtained by calculation. The following is a convenient way of collecting specimens of the air and conducting the analysis:

Clean and dry thoroughly as many jars as it is desired to collect samples of air, say a dozen or fifteen. The jars should hold from 5 to 10 liters (from 1 to 2 gallons) each; they should be accurately gauged and their contents marked on each with a diamond. They should have well ground, accurately fitting glass stoppers, each of which and the jar it belongs to should be marked with the diamond to prevent mixing. The gauging can be done by filling each jar with water which has acquired the temperature of the room where the operation is going on, from a liter flask or graduate, until the stopper just fits into its place, and recording the amount required, or by filling it first and then siphoning off the water into a liter flask (and finally a graduate), and so obtaining the contents.

Having transported the jars to the locality to be examined, they are filled with air as follows: A good caoutchouc stopper which fits the mouths of the jars has two holes bored in it, through one of which passes a short glass tube fitting the hole air tight, and through the other passes another glass tube, also fitting air tight, which is long enough to reach the bottom of the jar when the stopper is squeezed into its mouth. Over the end of the short tube is slipped a piece of stout caoutchouc tubing, which connects with the air pump or similar contrivance, while another piece of caoutchouc tubing long enough to reach to the ceiling of the room is attached to the external end of the long glass tube. After fitting the stopper tightly the end of this tube can be held in any desired place by means of a pole to which it is tied, and the pumping commenced. (See Fig. 1.) This operation must be continued long

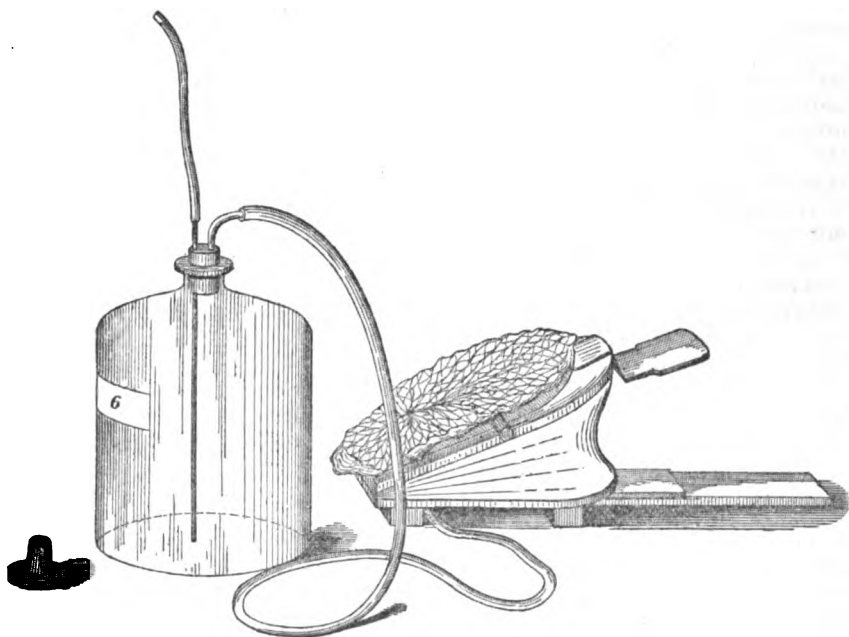


FIG. 1.

enough to make sure that the air originally in the jar has been replaced by that of the place where the end of the tube is held. To be certain of this, preliminary experiments must be made, such as filling the jar with tobacco smoke and counting the number of strokes required to completely empty it, or a jar is inverted over water, a glass tube connected with the caoutchouc tubing of the exhausting apparatus is pushed up to its bottom, and the number of strokes necessary to fill the jar with water are counted. During this operation the jar must be held so that the water is at the same level inside and out. A convenient pump for this work is the foot bellows used with blast lamps in laboratories, which can be adapted to the reverse action required of it by fitting the hole through which air enters it with a good cork carrying a bent-glass tube to connect with the caoutchouc tubing leading to the short tube of the jar. In making the collection of air for analysis,

pumping should be continued until three or four times as many strokes have been given as were found necessary to remove the tobacco smoke in the preliminary trials with the particular bellows employed. Care should be taken during this operation to keep the end of the tube through which collection is being made far enough away from any person or group of persons to prevent the chance of the air entering it being contaminated by the direct breath, because one respiration gives out enough carbonic acid to vitiate the result of the subsequent analysis.

After the jar has been filled in this way with the air to be examined, the stopper carrying the glass tubes is removed and 60 cubic centimeters of lime water are quickly transferred by a pipette from the bottle which is standing at hand to the jar, which is immediately tightly closed with its own stopper and a piece of rubber gauze is tied down over the latter. The jar is then turned around in various directions a few times so as to spread the lime water over its sides and top, and, after a label stating the place and time of collection is pasted on it, is set aside in a place of about the same temperature as the place of collection for transfer to the laboratory and examination the next day. During the removal of the stopper and the manipulation of the lime water the operator and his assistant must be careful not to breathe near the mouth of the jar or the lime-water bottle. As the transfer only takes a few seconds it is easy to hold the breath during that period.

The temperature of the point of collection, which is essential in making the subsequent calculations of the analyses, is obtained by hanging a thermometer on the end of the pole which carries the caoutchouc tube and reading it on taking the pole down. The whole operation of filling the jar with air and taking the temperature of the latter does not take more than three or four minutes. The principles of the simple analytical process are laid down in chemical handbooks (it is a simple case of volumetric analysis), but it requires some experience in chemical manipulation to conduct the process properly. Different practitioners prefer different modifications, some using lime water and others baryta water to absorb the carbonic acid, and different strengths of the solution of acid (oxalic) are also employed.

The following is a convenient solution of acid to use. It was recommended by Pettenkofer, and is of such strength that 1 cubic centimeter exactly neutralizes 1 milligramme of lime. It is obtained by weighing off 2.25 grammes of pure, dry, crystallized (uneffloresced) oxalic acid and dissolving it in a liter of distilled water. To ascertain the strength of the lime water (which varies slightly with the temperature) a quantity of it (say one liter) sufficient for use for a day or two is rapidly poured from the large bottle containing the quicklime, through a filter into the bottle in which it is to be transported to the locality to be examined. Thirty cubic centimeters of the clear lime water are then taken from this bottle by a pipette which delivers exactly that amount, and run into a beaker, and two or three drops of an alcoholic solution of rosolic acid (or phenolphthaleine) are added to color the solution. A 50-c. c. burette (graduated to tenths of a cubic centimeter) has previously been filled with a solution of oxalic acid so that the mark on the Erdmann float coincides with the upper or zero mark of the burette. The solution is now run into the beaker, the fluid in which is kept constantly stirred by a glass rod until there is an indication of a change of color, when the stop-cock of the burette is turned so as to deliver the solution slowly drop by drop. When the color disappears, which it does instantaneously, the lime in the lime water has been exactly neu-

tralized by the oxalic acid, and as the solution of the latter is of such strength that each cubic centimeter thereof is equal to one milligramme of lime, on reading on the burette the number of cubic centimeters and tenths which have been run out, we know the number of milligrammes and tenths of lime in the 30 c. c. of lime water taken. The Erdmann float with its mark renders it easy to read the graduations of the burette exactly. This operation should be repeated and there should not be more than a tenth difference in two readings. It is necessary to ascertain the strength of the lime water before each campaign, and in preparing fresh quantities, i. e., when fresh quicklime is used, it is advisable to throw away the first two or three drenchings in order to get rid of the alkalies contained in the lime, although this is not necessary if time is pressing, because the alkalies do not exert such an influence when lime is used as when baryta is employed. (Pettenkofer.)

Knowing now the strength of the lime water, thirty cubic centimeters of the sixty which were put in the jar in the room under examination are taken out with a pipette, after rinsing the jar by turning it about and letting it stand inclined a few minutes, and treated as above described, and the difference in the quantity of oxalic acid needed to neutralize the lime in these thirty cubic centimeters and that needed for the same quantity before exposure to the air in the jar shows the number of milligrammes of lime which have been taken up by the carbonic acid of the air of the jar. This difference and the temperature which was taken in the room at the time of collection give the data necessary for computing the proportion of carbonic acid in the air.

It is impracticable to give a description of the minute details of manipulation, which are like those involved in carrying out any analysis and which are familiar to all chemists, because they must be learned by practice in any case, and it is easier to learn by watching another than by trying to understand written directions. The hands can do in a few minutes what would require an hour to describe in writing and a long time to read and understand, so that a really simple thing seems difficult, tedious, and consequently forbidding, to one trying to master it from a description. "The processes [of analysis] can best be learned," says Dr. Billings,<sup>1</sup> "by spending about three hours a day, for three or four days, in a laboratory, working under the directions of a good chemist." A person who has once acquired the drill necessary to make these analyses can go on with them with great rapidity.

So much for the analysis itself. The computation is given as follows in Parkes' Hygiene:

After the lime has absorbed the  $\text{CO}_2$  of the air in the vessel, 30 c. c. of the solution are taken out and tested with the oxalic acid solution as before; the difference shows the milligrammes of lime precipitated by the  $\text{CO}_2$ . Multiply the difference by 0.795, the result is the c. c. of  $\text{CO}_2$  in the quantity of air examined. Deduct 60 c. c. from the total capacity of the jar (to account for the space occupied by the lime water put in) and state the capacity in liters and decimals; divide the cubic centimeters of  $\text{CO}_2$  obtained by the corrected capacity of the jar; the quotient is the c. c. of  $\text{CO}_2$  per 1,000 volumes of air.

#### *Example.*

The first alkalinity of lime water was 39 for 30 c. c.<sup>2</sup>

After exposure to the air in the jar, it was 33 for 30 c. c.

Difference, 6, being milligrammes of lime precipitated by  $\text{CO}_2$  in the jar.

<sup>1</sup> *Ventilation and Heating*; in the *Sanitary Engineer*, 1884, p. 22.

<sup>2</sup> That is to say, 39 c. c. of acid were required to neutralize 30 c. c. of lime water.

$6 \times 0.795^1 = 4.770$  = total  $\text{CO}_2$  in jar, in cubic centimeters.

Capacity of jar, 4.385 c. c.; deduct 60 c. c. for space taken up by lime water; then the net capacity will be 4.325 c. c. = 4.325 liters.

Then  $4.770 \div 4.325 = 1.103$  c. c. of  $\text{CO}_2$  per liter, or volumes per 1,000.

A correction for the temperature of the air examined must be made, the standard being  $32^\circ \text{F}$ ., or  $0^\circ \text{C}$ ., the freezing point of water. If the temperature be above this (as it will generally be, at least in buildings), the air will be expanded, and a smaller quantity, by weight, consequently, will be operated on. On the other hand, below  $32^\circ$  the air will be contracted, and a larger quantity, by weight, operated on than at the standard temperature. This can be corrected by adding 0.2 per cent. to the result for every degree above  $32^\circ$ , and subtracting it for every degree below, the reason being that air expands or contracts 0.2 per cent. for every degree (or 1 per cent. for every 5 degrees) it deviates from the standard.

*Example.*—In the preceding example the  $\text{CO}_2$  was found to be 1.103 per 1,000. Suppose the temperature to have been  $60^\circ \text{F}$ ., then  $60 - 32 = 28^\circ$  to be corrected for;  $28 \times 0.2 = 5.6$  per cent. to be added to the result, or the result must be multiplied by  $1 + .056$ ; therefore,  $1.103 \times 1.056 = 1.154$  per 1,000, the corrected result. Suppose the temperature had been  $25^\circ \text{F}$ ., then  $32 - 25 = 7^\circ$  to be corrected for;  $7 \times 0.2 = 1.4$  per cent. to be deducted, or the result must be multiplied by  $1.00 - .014 = 0.986$ ; therefore  $1.103 \times 0.986 = 1.087$ , the corrected result.

A correction for pressure is not necessary, unless the place of observation be much removed from sea-level; in that case the barometer must be observed, and a rule of three stated.

$$\left\{ \begin{array}{l} \text{As standard height of bar.} \\ (29.92 \text{ in., or } 760 \text{ mm.}) \end{array} \right\} : \left\{ \begin{array}{l} \text{Observed height} \\ \text{of bar.} \end{array} \right\} :: a : x.$$

It must be understood that none of the methods hitherto used for the determination of  $\text{CO}_2$  in the air give quite accurate results, but the above is the most convenient for ordinary use, and is sufficiently accurate for practical purposes. The results differ considerably if the quantities of air treated vary; therefore uniformity in this point is desirable.

From a number of analyses conducted as just described an accurate idea of the degree of the purity of the air of a room can be obtained, by comparing the amount of  $\text{CO}_2$  found with the standard of purity previously described (p. 361), viz, 1 part in 1,000, or 10 parts in 10,000 of air.<sup>2</sup>

<sup>1</sup> "The factor 0.795 is obtained as follows: The difference between the two alkalities expresses milligrammes of lime precipitated by  $\text{CO}_2$ ; from this the milligrammes of  $\text{CO}_2$  can be got by calculating from the ratios of the equivalents, thus:

$$\begin{array}{ccccccc} \text{CaO} & \text{CO}_2 & \text{Mgm. of CaO} & & \text{Mgm. of CO}_2 \\ 56 : & 44 : : & a & : & x \end{array}$$

$$\therefore x = a \times \frac{44}{56}$$

"As 1 c. c. of  $\text{CO}_2$  at  $32^\circ \text{F}$ . ( $0^\circ \text{C}$ .) weighs 1.9767 milligrammes, the ratio between weight and volume is  $\frac{1}{1.9767} = 0.506$ ;  $\therefore x \times 0.506$  = cubic centimeters of  $\text{CO}_2$ , corresponding to the milligrammes by weight. As 60 c. c. of lime water were put into the jar, and only 30 c. c. taken, the result must be multiplied by 2. Therefore the

factors combined are  $\frac{44}{56} \times 0.506 \times 2 = 0.795$ , and this, multiplied by  $a$ , the difference between the two alkalinities, gives  $x$ , the total cubic centimeters of  $\text{CO}_2$  in the jar."

<sup>2</sup>At a slight expense of time an instructive experiment might be made by collecting material for microscopic examination at the same time that the air for analysis is being taken. To do this a wide-mouthed flask of, say, a liter capacity could be fitted with a caoutchouc stopper and glass tubes like the jars. A small quantity of water should be poured into the flask to the depth of half an inch or an inch, and the stopper fitted, pushing the long tube down until its end almost touches the bottom of the flask, and so is well beneath the surface of the water. On connecting the short tube with the bellows, twenty or thirty liters of air should be slowly pumped through the water, which can then be handed to a microscopist. It would, perhaps, be well to make the collection at the height of the heads of the scholars and dispense with the long caoutchouc tube. The end of the glass tube which dips under water should be narrowed in the flame so as to leave a small aperture. The microscopic examination might give interesting qualitative results.





Date of examination ..... On what floor? .....

On what side of building? ..... weather: dry; wet; windy. Direction of  
wind ..... iceable, mention it (*e. g.*, illuminating gas,  
sulphureted hydrogen, &c.) .....

[illegible]

Only a word is necessary for the other two elements of the climate of a room, the temperature and the moisture. Both can be determined simultaneously by the same instrument—the dry and wet bulb hygrometer, and both ought to be ascertained in various parts of the room, by placing the instrument at the sides, center, and ceiling. The temperature of the latter place is found when taking air for  $\text{CO}_2$  determination. The instrument ought to be swung to and fro for a minute or so before reading. To ascertain the quantity of air passing out through the ventilators or entering through the hot-air inlets, an anemometer is used. It should be moved about over the grating so as to measure the average current of air passing. Knowing from this instrument the velocity of the current, the size of the openings enables one to estimate the number of cubic feet which enter or leave the room in a given time from those sources.

All the apparatus needed for actual work in a room consists of the jars, the bellows, the rubber stopper with its glass tubes and caoutchouc tubing, a bundle of rubber strips to be tied down over the stoppers of the jars after they have been filled, a carefully-stoppered bottle of lime water, a pipette delivering 60 c. c., a hygrometer, and an anemometer. This apparatus can be packed in a hand-cart, or in trays and placed in a wagon, and transported to any desired point.

Last year (1884) the Bureau of Education published a list of inquiries upon the sanitary condition of city school-houses, of which the accompanying blank form was a part. It was intended to be filled up in the actual examination of rooms.

The blank was found very convenient in practice and was used in examining two schools in the District of Columbia the past winter (1884-'85). It was found that fifteen samples of air, collected at different times in different rooms, together with thermometer and anemometer readings, could be taken during school hours by two persons, and that the analyses could be easily made the next day.

The results of the examinations are given on the following pages in tabular form.

## ANALOSTAN SCHOOL.

Date.	Number and locality of room (size of rooms 26x36x14).	How ventilated at time of examination.	Persons present.	Time.	Temperature.		Relative humidity.	Temperature external.	CO <sub>2</sub> in 10,000 parts.	CO <sub>2</sub> hot-air inlet.	CO <sub>2</sub> external.	CO <sub>2</sub> of ventilation.	Remarks.
					Dry bulb.	Wet bulb.							
1884. Dec. 18	Room 1, 1st floor NE.	Lower ventilators open; door into hall open.	{ 38 40 }	{ 12 m 2 p. m. }	65° 65	49°	23	22° 19	Ceiling, 6.590 8 feet from floor, 6.532 On floor, 5.888	.....	{ 3.61 ..... }	{ 2.919 2.871 2.242 }	{ Building heated by air which has passed over steam coils; no odor; wind NW.; snowing.
	Room 4, 1st floor SW.	Upper and lower ventilators open; door into cloak-room open.	{ 38 39 }	{ 3 p. m. 3 p. m. }	60 68	49 52	39 26	19 16	Ceiling, 6.470 8 feet up, 8.571 Ventilator, 7.342	(Temp., 127°) 4.594	.....	.....	Scarcely perceptible odor.
	Room 1	Lower ventilators open; door into hall open.	39	3 p. m.	68	52	26	16	Ceiling, 5.638	.....	.....	.....	No odor; wind NW.
	Room 3, 1st floor SE.	Upper and lower ventilators open; door into hall open.	35	3 p. m.	60	53	27	29	Ceiling, 6.348	.....	.....	.....	Do.
1885. Jan. 14	Hallway Room 4	Upper ventilators open; door into hall closed.	46	3 p. m.	73 69	55 51.5	24 21	.....	Ceiling, 6.363 Ceiling, 7.266	.....	.....	.....	Scarcely perceptible odor.
	Room 5, 2d floor SE.	Lower ventilators open; door open into hall	53	3 p. m.	71	55	29	34	Ceiling, 6.379	.....	.....	.....	No odor.
Jan. 15	Room 6, 2d floor NW.	Lower ventilators open; door into hall open.	{ 56 56 }	{ 2 p. m. 13 m. }	68 67	55 56	33 46	.....	Ceiling, 6.548 Ventilator, 7.387	.....	.....	.....	Do.
	Room 10, 2d floor NW.	Upper and lower ventilators open; door closed.	38	13 m.	67	56	46	.....	Ceiling, 6.962	.....	.....	.....	Scarcely perceptible odor.
	Room 11, 2d floor SE.	Lower ventilator open; door open into hall; south window open.	47	11 a. m.	66	55	45	.....	Ceiling, 8.730	.....	.....	.....	Wind NW.; no odor.

## TWINING SCHOOL.

Date.	Number and locality of room.	How ventilated at time of examination.	Persons present.	Time.	Temperature.		Relative humidity.	Temperature, external.	CO <sub>2</sub> in 10,000 parts.	CO <sub>2</sub> hot-air inlet.	CO <sub>2</sub> external.	CO <sub>2</sub> top of vith.	Remarks.
1885. Jan. 22	Room 2 (3d & 2d floor) S.W.	Lower ventilators open; door into wardrobe open.	56	12 m.	Dry bulb. 66°	Wet bulb. 52°	Percent. 32		Ceiling, 9.573.				Perceptible odor; room heated by stove receiving cold air from without and heating it; weather cold and windy.
	Room 4, 2d floor S.W.	Lower ventilator open; door into wardrobe open.	48 50	11.30 a. m. 11.45 a. m. 12.45 p. m.	68	55	38		Ceiling, 8.068. Floor, 7.441. Ceiling, near windows, 7.246. Ventilator, 10.228 Ceiling, 9.634.	(Temp., 14.0°) 7.574.			Scarcely perceptible odor.
	Room 9, 3d floor N.E.	Lower ventilator open; door into wardrobe open.	59	1 p. m. 1.30 p. m. 1.15 p. m. 2 p. m. 2.40 p. m.	68 70	50 52	20	23°	Ceiling, 10.333 Ceiling, 11.946 Ceiling, 12.328 Ventilator, 14.927 Ceiling, 9.644. Ventilator, 12.061	7.147			{ Hot-air furnace; perceptible odor.
	Room 8, 3d floor.	Lower ventilators open; door into wardrobe open.	46	11.30 a. m. 11.45 a. m.	66	53	33			6.779			No odor.

These figures show, as might be expected, that carbonic acid does not sink to the floor of an inhabited room and stay there. They also bear out the statement that when Pettenkofer's limit of 10 parts of  $\text{CO}_2$  in 10,000 is reached (when the 10 parts contain 4 parts from the outside air) the air of an inhabited room becomes noticeable to the senses. The ventilating openings at which collections were made in the rooms examined were in the walls just above the floor. It is instructive to see that as a rule the carbonic acid was higher at those openings than elsewhere. The fact needs confirmation, however, because it may be that the direct breath from persons sitting near may have been drawn into the openings. In the case where there was a constant increase of carbonic acid from hour to hour it appears that the ventilation was not sufficient to prevent the accumulation of vitiated air.

The hygrometer readings are not considered perfectly reliable, because when two instruments were used there was enough difference in the wet bulb readings to make a difference of 10 per cent. in the relative humidity. There was no time to find the cause of the differences.

Many collections were made in different parts of the rooms with a view to determining the best point to obtain what might be called an average sample of the room air. The center of the room would seem to be a promising place for that purpose. But the increase of carbonic acid at the ventilators appears to show a current setting that way, and in room 4, Twining School, it would seem that this current extended from the windows on the opposite side of the room toward the ventilator. This point should be settled by making a simultaneous collection of air at the ventilators and across the room from them, which could be done by a little management, and if the fact is established it might be taken into account in selecting the place for ventilators. If the carbonic acid is drawn to the ventilators from all parts of the room, some other place than the middle will have to be taken from which to get an average sample of air. It is important above all things that the collection should be made far enough away from the inmates of the room to be sure that no direct breath has been drawn into the jar.

The column headed " $\text{CO}_2$  of vitiation" is left unfilled, because it is not known what proportions of  $\text{CO}_2$  entered the rooms through the windows, etc., and through the hot air inlets. To determine this a separate examination of the air of the empty room would be necessary.

It is desirable to collect as many analyses of school air as possible and compare the quantities of  $\text{CO}_2$ , the temperature, and moisture or relative humidity, and obtain, if possible, the sick lists of the same schools. But sick lists alone are not enough, since they do not represent the real state of health in the schools. Dr. Hertel, in his work on overpressure in Danish schools, says that the lists are of no value on this point, because they merely show the number of children who are absent on account of temporary illness, whereas it is not the number of those temporarily ill that is of consequence so much as the number of "sickly" individuals. By "sickly" children, Dr. Hertel means those who are unsound, who suffer from chronic complaints but are able to attend school regularly; in short, children whose state of health is abnormal, and who require special care both at home and at school. A list of complaints taken into account while investigating the overpressure question includes anæmia, headache, nervousness, want of appetite, nose-bleed, and diseases of the eye. To examine children affected with these complaints would require a systematic medical inspection of the schools at stated periods, as is done in Europe. If a large number of analyses showing

the usual condition of room air, together with medical returns of sick and sickly children from the same rooms, could be obtained and discussed by some competent physician, it might be possible to ascertain complaints due to bad air, and separate them from those usually charged to overpressure, the cause to which nearly all sickness in the higher schools of Europe is now attributed. In this experimental way alone could whatever connection that really exists between bad air and ill health be discovered, and definite data be obtained for drawing conclusions and correcting theoretical or *a priori* assertions. The following collection of analyses of school air is useful as a beginning, and shows the atmosphere in which school children pass much of their time in different places. No deductions as to the influence of such an atmosphere on health can be made, however, because there are no medical returns from the same places with which to make comparisons.

The following figures by Professor Nichols are taken from a paper, "On the Ventilation of School-houses," by Dr. F. W. Draper and Prof. William Ripley Nichols, in the Third Annual Report (1875) of the Board of Health of the city of Boston:

Name of school.	Greatest amount of CO <sub>2</sub> in 10,000 parts.	Least amount of CO <sub>2</sub> in 10,000 parts.	Average of all the rooms.
Eliot .....	17.0	7.8	10.3
Brimmer .....	25.6	6.6	15.1
Comins .....	30.0	10.4	18.1
Chapman .....	16.2	7.1	11.6
Lawrence .....	20.7	7.7	13.1
Dudley .....	16.5	6.2	11.4
Girls' High .....	15.7	6.1	9.8
Phillips .....	13.9	6.9	9.3
Starr King .....	17.3	6.7	10.6
Rice Primary .....	11.0	5.7	8.3
General average.....			11.8

The odor of organic matter is entered as soon as 10 parts of CO<sub>2</sub> in 10,000 are passed. The humidity is not given. The temperature varied from 54° to 77° as extremes, but the averages were mostly between 65° and 70°.

Mr. N. T. Lupton examined the schools of Nashville, Tenn., in 1878, and the results were published in the *Chemical News*, vol. 39, from which the following table is taken:

Date.	Thermometer.		CO <sub>2</sub> in 10,000 parts.	Number of persons present.	Contents of room.	Percent. of moisture.	Cubic feet of air per head per hour.
	Dry bulb.	Wet bulb.					
1878.	° F.	° F.					
Feb. 1.....	19	16	32.42	136	26,415	73	4.0
1.....	18½	15½	29.29	137	37,377	70	4.5
6.....	19	14	{ 15.83 }	136	26,415	58	9.5
6.....	20	14	12.07	137	37,377	50	13.8
8.....	19	17	{ 9.14 }	136	26,415	80	20.5
8.....	20	17	{ 9.71 }	137	37,377	70	23.3
11.....	15	13	8.61	50	12,360	80	5.0
11.....	18	14½	27.22	50	12,360	60	6.1
12.....	19	15	{ 22.28 }				
12.....	19	15	{ 22.28 }	66	13,180	64	9.0
12.....	19	14	{ 16.88 }				
13.....	18	13½	{ 18.04 }	50	12,360	59	5.7
13.....	18	15	{ 24.00 }	66	13,180	59	8.6
13.....	18	15	{ 19.31 }	50	12,360	72	10.0
13.....	18	15	17.47				
13.....	18	15	14.92				

Date.	Thermometer.		CO <sub>2</sub> in 10,000 parts.	Number of persons present.	Contents of room.	Percent. of moisture.	Cubic feet of air per head per hour.
	Dry bulb.	Wet bulb.					
1878.	° F.	° F.					
Feb. 13.....	18	15	22.54	50	12,360	72	6.0
13.....	18	15	9.30	98	17,680	72	20.1
14.....	19½	17	14.84	55	10,390	76	9.9
14.....	20	18	19.11	55	10,390	81	7.2
14.....	19	16	15.37	55	10,390	73	10.0
14.....	19	16	11.08	75	20,150	73	16.0
15.....	19	16	21.33	50	10,390	73	6.6
15.....	20	17	{ 29.75 } { 29.50 }	55	10,390	70	4.4
15.....	19½	15	17.50	85	20,150	60	8.4
18.....	16	11	9.86	364	61,660	54	18.0
18.....	20	16	22.61	294	61,974	64	6.0
18.....	21½	17½	{ 28.25 } { 26.84 }	294	69,138	57	4.6
19.....	18	11½	13.42	364	61,660	48	12.2
19.....	20½	15	26.62	294	61,974	45	5.0
19.....	20	15½	{ 16.14 } { 16.14 }	294	69,138	58	9.3
20.....	19	17	13.79	364	61,660	80	12.0
20.....	21	17	15.10	294	61,974	63	9.5
20.....	21	16½	17.68	294	69,138	61	8.3
22.....	20½	16½	14.18	130	30,050	62	17.4
25.....	20	15½	{ 18.58 } { 17.58 }	130	30,050	58	7.8
22.....	20	16	16.54	125	33,850	64	9.0
25.....	18	12	{ 9.14 } { 9.41 }	125	33,850	48	20.0
28.....	20½	14	{ 10.97 } { 14.60 }	85	15,326	49	15.6

Figures in brackets represent two samples taken in different parts of the same room at the same time. The cubic feet are computed by Roscoe's formula, which will be referred to later.

Mr. Lupton says:

It was observed that in every instance where the amount of carbon dioxide reached 20 volumes in 10,000, or one-fifth of one per cent., the odor arising from other impurities of respiration was exceedingly offensive; and even when the amount was 10 in 10,000 this offensive odor was distinctly perceptible.

The following are the results of the chemical examination of the air of schools in Switzerland and Germany. Dr. Carl Breiting examined some of the schools in Basle at the request of the authorities, to whom complaints had been made of the bad air in the school rooms, overcrowding, etc. Dr. Breiting found<sup>1</sup> the extremes of temperature in different rooms ranging from 48° to 72°. The CO<sub>2</sub> ranged as follows:

	FORENOON.	Parts in 10,000.
Before the session began.....		22.1
At beginning.....		24.8
End of session.....		48.0
After recess.....		47.0
Before second recess.....		68.7
After second recess.....		62.3
End of session.....		81.1
11 A. M., empty room.....		73.0
	AFTERNOON.	
Before the session.....		53.0
Beginning of session.....		55.0
Before recess.....		76.0
After recess.....		64.6
End of session.....		93.6
4 P. M., empty room.....		57.2

<sup>1</sup> *Deutsche Viertelj. für öffentl. Gesundh.* Bd. II. 1869.



The following table<sup>1</sup> shows the relation between the maximum CO<sub>2</sub> and that of the empty room. Many of the rooms had no ventilation:

Maximum of CO <sub>2</sub> in 10,000 parts.	CO <sub>2</sub> in the empty room in the morning.
86.6	20.0
93.6	22.1
73.0	—
13.1	6.3
9.2	6.1
53.9	5.2
45.8	5.2
26.7	6.4
54.5	4.0
65.3	—

Dr. A. Schottky made a thorough examination of the ventilation of schools in Breslau in 1879.<sup>2</sup> There were three methods of heating the schools he examined, viz, by hot-air furnaces, stoves, and hot water. The object was to compare the temperature, relative humidity, and CO<sub>2</sub> in rooms heated by the different systems. He concluded in favor of hot-air furnaces. The following is a summary of his results:

No. of experiment.	Hour.	Temperature.	Relative humidity.	CO <sub>2</sub> in 10,000 parts.
		°F.	Per cent.	
1.....	9.30	65	63.4	15.25
2.....	9.45	67	69.1	46.4
3.....	10	69	75.4	44.3
4.....	10.30	62	72.6	27.2
5.....	10.45	65	78.5	33.2
6.....	11	68	65.3	12.2
7.....	11.10	(Court) 38	—	2.2 (3.21)
8.....	9	64	63.8	31.4
9.....	9.5	62	67.9	27.2
10.....	9.15	67	55.6	24.3
11.....	9.30	67	62.9	21.4
12.....	9.45	63	67.2	42.7
13.....	10	74	59.8	26.5
14.....	10.30	(Court) 34	—	3.1
15.....	7.30	61	61.2	19.0
16.....	8.30	63	—	25.4
17.....	9.15	64	—	23.1
18.....	10	66	—	26.3
19.....	10.30	69	—	22.9

Ninety-three analyses were made and the results were as follows:

(1) With hot-air furnaces the average temperature ranged from 63° to 69°, the maximum being 73° and the minimum 62°.

(2) With stoves supplied at the top with fuel and self-feeding, the average temperature was 72° to 75°, with a maximum of 79° and a minimum of 65°.

(3) With porcelain stoves (*Kachelofen*) the average temperature was 64°, with a maximum of 67° and a minimum of 63°.

(4) With warm water the average temperature was 66° to 68°, with a maximum of 70° and a minimum of 66°.

The relative humidity in the same classes was, in class 1, average 56.6 to 74 per cent., maximum 78.5 per cent., minimum 46 per cent.

In class 2 the average was 56.3 per cent. to 61.4 per cent., maximum 68.4 per cent., minimum 53 per cent.

<sup>1</sup> Baginsky: *Handbuch der Schulhygiene*, p. 148. 1883.

<sup>2</sup> *Zeitschrift für Biologie*, Bd. XV.

In class 3 the average was 66 per cent., the maximum 69 per cent and the minimum 61.7 per cent.

In class 4 the average ranged from 67.5 per cent. to 70.75 per cent., maximum 74 per cent., minimum 63 per cent.

The CO<sub>2</sub> averaged 26.91 to 31.4 parts in 10,000 in class 1, with a maximum of 50.8 and a minimum of 16.7.

In class 2 the average ranged from 25.16 to 42.1, the maximum being 51.5 and the minimum 15.3.

In class 3 the average was 32.2, the maximum 46.4 and the minimum 17.9.

In class 4 the average ranged from 30.4 to 41.1, the maximum being 52.5 and the minimum 22.8.

In a report on the heating and ventilation of the schools of Darmstadt<sup>1</sup> is a series of instructive tables, some of which are reprinted here.

In rooms heated by stoves and not provided with ventilating contrivances the CO<sub>2</sub> and relative humidity were as follows:

Persons present.	CO <sub>2</sub> in 10,000 parts.						Per cent. of relative humidity.					
	8 A. M.	9 A. M.	10 A. M.	12 M.	1 P. M.	2 P. M.	8 A. M.	9 A. M.	10 A. M.	12 M.	1 P. M.	2 P. M.
75	5.0	38.5	47.0	56.0	33.5	7.5	52	62	67	66	63	59
34	5.1	28.5	37.4	44.8	29.5	17.5	36	49	45	51	50	44
52	.....	5.5	30.5	46.7	23.6	18.8	53	55	63	66	66	65
47	5.0	30.6	41.2	57.6	28.5	23.3	44	55	58	61	64	60

Here then was a constant increase in carbonic acid and moisture, and the authors state that staying in the room at 12 M. was very disagreeable.

In the following table the upper figures show the composition of the air in ventilated rooms heated by hot water, the lower in similar rooms heated by hot air.

Persons present.	CO <sub>2</sub> in 10,000 parts.						Per cent. of relative humidity.					
	8 A. M.	9 A. M.	10 A. M.	12 M.	1 P. M.	2 P. M.	8 A. M.	9 A. M.	10 A. M.	12 M.	1 P. M.	2 P. M.
47	5.0	17.0	16.0	15.0	.....	5.0	29	34	35	35	...	27
37	5.2	15.0	14.0	14.0	5.0	5.0	27	33	32	31	...	35
39	5.5	13.0	13.0	13.0	5.6	5.0	31	39	36	39	32	26
71	4.5	19.0	18.2	18.0	5.0	4.0	37	...	49	49	43	42
60	3.5	21.5	21.0	19.0	6.6	4.0	35	35	47	46	40	36
68	3.8	23.0	24.0	22.0	6.0	4.0	46	54	53	50	...	39
60	3.8	15.2	13.4	15.0	3.7	4.0	28	37	41	38	33	31
65	4.0	14.5	17.0	15.0	4.8	4.0	28	43	44	43	25	33
60	3.7	13.3	16.2	14.7	4.6	4.0	29	39	41	41	35	33
60	4.2	13.3	15.4	18.3	5.1	5.2	34	40	39	38	37	32
63	4.7	17.6	19.5	17.9	6.1	7.6	49	48	48	46	40	41
60	4.0	14.2	15.8	16.5	4.7	3.8	45	45	46	46	35	35

<sup>1</sup> *Untersuchungen der Heiz- und Ventilationsanlagen in den städtischen Schulgebäuden zu Darmstadt.* By Prof. Dr. Büchner, Dr. Ihle, and Dr. Siegert. 1890.

The following table shows the condition of the air in ventilated rooms heated by stoves.

Persons present.	CO <sub>2</sub> in 10,000 parts.						Per cent. of relative humidity.					
	8 A. M.	9 A. M.	10 A. M.	12 M.	1 P. M.	2 P. M.	8 A. M.	9 A. M.	10 A. M.	12 M.	1 P. M.	2 P. M.
50	4.5	12.2	14.1	13.1	8.0	5.4	26	29	29	30	25	24
52	4.5	12.6	13.0	14.7	5.6	5.1	27	33	33	35	30	30
32	4.6	13.6	12.1	12.1	5.8	.....	28	33	32	35	28	27

The experiment was tried of interrupting the ventilation by closing the ventilators from 9 to 11 and then opening them. The results were as follows:

Persons present.	CO <sub>2</sub> in 10,000 parts.						Per cent. of relative humidity.				
	9 A. M.	11 A. M.	11.20 A. M.	11.40 A. M.	12 M.	1 P. M.	2 P. M.	9 A. M.	11 A. M.	12 M.	1 P. M.
50	10.4	31.0	18.8	17.4	15.0	-----	-----	42	48	40	-----
35	12.9	27.2	20.3	18.4	16.7	-----	5.7	42	52	46	-----
42	21.0	30.8	25.0	19.7	18.1	4.6	4.8	55	57	52	41
74	20.7	32.5	21.3	18.5	17.1	3.6	3.8	48	55	47	41

If we wish to arrange the foregoing results so as to show the gaseous composition of school room air (leaving out the watery vapor and organic matter), we have a wide range to select from. Taking Pettenkofer's limit of 10 parts of CO<sub>2</sub> in 10,000 of air as a starting point, and assuming for convenience that the composition of "normal" or standard air is 20.96 per cent. of oxygen, 0.03 per cent. of carbonic acid, and 79.01 per cent. of nitrogen, we should have—

Oxygen .....	20.89
CO <sub>2</sub> .....	.10
Nitrogen .....	79.01

supposing the oxygen of "normal" air to be replaced by 0.07 parts of carbonic acid. Looking over the previous analyses we find 0.20 per cent. and 0.30 per cent. of carbonic acid occurring frequently, while 0.40 per cent. and 0.50 per cent. are not rare, and 0.80 per cent. and 0.90 per cent. are the extremes. A tabular arrangement gives—

Oxygen .....	20.79	20.69	20.59	20.49	20.19	20.09
CO <sub>2</sub> .....	.20	.30	.40	.50	.80	.90
Nitrogen .....	79.01	79.01	79.01	79.01	79.01	79.01

All of which show worse air than Pettenkofer's limit allows. The last four show worse air than that of a crowded court room which was intolerable to a new comer, where the oxygen was 20.6 (if we can use oxygen as a criterion), and the last two are worse than the average bad air of mines.

The tables above given show the use of carbonic acid as a measure of impurity in room air. Ordinarily it is sufficient to estimate the propor-

tion of that gas in the air and observe if it is much above Pettenkofer's standard of 10 parts in 10,000, but occasionally it may be desired to know the degree of ventilation more exactly, and to compute the amount of fresh air which has entered the room to keep the vitiation at the observed limit. For this purpose various formulas have been employed by different persons, two of which are here given.

In Roscoe's examination of the ventilation of barracks is one example.<sup>1</sup> He determined the carbonic acid in a room containing 7,920 cubic feet, after 16 men had occupied it 6 hours, and found it to be 12.42 parts in 10,000. Assuming that a man exhales 0.686 of a cubic foot of carbonic acid per hour, sixteen men would give out 65.86 cubic feet in 6 hours. Then the question is, with what quantity of air must this 65.86 cubic feet of carbonic acid be mixed so that the percentage should be reduced to 0.1242, the amount found? Since the external air contains a little carbonic acid, more of it would be needed than if it were free from that gas.

If  $V$  represents the volume of pure air which must be added, and  $a$  is the fraction which the carbonic acid in the air [0.04 per cent.] is of the limit of impurity in the mixture [0.1242 per cent.], the volume of air  $V_1$  which must be added is found from the expression

$$V_1 = V + Va + Va^2 + \dots Va^n.$$

In this way it is found that in order to reduce 65.86 cubic feet of carbonic acid to 0.1242 of the total bulk, we require 76,600 cubic feet of air. That is, in 6 hours 76,600 cubic feet of air must pass through the room and carry off 0.1242 per cent. of its bulk of carbonic acid.

This gives to each man 13.3 cubic feet a minute, which is too little according to Roscoe's views, who thought 20 cubic feet necessary. Roscoe found 23.71 parts of carbonic acid in 10,000 of air in a school room of 22,140 cubic feet, containing 164 boys. The ventilation was sensibly imperfect, and the computation showed less than 6 cubic feet per head per minute. In another school room of 4,640 cubic feet contents there were 67 boys. The carbonic acid was 31 parts in 10,000, and the computation showed 240 cubic feet per head per hour, or 4 per minute.

The formula given by Roscoe was employed by Lupton in computing the amount of ventilation in the schools of Nashville, Tenn., which was given in a previous table. Lupton changed the formula to

$$V_1 = V \left( \frac{1}{1-a} \right), \text{ "as it is an infinite decreasing series."}$$

To determine, then [he says], the quantity of air in its normal condition which must be added to one of the rooms [the first in the table], containing 136 persons, so as to give in one hour and a half the percentage of carbon dioxide (0.3242 per cent.) found, we proceed as follows: if one person exhales 0.686 cubic foot of carbon dioxide in one hour, 136 persons will exhale 139.944 cubic feet in one hour and a half. By a simple proportion we get the value of  $V$ , which, multiplied by the fraction in the equation, whose terms are known, we get within reasonable limits of the quantity of air with which 139.944 cubic feet of carbon dioxide must be mixed in order to make the percentage of this gas amount to 0.3242, the quantity actually found in the room. The calculation gives 49,242 cubic feet of air as necessary to reduce 139.944 cubic feet of carbon dioxide to 0.3242 per cent. of the total bulk. This allows to each person 4 cubic feet per minute, which is not sufficient for healthful respiration.

All the formulas of this kind are based on the assumption which experiment substantially supports, that the new air *mizes* with that in the room, and does not drive it out bodily volume for volume.

<sup>1</sup> *Quarterly Journal of the Chemical Society*, 1858.

Kohlrausch's formula is

$$O = \frac{nk + (p_1 - p_2) \frac{m}{T}}{\frac{p_1 + p_2}{2} - a};$$

in which

$O$  = the volume of fresh air in cubic meters which is introduced into the room in the unit of time.

$m$  = volume of the room in cubic meters.

$T$  = the time between the beginning and end of an experiment, expressed in the same units to which  $O$  is referred.

$p_1$  = the amount of  $\text{CO}_2$  found in the room at the beginning, and

$p_2$  = the amount of  $\text{CO}_2$  at the end of the experiment.

$a$  = the amount of  $\text{CO}_2$  found in the outside air.

$k$  = the volume of  $\text{CO}_2$  given off by one source of  $\text{CO}_2$  (or by one individual) in the unit of time, and

$n$  = the number of such sources (or individuals).

The formula is obtained as follows: In the first minute the increase in  $\text{CO}_2$  is  $nk + aO - p_1O = nk + (a - p_1)O$ . In the last minute it is  $nk + aO - p_2O = nk + (a - p_2)O$ . Taking the mean during the time  $T$  of experiment, the approximate value would be

$$\frac{1}{2}[nk + C(a - p_1) + nk + C(a - p_2)] = nk + C\left(a - \frac{p_1 + p_2}{2}\right).$$

The increase during the time  $T$  would therefore be

$$\left[ nk + C\left(a - \frac{p_1 + p_2}{2}\right) \right] T,$$

and the ratio of this to the whole room, or the total increase in  $\text{CO}_2$ , would be

$$\frac{\left[ nk + C\left(a - \frac{p_1 + p_2}{2}\right) \right] T}{m}.$$

If the original amount of  $\text{CO}_2$  in the room was  $p_1$ , and the amount at the end of the experiment was  $p_2$ , the increase would be  $p_2 - p_1$ . Therefore

$$\frac{\left[ nk + C\left(a - \frac{p_1 + p_2}{2}\right) \right] T}{m} = p_2 - p_1,$$

or

$$O = \frac{(p_2 - p_1) \frac{m}{T} - nk}{a - \frac{p_1 + p_2}{2}},$$

or

$$O = \frac{nk + (p_1 - p_2) \frac{m}{T}}{\frac{p_1 + p_2}{2} - a}.$$

The formula is sufficiently accurate for experiments lasting only a short time. In using it, therefore, collections of air for carbonic acid determinations should be made at intervals of fifteen or twenty minutes.

With longer intervals, say from half an hour to an hour, the formula is said not to give such accurate results. The results can be compared with those of the formulas given below which express the amount of fresh air required to keep the impurity down to a given standard.

A complicated formula by Professor Seidel of Munich was used by Schottky in his examination of the schools of Breslau above referred to. He found that there was a ventilation of 5.2 cubic meters per head per hour on the average (or 183 cubic feet) with the hot air system, and less with the other forms of heating. He thinks the Pettenkofer limit too low for schools, and refers to Breiting, who sets 20 parts of CO<sub>2</sub> in 10,000 as allowable in school rooms. His own conclusions are that 25, and even 30, parts of CO<sub>2</sub> in 10,000 are not too high.

If it is desired to compute the amount of fresh air required to keep the impurity of room air down to a given limit, the principle employed by Dr. De Chaumont already quoted is adopted. The following is a summary of the section on the subject in Lang's *Natürliche Ventilation*.

The problem is to know what quantity of fresh air *C*, containing *a* parts of CO<sub>2</sub>, is necessary per hour in order to keep the proportion of CO<sub>2</sub> down to a certain limit *p*, in a room containing *n* persons, each of whom breathes *k* liters of CO<sub>2</sub> per hour, or  $\frac{k}{1000}$  cubic meters. The value

of *k* changes with age and sex, varies with the amount of work done, and is different at different hours of the day. Thus, according to Pettenkofer, a workman gave out 36.3 liters per hour while at work, and only 22.6 liters while resting. Scharling's observations are as follows:

	Age.	Weight.	Hourly production of CO <sub>2</sub> .	
			Liters.	Cubic inches.
Boy.....	9½	48.5	10.8	628
Girl.....	10	50.5	9.7	592
Youth.....	16	127	17.4	1,082
Young woman.....	17	128	12.9	787
Man.....	28	180	18.6	1,135
Woman.....	35	144	17.0	1,057

It is as well to take the production of carbonic acid of an adult for scholars over 13 years of age. In gymnasia, fencing schools, dancing halls, etc., the production of carbonic acid by a strong man may be taken at 36 liters (2,196 cubic inches). Thus the value of *k* is given by these conditions.

The value of *p* varies with the standard established, whether the Pettenkofer limit of 0.0007 to 0.001 for large rooms, or 0.0010 to 0.0015 proposed by Lang for smaller and tolerably well ventilated rooms, be adopted. The amount *a* of carbonic acid in the incoming air is also different in different places, and should be determined each time. In Munich the proportion varied between 0.0003 and 0.0004, and 0.0005 may be taken as representing the amount entering dwelling rooms.

The computation is simple. According to Vierordt the expired air contains 43.34 parts in a thousand of carbonic acid. Each breath may be taken at 500 cubic centimeters for an adult. According to Hutchinson's observations the number of breaths is 1,050 an hour. If the limit of impurity is 0.7 per thousand, and *a* is 0.5 per thousand, we have

$$\frac{43.34}{0.7 - 0.5} = \frac{43.34}{0.2} = 216.7 \text{ volumes of fresh air needed for every volume of expired air.}$$
 The latter amounts to 525 liters per head per hour, con-

sequently the amount of fresh air required for a man is  $525 \times 216.7 = 113.8$  cubic meters (3,994 cubic feet).

One could also say: 1,000 c. c. of breath contain 43.34 c. c. carbonic acid. Every breath of a volume of 500 c. c. would therefore contain 21.67 c. c., or 0.02167 of a liter, of carbonic acid. With 1,050 breaths per hour, therefore, 22.75 liters of carbonic acid would be given out into the room. If the limit of impurity is to be 0.0007 and the carbonic acid of the incoming air is 0.0005, we have, since 22.75 liters = 0.02275 of a cubic meter,  $\frac{0.02275}{0.0007 - 0.0005} = 113.75$  cubic meters (or 3,992 cubic feet). With a higher limit the figure would of course be smaller.

The previous formula was  $C = \frac{k}{p-a}$ . If we now take into account the cubic space per head we get another very simple formula. It is  $C = \frac{k}{p-a} - m$ , or,  $C = \frac{k-m(p-a)}{p-a}$ ,  $m$  being the cubic space per head. The formula applies to the time in which the  $\text{CO}_2$  increases from  $a$  to  $p$ .

*Example.*—Taking the mean of the figures of Pettenkofer, Voit, and Scharling for the  $\text{CO}_2$  evolved per head per hour, viz, 22.6, 16.8, and 18.6 liters, which is 19.3 liters, we have, without taking the cubic space per head into account,  $C = \frac{k}{p-a}$ , or  $\frac{0.0193}{0.0007 - 0.0005} = 96.5$  cubic meters, or  $\frac{0.0193}{0.0010 - 0.0005} = 38.6$  cubic meters, of fresh air per head, according to

the standard of purity required. In a lecture room of 670 cubic meters capacity holding 200 adults,  $m$  would be 3.4 cubic meters. Using the last formula we have  $C = \frac{k}{p-a} - m = 96.5 - 3.4 = 93.1$  cubic meters, or  $38.6 - 3.4 = 35.2$  cubic meters per head, according to the limit required. With a small cubic space, therefore, the difference in the required ventilation is small, but with larger rooms (or larger cubic space) the required ventilation would be lessened.

Professor Heymann of Stockholm made an examination of the schools of that city in order to furnish a committee of the medical society of Sweden evidence of the influence of schools on health.<sup>1</sup> He proposes a formula for computing the coefficient of ventilation which is thus obtained. If it is desired to keep the carbonic acid of a school room down to 10 parts in 10,000, the volume of air necessary for that purpose can be computed, the carbonic acid of the outer air and of the breath of an individual being known. Pettenkofer, Voit, and Scharling have determined that the amount of carbonic acid exhaled per hour by persons between 8 and 14 years of age is from 12 to 15 liters (732 to 915 cubic inches), and for older persons 15 to 20 liters (915 to 1,221 cubic inches). This is an average which varies greatly with circumstances. In cities, according to Angus Smith, the carbonic acid of the outer air is nearer 4 parts in 10,000 than 3.

To compute the coefficient of ventilation it is assumed that the air of a school is as pure as the outer air at the outset of the experiment, and that the incoming air mixes with that of the room equally.

The measures are in cubic meters.

<sup>1</sup> *Annales d'Hygiène Publique*, 3<sup>e</sup> Sér., 6, 1881.

Let  $V$ =the coefficient of ventilation sought.

$v$ =cubic space for each scholar=7 c. m.

$k$ =contents of incoming air in carbonic acid=0.0004.

$k_1$ =contents of room air in carbonic acid at outset=0.0004.

$k_2$ =contents of room air in carbonic acid at end of the hour=0.001  
(=the limit).

$a$ =quantity of carbonic acid exhaled per head per hour=0.012  
to 0.015.

$u$ =mean contents of the room air in carbonic acid during the  
hour =  $\frac{0.0004+0.001}{2}$  = 0.0007.

Then

$$7 \times 0.001 = 7 \times 0.0004 + 0.012 + V \times 0.0004 - \bar{V} \times 0.0007$$

Carbonic acid at end of hour for each person.	Carbonic acid at beginning.	Carbonic acid ex- haled per head per hour.	Carbonic acid introduced.	Carbonic acid carried out.
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whence  $V(0.0007 - 0.0004) = 0.012 - 7(0.001 - 0.0004)$ , or  $V = 26$  c. m. (=918 cubic feet) for each scholar.

The author prefers to use  $u$ , the arithmetical mean of carbonic acid at the beginning and end of the hour, instead of a value obtained by analysis.

The general formula according to which the amount of ventilation can always be calculated when the quantities above indicated are known is as follows:

$$vk_2 = vk_1 + a + V\bar{k} - V\bar{u}, \text{ or } V = \frac{a - v(k_2 - k_1)}{u - k}$$

The formula shows that the greater  $k_1$  is and the smaller  $v$ , the greater is  $V$ ; that is to say, the higher the amount of carbonic acid at the beginning of the hour and the less the cubic space per scholar, the larger is the amount of fresh air required to keep the carbonic acid from exceeding the limit.

He uses this formula to compute the cubic meters of fresh air for one hour for one person as follows:

Individual space in cubic meters.	For young children $a=0.012$ .		For older children $a=0.015$ .		For adults $a=0.020$ .	
	Limits of impurity.		Limits of impurity.		Limits of impurity.	
	7 (in 10,000).	10 (in 10,000).	7 (in 10,000).	10 (in 10,000).	7 (in 10,000).	10 (in 10,000).
5.....	70	30	90	40	123.3	56.6
6.....	68	28	88	38	121.3	54.6
7.....	66	26	86	36	119.3	52.6
8.....	64	24	84	34	117.3	50.6
9.....	62	22	82	32	115.3	48.6
10.....	60	20	80	30	113.3	46.6

These calculations give the ventilation for one hour if the air is pure at the start. The quantity would be greater if the time were longer and the air were not pure at the start.



In determining the carbonic acid of room air the Pettenkofer method was employed in most of the analyses referred to above. A modification of that method, which is often referred to and which appears to have advantages of convenience, simplicity, and rapidity of execution, was made by Dr. W. Hesse, and a description of it is given here, taken from Winkler's *Anleitung zur chemischen Untersuchung der Industrie-Gase*. The analysis is made in the small flasks in which the air is collected by inserting the burette through their rubber stoppers without the necessity of opening them, and collection and analysis can be made in the room under examination. It should be said that Pettenkofer, who was the father of this whole branch of technical analysis, also used the same flask for collection and analysis, making the titration by a burette inserted through the stopper of the flask.<sup>1</sup> His flasks, however, were relatively large, holding 3,500 c. c.

The apparatus employed by Hesse consists (like that of Pettenkofer) of the reserve or laboratory portion, and the transportable set.

A. The laboratory apparatus comprises the following articles:

(1) A glass jar of several liters capacity, containing concentrated baryta water. The solution is prepared by adding 4 to 5 liters of distilled water to 1 kilogramme of barium hydrate with 50 grammes of chloride of barium. As the solution is used water is added from time to time as long as there is enough of the hydrate to saturate it.

(2) A flask of dilute baryta water, which is provided with a contrivance for freeing the air which enters it from carbonic acid. The latter consists of a small flask containing pumice stone saturated with a concentrated solution of potash. (See Fig. 2.) The dilute baryta

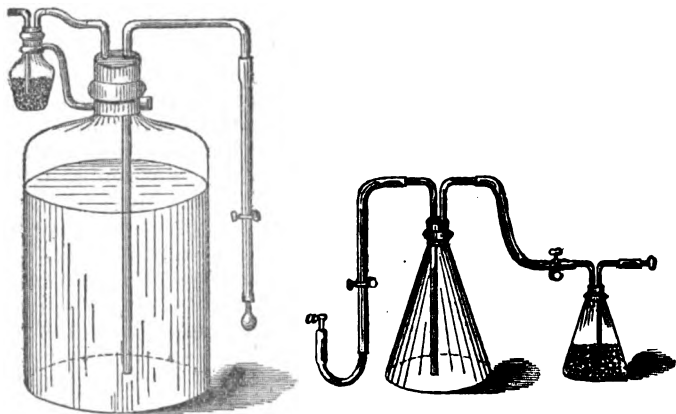


FIG. 2.

water is prepared by adding about 30 c. c. concentrated baryta water to every liter of distilled water, or, directly, by dissolving 1.7 grammes of a mixture of barium hydrate and chloride of barium (20:1) in a liter of distilled water.

(3) A flask of oxalic acid solution made by dissolving 5.6325 grammes crystallized oxalic acid in a liter of distilled water. One cubic centimeter of this solution indicates 1 c. c. of  $\text{CO}_2$ .

(4) A small flask of rosolic acid solution, 1 part acid to 250 alcohol.

B. The transportable apparatus consists of—

(1) Five thick-walled conical Erlenmeyer's flasks of  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ , and  $\frac{1}{16}$  liter contents, provided with well-fitting rubber stoppers with two holes bored

<sup>1</sup> Chem. Soc. Quarterly Journal, Vol. X (1858), p. 294.

through them. Each of the first four flasks is marked at the place where the end of the stopper reaches when pressed in, and the contents is scratched on the flask with the diamond. (Hesse obtained the contents by weighing the flasks empty, and filled with water.) Each of these flasks has two pieces of glass rod 3 to 5 cm. long, which fit the holes in the stoppers. They should have one end rounded in the flame and have a small knob at the other.

(2) A thick walled 10 c. c. pipette.

(3) A burette of 10 to 15 c. c. contents, graduated to tenths, having a glass stop-cock, with its end drawn out to a length of 7 to 10 cm.

(4) A flask holding 300 c. c. for dilute baryta water, provided with an arrangement for guarding against the entrance of  $\text{CO}_2$  like that described above. This flask is easily filled from the reserve flask in the laboratory by using the siphon tube of the latter, as shown in Fig. 2, by removing the glass plugs connecting the tubes of each and opening the pinch-cocks. Before beginning an experiment a few drops of rosolic acid solution are added to the baryta water to color it. The fainter the color the sharper the end reaction, but the color should not be so faint as to be indistinct. The proper depth of color lasts about three days, and then fades, so that a few more drops of rosolic acid solution must be added.

(5) A  $\frac{1}{2}$ -liter flask for dilute oxalic acid. The dilution is made by running 25 c. c. of the titrated oxalic acid solution into a 250 c. c. flask, and filling to the mark with distilled water. (This solution is therefore one-tenth as strong as the laboratory solution, so that 1 c. c. indicates  $\frac{1}{10}$  c. c. of  $\text{CO}_2$ .)

(6) A thermometer.

(7) A barometer (small aneroid).

The solutions allotted to the transportable apparatus are sufficient to allow of making 30 separate determinations, or (including the control determinations and standardizing) at least 10 experiments.

With reference to conducting the carbonic acid determination by Hesse's method it should be premised that every determination is made in duplicate, with a different volume of air. According as there is reason to suspect a greater or less proportion of carbonic acid in the air, flasks of one-half and one-fourth, or one-fourth and one eighth, or one-fourth and one-twelfth liter capacity are employed to collect the air for examination. The flasks are filled with the air of a place by filling them on the spot with water which has acquired the temperature of the place, emptying them, and rinsing them with distilled water, care being taken not to warm the flasks with the hand and not to allow the breath to enter them. To absorb the carbonic acid, the 10 c. c. pipette is pushed through one of the holes of the rubber stopper which is to close the flask, is rinsed with a little baryta water (by removing the plug at *a* (Fig. 2), inserting the tip of the pipette there, opening the pinch-cocks, and sucking the baryta water into the pipette), and is then sucked full of baryta water to the mark; the stopper carrying the pipette is then fitted into its place in the mouth of the flask and the baryta water is allowed to run in. While this is going on the other hole in the stopper is kept partly closed with the finger or a glass plug, so that the air can just escape from the flask. Then the glass plug is fitted in tightly, the pipette is withdrawn after warming with the hand for a moment while the upper end is closed with the finger, to empty it, and the hole it occupied is also closed with a glass plug. The same operation is repeated with another flask of a different capacity, and both vessels are allowed

to stand some time with occasional shaking while the strength of the baryta water is determined.

This is done as follows: by a preliminary trial it is found how much oxalic acid solution is needed to exactly neutralize 10 c. c. baryta water which have been run directly into a flask for that purpose. Nearly as much oxalic acid solution as was found to neutralize the baryta water in the previous experiment is run into the one-sixteenth liter flask and 10 c. c. of the baryta water to be examined are run directly into it from a pipette, whereby a slight coloration is produced (the dilute baryta water being tinted with rosolic acid) because the baryta water is in slight excess. The exact neutralization is then effected by adding the oxalic acid solution from the burette drop by drop, and the volume is read off. This way has the advantage that the titration can be made with great accuracy even in an atmosphere rich in carbonic acid, because the fluid never becomes alkaline enough to take up noticeable quantities of that gas from the air.

In titrating the baryta water which has been shaken with air in the flask, the usual separation of the precipitated carbonate of baryta is dispensed with and the titration is carried on directly in the flask in the following way. One of the glass plugs is removed from the rubber stopper and is replaced by the drawn out end of the burette containing the oxalic acid solution. The end should be pushed as far down into the flask as possible (see Fig. 3). Then the stop-cock of the burette is opened and the acid solution is allowed to run into the flask, at first rapidly and finally drop by drop. If the pressure in the flask becomes so great as to hinder the flow of the solution, it can be relieved by lifting the glass plug for an instant. As soon as decolorization occurs the quantity of solution used is read off on the burette, and the baryta water in the second flask is titrated in the same way. It is obvious that with small percentages of carbonic acid the accuracy of the results will be greater, the larger the volume of air operated on, and Hesse accordingly uses a flask of  $\frac{3}{4}$  to 1 liter capacity whenever the carbonic acid is expected to be below the limit for inhabited rooms, as in the open air, or indeed whenever the greatest accuracy is desired. The baryta water must always be taken in sufficient quantity to make sure of an excess of baryta. The small quantity of carbonic acid which the inflowing baryta water takes from the air it displaces, may be disregarded.

In calculating the analysis the volume of air operated on should be reduced to 0° C. and 760 mm. barometric pressure for the sake of comparison, by the usual formula, which is

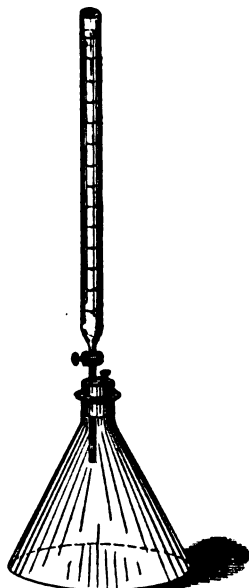


FIG. 3.

$$v_0 = \frac{vb}{760(1 + 0.003665t)}$$

where  $v_0$  is the volume of air reduced to 0° C. and 760 mm.,  $v$  the volume of air operated on,  $b$  the observed height of the barometer (or reading of the aneroid) at the time of the experiment, and  $t$  the temperature (centigrade) at the same time.

*Example.*—If  $v=556$  c. c.,  $b=740$  mm., and  $t=16^\circ$ , then

$$v_o = \frac{556 \times 740}{760 (1 + 0.003665 \times 16)} = 511 \text{ c. c.}$$

When no barometer is available a correction for temperature alone is made by using the formula  $v_o = \frac{v}{1 + 0.003665t}$ , in which  $v_o$  is the volume corrected for temperature,  $v$  the volume of air in the flask, and  $t$  the temperature (in centigrade degrees) at the time of the experiment.

*Example.*— $v_o = \frac{556}{1 + 0.003665 \times 16} = 525$ . (If the temperature is below  $0^\circ$  C.

the formula becomes  $v_o = \frac{vb(1 + 0.003665t)}{760}$ .)

Suppose  $v=223$  c. c.,  $t=19^\circ$ ,  $b=739$  mm., the quantity of oxalic acid which will neutralize 10 c. c. of baryta water = 11.5 c. c., and the quantity found necessary to neutralize the baryta water in the experiment = 6.2 c. c. Then  $11.5 - 6.2 = 5.3$  c. c. less of the oxalic acid solution was needed to neutralize the 10 c. c. of baryta water introduced into the flask than 10 c. c. of pure baryta water required, which difference is due to the carbonic acid absorbed from the air of the flask by the baryta. As the normal oxalic acid was of such strength that 1 c. c. = 1 c. c.  $\text{CO}_2$ , while the dilute solution used in the experiment is one-tenth as strong, the 5.3 c. c. are equivalent to 0.53 c. c.  $\text{CO}_2$ , which have combined with the baryta. Then we have the proportion, the air of the flask (= 223 c. c. - 10 c. c. baryta water run in = 213 c. c.) is to the  $\text{CO}_2$  it contains (= 0.53 c. c.) as one liter (= 1000 c. c.) is to  $x$ , the quantity of  $\text{CO}_2$  in a liter, = 2.49 c. c., the air not being reduced to  $0^\circ$  and 760 mm. After reduction by the above formula 213 c. c. become 194 c. c. Hence, 194 c. c., the corrected volume of air, is to 0.53 c. c., the amount of  $\text{CO}_2$  it contains, as 1,000 c. c. is to 2.73 c. c., or the air contains 2.73 parts in a thousand (or 27.3 parts in 10,000).

As the Pettenkofer method and its modifications involve some trouble and skill, simpler means have been proposed for estimating roughly the degree of respiratory impurity in the air as measured by its carbonic acid. Some of these are described here without comment.

One method is to use a small bottle containing baryta water connected with a hand ball of known contents, so that measured quantities of air can be pumped through the bottle and baryta water until a turbidity is produced. The number of pumps corresponding to a given amount of carbonic acid is ascertained, so that the appearance of the turbidity indicates at once the amount of carbonic acid.

The details are as follows (see Fig. 4). A bottle holding about 50 c. c. is provided with a cork

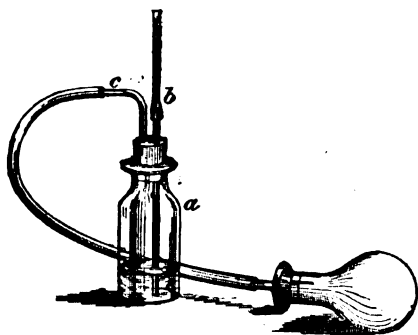


FIG. 4.

having two holes bored in it. Through one of the holes passes a glass tube  $b$ , which reaches nearly to the bottom of the bottle, and to its outer end is attached a piece of thin-walled rubber tubing. Through the other hole is fitted a bent glass tube which extends only a short

distance beneath the cork, and is connected outside with a thick-walled rubber tube about a foot long. This tube, which should have a short slit made lengthwise with a sharp knife near its end *c* to act as a valve, is connected with a hand ball such as is used for spraying, and can be bought readily. The contents of the ball should be ascertained by inserting the end of the tube into a measuring glass filled up with water, and inverted over water. In some cases it is about 28 c. c., but on compression by the action of the hand only yields 23 c. c. Seven c. c. of clear baryta water (of a solution of about 6 grammes to the liter) are introduced into the bottle, which is first filled with the air of a place by a few compressions of the ball, and then the stopper is replaced, and the bottle is shaken. From the size of the bottle (50 c. c.) this answers to two emptyings of the ball. Then the small caoutchouc tube connected with the long glass tube is squeezed together by the finger and thumb and the hand ball is compressed. The air escapes through the slit in the caoutchouc tube connected with the hand ball, and on releasing the latter and leaving the other caoutchouc tube free, air enters the bottle through it and the long glass tube (because the walls of the slit are closed by external pressure), and passes through the baryta water. The bottle is shaken again, and if there is no turbidity the pumping operation is repeated until it appears. To make the turbidity more evident a piece of paper may be gummed on the bottle, having on the inner side a lead pencil mark which should be below the level of the liquid in the bottle. When on looking through the liquid the mark becomes indistinct, the right point has been reached.

The following table shows the amount of carbonic acid corresponding to the emptying of a ball of the above dimensions:

No. of emptyings.	Volumes of CO <sub>2</sub> in 10,000 of air.	No. of emptyings.	Volumes of CO <sub>2</sub> in 10,000 of air.
4	22.0	12	7.4
5	17.6	13	6.8
6	14.8	14	6.3
7	12.6	15	5.8
8	11.0	16	5.4
9	9.8	17	5.1
10	8.8	18	4.9
11	8.0		

Angus Smith recommends a hand-ball of two ounces, and a bottle of the same capacity + the space required for the baryta water, viz, half an ounce. Then when the bottle is filled with the air of a place by one or two pumps of the ball before the liquid is put in, that counts for one ballful of air. The baryta water is then put in and the operation continued. His table is as follows:

Number of strokes of the finger-pump.	Per cent. of carbonic acid in the air.	Actual amount of carbonic acid in the air of the ball in c. c.
1	.444	.2515
2	.222	.1257
3	.148	.0838
4	.111	.0629
5	.088	.0503
6	.074	.0419
7	.063	.0359
8	.055	.0314
9	.049	.0279
10	.044	.0251
11	.040	.0229
12	.037	.0209
13	.034	.0193
14	.032	.0180
15	.029	.0167

Another application of the same principle is a simple apparatus invented by Prof. Dr. Wolpert, of Kaiserslautern, Germany. It consists of a small glass cylinder for holding lime water and a small glass tube provided with a rubber hand-ball, of known capacity, for bubbling air through the lime water. More in detail, the glass cylinder or tube for the lime water is  $4\frac{1}{2}$  inches long and  $\frac{1}{2}$  an inch in diameter, and has a white porcelain bottom. On the inside of this white bottom are marked in black the figures 1882, which are easily seen on looking down the tube. On the side of the tube, about an inch from the bottom, is a mark to indicate the height to which clear lime water is to be poured when the experiment is made. On taking the hand-ball tube to any part of a room and squeezing the ball the air it contains is expelled, and is replaced by that of the locality when the hand pressure is relaxed and the ball recovers its shape. The tube is now placed in the glass cylinder, which is held upright in a small wooden support and has been filled to the mark with lime water, with its end against the bottom of the cylinder, and its air is squeezed out so as to bubble up through the lime water. The operator should regulate the pressure so as not to allow any of the lime water to bubble over the top of the cylinder or to be sucked up into the hand-ball. This operation is to be repeated until, on looking down the tube at the black figures 1882, they just become illegible on account of the turbidity produced in the lime water above them by the carbonic acid of the air which has been bubbled through it. A printed table accompanying each box of apparatus gives the proportion of carbonic acid in 1,000 parts of air corresponding to the number of squeezes of the hand-ball necessary to produce the turbidity above described. Thus, if 20 squeezes of the hand-ball cause turbidity enough to obscure the dark figures, there is 1 part of carbonic acid in 1,000 of air (or 10 parts in 10,000). Ten squeezes indicate 2 parts in 1,000 (or 20 in 10,000), and so on. If, therefore, from ten to twenty squeezes produce enough turbidity to obscure the mark, the air under examination is very bad; if more than twenty are necessary, the air is tolerable or good, according to the number of squeezes, 50 being the maximum number and indicating pure air.

Blochmann's method for estimating the carbonic acid in room air is in substance as follows:<sup>1</sup> he uses a flask of 505 c. c., introduces into it 5 c. c. of lime water saturated, and of known strength, and three drops of phenolphthaleine (1 part in 1000 of 60 per cent. alcohol). The flask is then closed with a stopper carrying a long glass tube reaching nearly to the lime water, and a short bent tube through which suction can be applied. He sucks the flask full of air and shakes it two or three minutes, and so on, until the phenolphthaleine loses its color. Some of the carbonic acid to the extent of 10 per cent. escapes unabsorbed, but a correction is made for this. The following is a corrected table:

Number of fillings.	Volume of carbonic acid in 10,000.	Number of fillings.	Volume of carbonic acid in 10,000.
1	60	11	5.5
2	30	12	5.0
3	20	13	4.6
4	15	14	4.3
5	12	15	4.0
6	10	16	3.8
7	8.6	17	3.6
8	7.5	18	3.4
9	6.7	19	3.2
10	6.0	20	3.0

<sup>1</sup> Fresenius: *Zeitschrift für analytische Chemie*, 23, 1884.

This method was checked by the Pettenkofer method, and the following table shows the degree of accuracy it possesses when the two are compared :

Number of fillings.	Carbonic acid from preceding table.	Carbonic acid of the same air by the Pettenkofer method.
10-11	5.5- 6.0	5.8
8- 9	6.7- 7.5	7.1
7	8.6	8.8
6- 7	8.6-10	9.5
6	10	9.7
5	12	11.5
4	15	15

A compact apparatus for showing the amount of carbonic acid in room air has been devised by Mr. F. N. Owen of New York, and is described in the *Sanitary Engineer* of April 3, 1884, and in Dr. Billing's work before referred to. It consists essentially (see Fig. 5) of an aspirator which is formed of two graduated tasks placed mouth to mouth, connected with glass tubes furnished with stop-cocks, and set in a revolving frame so as to act continuously. On the outside of the box

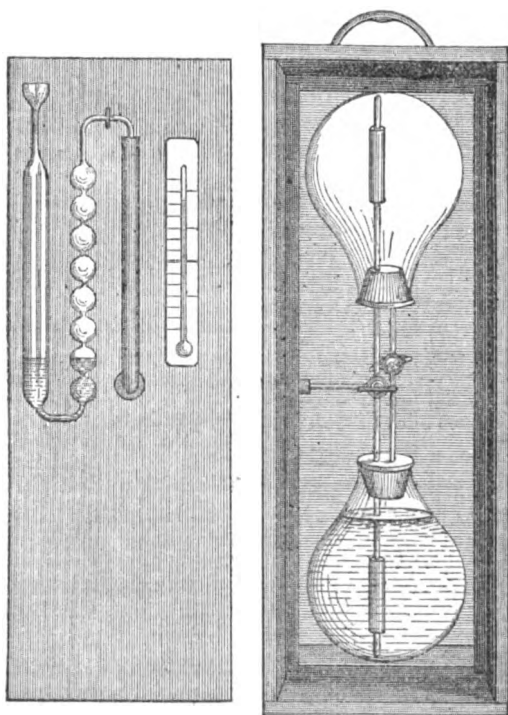


FIG. 5.

containing the frame is fixed a set of glass bulbs containing dilute baryta water tinged crimson with phenolphthaleine, and connected with

the aspirator through a glass tube. On bringing the flask filled with water uppermost and allowing the apparatus to work, the carbonic acid of the air on passing through the baryta solution decolorizes it, and when this occurs the action of the aspirator is stopped and the quantity of air which has passed through the apparatus is read off on the graduated flasks. Tables have been prepared which render calculations unnecessary, and show at a glance the proportion of carbonic acid in the air which has passed through the baryta water.



# THE ALLEGED INCREASE OF NEAR-SIGHTEDNESS AMONG SCHOOL CHILDREN.

*Report of a Committee of the National Educational Association.*

*Mr. President and Members of the Congress*—Your attention is respectfully called to the facts herewith presented, as transcribed from an article on "School Room Diseases" by Dr. Rudolph Virchow, of Berlin, Prussia, and furnished to your committee in August, 1880, by Mr. Charles Warren, then acting Commissioner of the Bureau of Education, Washington, D. C.

The first reliable facts, based on the most thorough investigations, were published in 1866 by Dr. Herman Cohn, of Breslau, Prussia. He has examined five village schools in Langenbielau (a village of Silesia), and the following schools in the city of Breslau: Twenty elementary schools, two higher girls' schools, two intermediate schools, two *realschulen* (non-classical colleges), and two *gymnasien* (classical colleges). Of the 10,060 scholars in these institutions, Dr. Cohn examined 6,059 himself, while the remainder were examined by teachers according to careful instructions. Of the students of the University of Breslau, Dr. Cohn personally examined 410. Among the 10,060 scholars, \* \* \* there are ten per cent. near-sighted, distributed in the following manner:

<i>School.</i>	<i>Per cent. near-sighted.</i>
In the village schools .....	1.4
In the city elementary schools .....	6.7
In the higher girls' schools .....	7.7
In the intermediate schools .....	10.3
In the "real schools" .....	19.7
In the "gymnasia" .....	26.0
Of the 410 university students examined .....	60.0

This shows that near-sightedness steadily increases from the lower grades of schools to the higher ones. The same principle of increase may be observed in each of these schools, taken separately, showing a gradual increase from the lowest to the highest class, according to the following percentage:

School.	Per cent. near-sighted by classes.					
	VI.	V.	IV.	III.	II.	I.
Elementary schools .....	.....	.....	2.9	4.1	9.8	9.8
Gymnasia .....	12.5	18.2	23.7	31.0	41.3	56.8

Not only does the number of short-sighted cases increase from one class to the other, and from one grade of school to the other, but also the degree of short-sightedness.<sup>1</sup>

[Thus], in the thirty-three schools of Breslau, including its university, Dr. Cohn examined 10,060 pupils of all grades, and found that 1,004 of the number, distributed among all the schools, were near-sighted; and that only twenty-eight of these had near-sighted parents. Of the children who were yet in their first half-year of school life, only 0.4 per cent. were near-sighted. Thence, upward, through seven biennial

<sup>1</sup> Circular of Information, Bureau of Education, August, 1870, pp. 21-22.

grades, the percentage increased till it reached 63.6 per cent. of those who had been fourteen years at school. The disease was found also to be progressive in degree.

Results bearing a striking correspondence with these have since been reported by various eminent European oculists, chiefly the following: of 4,358 examinations by Dr. Erisman, of St. Petersburg, in 1871; of 1,058 by Dr. Reusse, of Vienna, in 1872-'75; of 3,036 by Dr. Conrad, of Königsberg, in 1874-'75; and of 1,846 by Dr. Pflüger, of Lucerne, in 1876.<sup>1</sup>

For further facts pointing to the same conclusions, see the report of Dr. E. Javal, Director of the Laboratory of Ophthalmia at the Sorbonne. This report was read at the International Educational Congress at Brussels, in 1880, and valuable extracts were published in the *New Education* for February, and in the *School Bulletin* for March, 1881.

So much for investigations made in Europe. In America the results point to the same conclusions.

The honor of originating and carrying forward the work in this country belongs to Dr. Cornelius R. Agnew of New York. He has been ably seconded by Dr. Edward G. Loring, Jr., Dr. W. Cheatham, Dr. Peter A. Callan, and Dr. R. H. Derby, of New York; Drs. Prout and Matthewson of Brooklyn; Dr. Ayers and Dr. E. Williams of Cincinnati; Dr. Lucien Howe of Buffalo; Dr. Hasket Derby of Boston; and many others. Though the results of these investigations differ in no respect from those of Dr. Colin, yet a few references to them may not be out of place in this report.

Dr. W. Cheatham examined 549 students of New York College, with the following results:

<i>Class.</i>	<i>Per cent. near-sighted.</i>
Introductory .....	29
Freshman .....	40
Sophomore .....	35
Junior .....	53
Senior .....	37

In Brooklyn, Drs. Prout and Matthewson examined 300 in the Polytechnic Institute.

<i>Class.</i>	<i>Per cent. near-sighted.</i>
Academic .....	10
Collegiate .....	28

In Cincinnati Dr. Ayers and Dr. E. Williams examined 630 students.

<i>School.</i>	<i>Per cent. near-sighted.</i>
District .....	10
Intermediate .....	14
Normal high .....	16

Dr. Lucien Howe examined 1,003 of the Buffalo public school students with the following results:

<i>Age of students.</i>	<i>Per cent. near-sighted.</i>
Six years and under .....	5
Seven .....	11
Eleven .....	19
Thirteen .....	26
Eighteen .....	43
Over twenty-one .....	

<sup>1</sup> *Effects of Study on the Eyesight*, by Ward McLean; *Popular Science Monthly*, Vol. XII, p. 76.

During the summer of 1876, Dr. E. G. Loring, Jr., of New York, assisted by Dr. R. H. Derby, examined the sight of 2,000 pupils of the Twelfth Street public school and the normal school in Sixty-sixth Street, New York. Their ages ranged from six to twenty-one years. As in the other examinations cited, myopia was found to affect a very small percentage of the pupils in their first year, and to increase yearly and largely thereafter, to the close of school life; and that the average *degree* of near-sight increases with the age up to twenty-seven years.

In the fall of 1875, Dr. Hasket Derby, of Boston, commenced a series of examinations at Amherst College, with the purpose of noting the progress of near sight in the same class and in the same individuals. The freshman and sophomore classes—1880 and 1879—were required to report to him; and 27 per cent. of the former and 28 per cent. of the latter were found to be near-sighted. In the fall of 1876 they were again examined, when the disease was found to have progressed in one-half the number of those previously [examined and] found to be myopic.<sup>1</sup>

At this point in the investigation the question would naturally arise whether this increase of near-sight is confined to young persons who attend school, or will it not be found among all classes of young people, whatever be their occupations? Upon this point the observations have not been so numerous, yet enough has been done to make a conclusion fairly certain.

Dr. Cohn examined the eyes of many peasant children, living in a state of comparative simplicity, and having little or no occasion to tax or strain the sight, and found that hardly two in a hundred of them were near-sighted. Examinations have been made also of the sight of young factory operatives in large manufacturing towns of Europe, and the results exhibit a low percentage of myopia, corresponding to that of the peasant children here cited.

Dr. Lucien Howe of Buffalo reports as follows:

Of 213 cases of eye diseases seen during the last year among the paupers of Buffalo the record shows only 3½ per cent. to have been near-sighted.

Dondus remarked this difference between his private patients, representing the wealthy and cultivated class, and his hospital patients: that while over-sight was distributed between the two classes in nearly equal proportion, near-sight occurred much more frequently among his private patients.

Dr. Peter A. Callan of New York has made some investigations on near-sight among the colored children of that city, which should not be neglected in this connection.

He examined the sight of 457 colored school pupils, aged from five to nineteen years, of the New York public schools Nos. 3 and 4, and he found but 2.6 per cent. of them near-sighted. This field was selected because it was thought to furnish the nearest approach to the normal eye to be found in this locality. The Southern freed-men, he thinks, would afford the best possible field for this special line of investigation. As a class, the colored people of New York, prior to this generation, had very limited educational advantages, and the occupations that tax the sight, like engraving, etc., have never been known among them. But as these 457 subjects are now receiving the best school-training that the city affords, the superior condition of their sight must be referred to their freedom from hereditary tendency to myopia.

For many of the facts presented above, your committee is indebted to a valuable article by Mr. Ward McLean, published in the *Popular Science Monthly* for November, 1877.

From the vast array of facts here presented, covering about 40,000 cases, the following conclusions force themselves upon us in a manner truly irresistible:

(1) That among young persons that have never attended school, and among children when they first enter our institutions of learning, the percentage of near-sight is very small indeed, it being often impossible to find a single case.

(2) That very soon after entering school some children begin to show symptoms of the disease.

<sup>1</sup> *Popular Science Monthly*, Vol. XII, p. 78.

(3) That the number of children afflicted, and the degree or intensity of the disease, gradually but surely increase through the entire school life, from class to class, from year to year, until, when the colleges and universities are reached, in many cases more than half the students are near-sighted.

The facts presented and the conclusions that irresistibly follow may well cause us to stop and question. Is it necessary that half or more of those who get an education must impair their sight in the getting? or may this disease be traced to errors that can be corrected? It is hard to believe that Nature makes human beings in such a slipshod manner that they can become educated only by the sacrifice of their eyesight. So large a percentage of near-sight, increasing, as it does, the farther students advance in their school-work, is strong presumptive evidence that there is something wrong in our manner of teaching. Are our methods Nature's methods? for here, as elsewhere, Nature is very sure to guide us safely.

Before the child ever sees the inside of a school room, he learns many useful things, often more than in the next five years after; and yet this learning does not injure his eyes. All the investigations made show that children are free from near-sight at the time of entering school, but almost immediately thereafter the disease begins to show itself. This is conclusive evidence that the fault, to a great degree at least, is in the school.

Nor need a man be very fully learned in the methods of deductive philosophy, to foretell that the results must be substantially as our examinations have shown them. Before his school days begin, and while the child is really learning, and that too very rapidly, all the knowledge he gains is real knowledge of concrete things, gained through the use of all his senses and all his activities, by being brought into contact with the things he learns about. He is free to sit still or to move; to fix his attention upon a thing so long as it interests him, and then to leave it for something else.

But at school nearly everything is unnatural. As often as otherwise the child is seated on a hard bench, so high that his feet cannot touch the floor, with the back so straight that a comfortable position is impossible, and with the desk so far in front of him that he cannot use it without leaning forward much farther than is good for either his back or his eyes. And there, with foul air to breathe, with windows shaded improperly or not at all, with the light coming from the front as often as otherwise, and with nothing to make the place look cheerful or home-like, he is confined for six hours a day, five days in the week, from twenty-eight to forty-five weeks in the year, and for as many years as his constitution can stand such abuse or his parents afford to send him. In this room he seldom comes into contact with natural things, or even with representations of them, excepting his teachers and fellow students, and they are usually made as unnatural as possible. Seated on his high, hard bench, prohibited from looking to the right or to the left, book in hand, he is committing to memory the words of the author; and this they call getting an education!!

"What's in a name?" To go into some of our model city schools and see the children sitting there in nice, long, straight rows, all noiseless, all motionless, all afraid to move the head or change position, resembling rather so many lifeless, waxen dummies than living, feeling, thinking boys and girls, a stranger would naturally conclude that those children had committed some horrible crime for which they were suffering punishment, or that an effort was being made to make over a room full of

children into a room full of blockheads; and in this last conclusion he wouldn't be far from right.

Your committee received too late to be put into the body of this report a pamphlet giving the results of an examination of the eyes of the school children of Rockford, Ill., made in 1880 by Drs. W. H. Fitch and F. H. Kimball. The results are in perfect harmony with those given in the first part of this report and need no comment, but we beg time to quote one short passage:

Another interesting fact was noted during our work. Two of the schools under examination, of the same grade exactly, had adopted two different methods of instruction. In one, the Fourth Ward school, text-books were but little used, the teachers depending almost entirely on blackboard instruction; in the other, the Chestnut Street school, the old method of teaching with text-books was employed. The examination of these two schools was made with more than ordinary care and the results are perfectly correct. In the Fourth Ward school the total amount of myopia with both sexes and all ages was but 3.2 per cent., while in the Chestnut Street school the total myopia was 7.5 per cent. Here we have the amount of myopia reduced over one-half by the employment of a more rational method of instruction. Comment is superfluous.

Your committee is of the opinion that the practice of requiring pupils to commit their lessons from books is not only the cause of much of this near-sightedness, but that it is a pernicious practice from every point of view, and more especially so when much of the so-called studying must be done at home evenings. Students under fourteen or fifteen years of age should never be required to do much studying out of school hours.

Fewer hours of study and more rational modes of teaching, less cramming of mere memory and more healthy development of the intellect, will make brighter, healthier, more intelligent students, who will develop into stronger, sturdier, more energetic men and women. For such as these the practical affairs of life offer many and varied spheres of usefulness, while for the fallow-faced, narrow-chested, weak-eyed, book-worm, there is no room in a busy world.

All of which is most respectfully submitted.

C. J. BUELL,	} Committee.
EDWARD SMITH,	
A. W. NORTON,	
C. HENRY KING,	
W. H. LENNON,	

## ON THE CAUSES OF INCREASING NEAR-SIGHTEDNESS AMONG SCHOOL CHILDREN.

*Report of a Committee of the National Educational Association.*

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*Mr. President and Members of the Congress*—One year ago a Committee on the Alleged Increase of Near-sightedness among School Children presented a report, based upon the results of examinations made in this country and Europe, on the eyes of about thirty thousand persons of all grades of intellectual attainment, from those who had never engaged in study to the highest classes in the universities.

As a result of these examinations, your committee reported the following conclusions:

(1) That among young persons who have never attended school and among children when they first enter our institutions of learning, the percentage of near-sight is very small indeed, it being often impossible to find a single case.

(2) That very soon after entering school some children begin to show symptoms of the disease.

(3) That the number of children afflicted and the degree or intensity of the disease gradually but surely increase through the entire school life from year to year, until, when the colleges and universities are reached, in many cases more than half the students are near-sighted.

The human eye is very much like a hollow sphere, with a small opening on one side through which rays of light may enter. Just behind this opening is a double convex lens, through which the rays of light must pass on their way into the eye. As the rays pass through this lens they are all bent in such a way that they are made to come together at one point, called a focus, somewhere behind the lens. At this focus is formed a small image of the object, from which the rays of light are reflected. In the back part, and covering the inner surface of this hollow sphere, is a coating of peculiarly modified nerve tissue, called the retina, which is sensitive to light, and which is connected by the nerves of sight directly with the brain.

Now if the rays of light, which have been bent in passing through the lens in the front part of the eye, come to a focus upon the retina, then the impression made by the image is conveyed to the brain, and we say we see such or such a thing, whatever it may be, from which the rays are reflected; but if the rays come to a focus anywhere else but on the retina no clear impression will be conveyed to the brain, and we will have either no sensation of sight at all or a very imperfect one.

If the object from which the rays of light come into the eye be placed far away from the eye, the more nearly parallel will be the rays, and consequently the farther forward in the eye will be the place where they will be brought together at a focus. The nearer the object is to the eye, the farther back will be the focus where the rays converge. From this it follows that to be distinctly seen an object must not be too near the eye, nor yet too far away, but that it must be in such a position that its image will be clearly outlined upon the retina.

It is also evident that if the eye be so long from front to back that the rays come together before they reach the retina, or, if it be so short that the rays do not come together till after they reach the retina, then in neither case will there be any perfect image of the object on the retina, and consequently no complete vision.

Again, the *more convex* the lens by which the rays are bent to a focus, the *nearer* the lens will the focus be; while the *less convex* the lens, the *farther back* will the focus be. Accordingly the lens may be either too convex, or not enough so, to focus the rays on the retina and produce distinct vision.

Thus we see that there are three factors to be considered in order to understand the process of seeing plainly: the distance of the object from the eye, the length of the eyeball from front to back, and the convexity of the lens.

In the eye is a little muscle, called the ciliary muscle, or the muscle of accommodation, whose function it is to lessen the convexity of the front surface of the lens (see "Physiology and Hygiene", by Huxley and Youmans, pp. 262-263), and thus adjust the eye to distant objects. When the muscle relaxes, the front surface of the lens becomes more convex, and the eye is adjusted to nearer objects.

In the normal eye the length of the ball and the mechanism of adjustment are such that objects are distinctly seen when placed about the natural distance from the eye. When the eyeball is too short and the power of adjusting the lens is such that to be plainly seen an object must be placed farther away than usual, the eye is said to be *over-sighted*.

Now, when the ball is longer than usual, or the ciliary muscle is unable to flatten the lens sufficiently to secure distinct vision without bringing the object nearer the eye than usual, such an eye is said to be *near-sighted*, and a person whose eyes are in this condition is said to suffer from near-sightedness.

Consequently, it follows that anything that has a tendency to elongate the eyeball or to adjust the lens to nearer objects, will help to produce near-sight.

Perhaps one of the most usual causes is the prolonged straining of the eye in reading fine print, or in doing any fine work, by insufficient light. The continuous and unrelaxing tension of the muscle of accommodation causes it to lose a part of its elasticity, and consequently to weaken its control of the lens. Another effect of a prolonged strain of the eyes is seen in "the contraction and consequent thickening of the muscles that pull the two eyes inward so as to focalize the sight upon a near object," thus causing a pressure on the sides of the eye and a corresponding lengthening of the ball from front to back. "The prone position of the head causes the blood to settle in the eyeballs, increasing the tension of the fluids, exciting inflammation and consequent softening of the coatings, and resulting in permanent distention." School desks are usually so low and placed so far away from the scholars that it is necessary to lean well forward and to bow the head considerably, if the desk is to be of any benefit to the user. This could easily be remedied and much near-sightedness avoided.

To study to the best advantage, the light should come, not from the front, for then it shines directly into the eyes; not from behind, for then the student is in his own light; but from the sides; and it is better if the light can come from the left than from the right side; for the right hand, being the one most used, will throw a shadow over the work, if the light come from that side. Many school-houses are not

sufficiently lighted ; or, if light enough be admitted, it comes from the wrong direction. School-rooms should be placed far enough from other buildings so as not to be shaded by them ; a sufficient number of large windows should be provided ; the school building should stand in such a position that as few windows as possible shall admit the direct glare of the sun, and then such windows should be provided with translucent shades of an agreeable color. The walls, also, of the school-room should be of a color pleasant to look at. These precautions on the part of architects and school boards would secure proper light for the children to work by while in school.

At home the same care must be taken, or the effects will still be bad. Many people ruin their eyes by reading or doing fine work at the hour of twilight. It is astonishing how few people provide themselves with lamps properly shaded, and yet lamp shades are not an expensive luxury. Dim lights, like the old-fashioned tallow candles, are very injurious to the eyes ; so also are any lights that burn unsteadily. Of course, the best light of all is diffused sunlight, and any artificial light will be injurious just in proportion as it departs from the natural standard.

Not only the light admitted to our school-rooms, but also the books, slates, and other materials used by students in preparing their lessons may have much influence in causing near-sight. The paper used in our school books should be so thick that the words will not show through ; it should not be the clear bluish-white so often used ; unbleached is far better, for from it the light is reflected less glaringly ; the type should be large and clear ; the lines well separated and not too long. But books made in this way cost more, and we are strongly tempted to purchase such miserable eye-destroyers as are most of the publications of the American Book Exchange. Your eyesight is worth far more than the difference in price. Near-sight is more frequent in Germany than in any other country, and Dr. E. Javal, Director of the Laboratory of Ophthalmia at the Sorbonne, considers this largely due to the peculiar form of the German letters, and to the practice

among Germans of having their children read a great deal out of school hours, and pass the evening hours with an imperfect light, in deciphering Gothic characters printed upon a greasy, half-transparent paper. \* \* \* This pernicious influence upon the sight, of reading in the evening, is very perceptible in Alsace, where, since the annexation, the number of near-sighted people is visibly increased, without our being able to find any other difference in the régime than the introduction of German books into the class-rooms, and the obligation imposed upon the children to use them in the evenings, which is only done exceptionally in the French villages.

Greasy slates should be avoided ; also lead pencils so hard that they make an indistinct mark.

Bad ventilation is quite generally regarded as the greatest curse of our northern, in-door civilization, but its evil effects upon the eyesight may not be so well understood. Dr. E. G. Loring, Jr., of New York, uses the following words :

I am therefore of the opinion that bad air alone, acting as the primal cause, may set in train a series of morbid processes, which may, and often do affect, not only the working capacity and integrity of the organ [of sight], but which may lead even to its total destruction. Thus simple irritation of the mucous membrane of the eye may, and often does, pass into actual inflammation, which, increasing in violence, may proceed from part to part till the entire organ is involved, and thus the sight become impaired or totally lost.

Surely the average school room is none too well ventilated.

In their report of last year, your committee referred to the effects of different methods of study on the eyesight. Two separate and antagonistic



onistic methods of study are employed in our schools. The one, commonly called the old-fashioned method, because more generally used in the past than now, takes the printed page as the basis of all study. It seems to take it for granted that the entire structure of human knowledge was made and finished years ago, and that the principal duty of the nineteenth century learner is to accept without question or investigation the statements of mediæval writers. Whatever the subject may be—mathematics or science, literature or history—the students are set to committing a certain number of pages of the text book in use, and are expected to recite verbatim what they *think*, perhaps, that they have learned. The other, which I shall call the natural method, because it is the one that has been employed in getting all first-hand information since man became an observing animal, bases education on the use of the senses and reasoning powers. It assumes that the child's powers of observation are his to use; that only by use can those powers be improved; that the function of memory is to re-collect and bring back into consciousness actual perceptions; that the imagination, reasoning faculties, and powers of generalization should be cultivated in the order of their natural development; that mathematics, sciences, languages themselves should be studied, rather than some man's words about them; that the idea is worth more than the clothing in which some one has dressed it; that books are useful, very useful, for study and reference, but not to be committed verbatim; that the child's powers of speech should be increased side by side with his stock of ideas and powers of mind; and that when proving whether he understands his lesson, he should use his own words and not those of some one else.

We do not wish to be understood to oppose all memorizing—far from it; but we think that students can find exercises more suitable for this purpose than are any of their regular daily lessons. Selections for memorizing should be brief and pointed, containing in few words a great truth, a gem of thought, a valuable maxim, or a popular proverb, with the name of the author when possible. Such selections are not difficult to find, and may be used with great benefit, as witness the results of the practice in the schools of Albany.

In two of the schools of Rockford, Ill., the examining physicians found these two methods of study in use, with the following results: In the school where the text-book method was employed, 7.5 per cent. of the students were found to be near-sighted; whereas, in the school where the natural method was in use, the near-sightedness amounted to only 3.2 per cent. The schools were of exactly the same grade, and all other conditions were similar. (See "Report of the Examination of the Eyes of the School Children of Rockford, Ill.," by Drs. W. H. Fitch and F. H. Kimball.)

But why should there be this difference, amounting to  $2\frac{1}{2}$  times as much near-sight in one school as in the other? The reason is not hard to find. Most students can get an idea much quicker than they can commit to memory the words which some one has used to express that idea. Very often it is only necessary to state the subject of the next day's lesson, and many bright students will think out the work required without looking into a book or reading a word, and few students would have any trouble after reading the discussion of the subject once or twice. I have had students who demonstrated every proposition in the first three books of Euclid with no reference to a book, and without a hint from any one. To commit the demonstrations from the book would be a great tax on the eyes, and would not insure either a knowledge of

the subject or any real mental discipline. So with all text-book memorizing; it strains the eyes, requires more time, and secures but poor results, at best. We cannot too much insist upon the injury to young students from text-book study in the evening by artificial light. It is not alone the eyes that suffer from this kind of work; it is a most fruitful source of sleepless nights, nervousness, irritability, and a general uncertainty and inaccuracy that are the reverse of desirable.

Where text books are used less, more blackboards, maps, charts, etc., must be employed. In such cases the charts and maps should be plain, and care should be taken that the writing on the board be distinct. Inasmuch as near-sight is largely due to the adjustment of the eye to near objects, one of the members of your committee, Professor W. H. Lennon, of the Brockport Normal School, suggests that by habituating the eye to distant objects, near-sight may be prevented or diminished. We have the result of no observations on this point, but Professor Lennon's suggestion seems reasonable. If this is true, then blackboard exercises would rather work against near-sightedness.

One other matter of the utmost importance claims our attention. We quote again from Drs. Fitch and Kimball as follows:

The most interesting fact connected with the subject is the age at which this form of defective vision first manifests itself. We have divided all the scholars into five classes, depending upon age. \* \* \* Each class is made to include two years instead of one, in order to secure a greater number of cases and a consequent better average. Here we have arranged in a tabular form the results of this examination:

	Boys myopic.	Girls myopic.
	<i>Per cent.</i>	<i>Per cent.</i>
Class 1, aged 7 and 8 years .....	.8	2.1
Class 2, aged 9 and 10 years .....	2.5	5.9
Class 3, aged 11 and 12 years .....	2.5	5.5
Class 4, aged 13 and 14 years .....	6.8	12.0
Class 5, aged 15 years and over .....	17.7	16.8

We notice thus a gradual increase in the percentage of defect among the boys until we reach class 5 (aged 15 years and over); here a very great sudden increase manifests itself. The same gradual increase is noted with the girls until we come to class 4 (aged 13 and 14 years), and here we find the same sudden increase. Now, what does this change mean? The following seems to be the most rational interpretation of the fact. It will be seen that the increase occurs at about the age of puberty in each sex, with the boys during the fifteenth and sixteenth years, and with the girls during the thirteenth and fourteenth years, one or two years sooner. At this time all the energies, nervous and otherwise, of the system are taxed to the utmost to support the physiological changes then taking place. The system is thus poorly adapted to resist any evil influence whatever, and the amount of strain upon the eyes that under other circumstances would be resisted now yields its natural fruit in a permanent impairment of vision. The only conclusion to be drawn is obvious. Greater attention must be paid to the hygiene of vision at this time of life.

At this critical period of youth any sedentary occupation may induce morbid trains of thought, and thus lead to undesirable results. Care on the part of parents to explain to their children the nature of the physiological changes then taking place, combined with some light, attractive employment, which will afford plenty of fresh air and outdoor exercise, would be far better than school work for promoting the physical, mental, and moral welfare of young people at this time of life. In many cases all school work might profitably be omitted for a year or two, if light out-door work be furnished in its stead.

The only other point which demands the attention of your committee

refers to the influence of heredity in the production of near-sightedness. We quote from Dr. E. Javal:

As near-sightedness is more frequent in Germany than elsewhere, and as it is more frequently found in the children of cities than in those of the country towns, certain authors have concluded that it is often hereditary, and that the degree of civilization in a people may almost be measured by the number of near-sighted people it contains.

These statistical researches which we have made in Paris, quite in agreement with those made by Drs. R. H. Derby and Edward G. Loring, of New York, lead us to relegate to the second degree the influence of heredity upon the production of near-sightedness, an incontestable influence, but a sufficiently feeble one that proper care may almost always be enough to prevent the manifestation of in children whose parents are afflicted to the highest degree with it; while on the contrary we often see it produced with disastrous fatality in children of parents quite exempt from it, whenever they are subjected to influences which favor the birth of it.

Thus it appears that a very large fraction of the alarming amount of near-sightedness found among all civilized people can be traced directly to the school-room,—to the years of the child's life that are devoted to getting an education; that the circumstances that favor the birth and development of this disease operate with peculiar energy during childhood and youth; that some of the more powerful of those agents are to be sought in bad lighting, impure air, too small type, improper arrangement of school desks, unnatural methods of teaching, and a consequent overstraining of the eyes in the almost useless work of memorizing page after page of text-book; that although the increase of near-sightedness is continuous from the lowest to the highest grades of school-work, yet the progress of the disease is much more rapid at the critical period of youth than either before or after; and that though heredity may play a minor part in the production of the disease, yet there is no doubt that a tendency to near-sightedness may be transmitted from parents to children, thus, to a slight degree at least, fixing the disease as a permanent characteristic of the race.

But to show the magnitude of an evil and to point out the causes that produce it, are two long strides in the direction of its suppression. Educated people in all civilized countries are taking an interest in this subject fairly commensurate with its importance; and we may hope for a continuous and intelligent application on the part of architects, school boards, and teachers, of those measures which are fitted for preventing a further increase of this dreaded evil—near-sightedness.

C. J. BUELL,	} Committee.
EDWARD SMITH,	
C. HENRY KING,	
A. W. NORTON,	
W. H. LENNON,	

## SCHOOL HYGIENE IN ONTARIO.

BY D. FOTHERINGHAM,

*Public School Inspector, North York County, Ontario.*

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In dealing with a subject so wide and important in an article necessarily limited in extent, our remarks must be put in the form of *hints*, rather than an exhaustive treatment of School Hygiene. With this limitation in view we propose to deal briefly with the following divisions:

- I. The Provisions made in Ontario for promoting the health of the school population.
- II. The Progress made in School Hygiene.
- III. What remains to be done.
- IV. Means suggested for overtaking this work.

I. THE PROVISIONS made by the Education Department for the physical well being of the youth of the Province are evidence of the importance attached to this department of its administration, and of the intelligence and zeal of its promoters.

(1.) Much thought has been given to, and excellent regulations have been framed and enforced for, securing sufficient healthful accommodation for all between the ages of five and twenty-one years.

These regulations give prominence to healthfulness of site, size of house and grounds, suitability and sufficiency of furniture and apparatus, ventilation, lighting, and heating, separate and suitable privacy for the sexes, water supply, drainage, etc., etc.

While the taxpayers, by a majority vote at a legally called meeting, have power to locate or change a school site, careful directions are given that it shall be healthful, convenient, and large. Where the school population is under seventy-five, it may be only half an acre. Over that, it must be at least an acre.

The house must furnish twelve square feet on the floor and one hundred and twenty feet of air space for each of two-thirds of all in the section or district of school age (5-21). A class room is required for every fifty pupils enrolled, with additional recitation rooms for particular work. Separate entries and porches, with doors opening outward, are also required.

Ventilation, lighting, heating, blackboarding, etc., receive careful attention in the regulations, but without exacting special standards of sufficiency.

(2.) For many years the Education Department issued an official Monthly Journal, in which, among other matters of importance, school hygiene received frequent and prominent attention. Under the auspices of the Department a volume on school architecture was also published, and placed in the hands of leading officers connected with

the schools.<sup>1</sup> In this, great prominence is given to the most advanced views on ventilation; and detailed plans are laid down for its introduction in schools.

(3) When a well-defined course of professional training was, some ten years ago, made a condition on which any grade of teachers' certificate could be issued, physiology, anatomy, and hygiene were included in the course of study and examination; so that now no teacher takes charge of a school without a theoretical acquaintance with the principles of school hygiene. At the present time the disposition of the Education Department is to require more and better knowledge of these subjects at all the training institutions for teachers in the Province.

Further, the Minister has requested a committee of public school inspectors to collect facts and present suggestions that may help to a course of instructions and regulations which will cover largely the whole field of school-house erection and hygiene.

II. THE PROGRESS made in school hygiene during the past fifteen years has been substantial and gratifying. Fifteen years ago the law and regulations were greatly liberalized on the subject of size and sanitary arrangements, and a set of executive officers appointed, with considerable real authority and large discretionary power, to enforce improvements in the accommodation, the management, and methods adopted throughout the Province. Then began what may be called a real reformation, if not a peaceful revolution, in the conditions, the agencies, and administration of primary education in Ontario.

(1.) Nearly all schools now furnish floor and air space considerably in excess of present legal requirements, though these are greatly in advance of those of 1870. Ceilings are higher. Windows are more readily opened or shut, and usually shaded from direct or fierce light. The rudiments at least of ventilation are insisted upon; and in the cities, towns, and villages, most boards have introduced more effective means of purifying the atmosphere. Desks and seats, often very unsuitable for school purposes, and seriously harmful to comfort and health, have been replaced in most older counties by more attractive, convenient, and comfortable ones.

(2.) School sites are usually an acre or more in extent, are selected so as to avoid unsanitary influences, and not infrequently are graded and surrounded by young shade trees with flower-plots in suitable places, valuable for shelter and recreation.

(3.) Mental labor and relaxation are now made to alternate much more naturally than formerly. Calisthenic and kindergarten movements and songs are asserting and receiving more of their right place in the hourly exercises of the school room.

(4.) Any intelligent observer who saw the condition of school-houses and yards in 1870, and sees them again in 1885, cannot but be struck with the contrast. The houses now are mostly large, substantial, attractive buildings, and the grounds roomy, clean, and suitable for their purpose. This impression is confirmed by the fact that upwards of half the houses

<sup>1</sup> The following is the title of this book: *The School-house*, its architecture, external and internal arrangements, with elevations, plans, and specifications for public and high school buildings; together with illustrated papers on the importance of school hygiene and ventilation, also with practical suggestions as to school grounds, school furniture, gymnastics, and the uses and value of school apparatus. Second edition. With numerous illustrations. By J. George Hodgins, M. A., LL. D., Barrister-at-Law, and Deputy Minister of Education for Ontario.

are nearly new, and school property has doubled in value within a few years.

(5.) The teacher is by law constituted a public officer, and is required to see that everything about the school premises is in good condition, and, if not, must report to the Board, who are at once to remedy defects. He is also required to see that no pupil is admitted to, or continues in, any of the public schools who has been afflicted with or exposed to any contagious disease, till all danger of communicating the same has passed, as certified by a physician.

III. WHAT REMAINS TO BE DONE, however, is very much more than has been done. The best educationists and hygienists are hopeful, but far from satisfied. Hygienic provisions, now legally required and fairly met, are mostly of a *negative character*. They have grown out of a desire to *remedy existing evils*, more than from any matured and comprehensive plan for the thorough development of the physical nature of the child. They are designed to *prevent* enfeeblement rather than to secure the highest physical possibilities—a perfect manhood. They are not so comprehensive and radical as to take hold of immature or diseased childhood, and lead it on through a systematic and scientific course of hygienic training and development till it has been matured to become the most valuable type of citizen. Such development is now, unfortunately, mostly the result of mere accident. Ample and adequate measures are not adopted, much less enforced, to surround with, to stimulate and strengthen by, the surest and highest health promoting influences day by day. While very much has been devised and attained towards a healthful and even philosophical development of the *mind*, we are only beginning to realize that hardly second to that in importance is the necessity of developing the body also to a perfect soundness.

The *cubic space of air* required for each public school pupil, though ridiculously small when compared with that required in hospitals and garrisons, may be sufficient, even ample, if entirely renewed by the regular and rapid influx of pure and properly tempered atmosphere. Notably, however, the change is not so effected.

The *temperature* suggested for school-rooms may be the happy mean, but if windows and doors must be thrown open occasionally to change the otherwise unventilated, mephitic atmosphere, and the thermometer rushes up or down fifteen or twenty degrees in as many minutes, hygienic principles are certainly greatly strained.

If inside air is breathed and heated, then rebreathed and then reheated, or burnt on a stove in the room, it requires no doctor to understand how hurtful such an atmosphere must be.

When young people, whose bones and muscles are only in the formative stage, are obliged to occupy, for hours a day, seats without suitable rests for feet or back, and desks which compel awkward and unnatural postures of spine and limbs, it is very evident that a constant and heavy tax is laid on the vital forces of the body, which should all contribute to the healthful development of form and force.

When the delicate organs of sight are forced to do duty day by day in direct or strongly reflected light, or at small or great distances, it is pretty certain that the seeds of weakness and disease are surely being planted.

When the immature, delicate, susceptible body of a child is deprived through the school term of the wholesome and warm noon meal, and, instead, is furnished with shortbread, cold pastry, and confections,

there remains no room for doubt as to the cause of reduced average health and life.

When the instinct of perpetual motion in healthy childhood, so important a factor in physical strength, is repressed if not destroyed by hours of enforced idleness and stillness, and exercise is possible only during certain short intermissions of school work, it becomes fitful and violent. Is it to be wondered at that in these circumstances blood and bile stagnate, cheeks become pale or flushed, and the buoyance of youth gives place to hysterical outbursts of temper or will?

Considerations like these lead naturally to—

IV. THE MEANS SUGGESTED for overtaking the necessities of the case.

(1.) Educate public opinion. In common with all important reforms, this can only be effected fully by securing the co-operation of those for whom the benefit is chiefly intended. On few topics is it more difficult to enlighten the masses than on those which influence the public health. Hence the indifference, even opposition, of the illiterate, to sanitary reform; and hence the indifference to hygienic improvements in the findings and movement of public schools. This, however, must be overcome, and in its place must be secured full appreciation of wise and liberal provision for the development of strong, healthy bodies, as well as strong, healthy minds.

(2.) Require by law, in every school, the introduction of adequate ventilating arrangements, under the best plans and thorough supervision.

Till school boards are educated to the true importance of a constant and wholesome exchange of atmosphere in the school room, it is useless to expect them to make the necessary outlay or arrangements, which make no show and to them are of no value.

(3.) Systematize and enforce almost hourly drill in gymnastics, calisthenics, military motions, etc., for the express purpose of developing physical power. Let provisions of this character be as minute and matured as those for mental development.

(4.) Require that the grading of seats and desks, and their adaptation to the physical necessities and conditions of the child, shall be as favorable as those for mental growth and pleasure.

(5.) Insist that the *direction* and *quantity of light and color* admitted into school rooms shall be controlled by the best known principles of optical hygiene. Let walls, furniture, slates, etc., be tinted in colors that harmonize and rest the eye.

(6.) Provide time for a regular, deliberate, wholesome meal at noon.

(7.) Provide for sufficient, natural, and stimulating exercise and amusement in stormy, as well as fair weather.

(8.) Let the sessions of the daily school work be materially reduced, so that most preparation may be made apart from the distractions and strain of the school room.

Brief and incomplete as these hints may be, as they come from the vantage ground of present experience and attainment, it may reasonably be hoped they may prove of some practical value. And from the rapid advance of the past fifteen years it may safely be predicted that the next fifteen must witness still more gratifying progress in school hygiene, as in all other departments of education.

## SCHOOL ARCHITECTURE IN ONTARIO.

BY JOHN DEARNESS,

*Public School Inspector, County of Middlesex East, Ontario, Canada.*

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So rapidly and recently has this Province been settled and developed, that within forty years the number of school divisions or sections, and consequently the number of school-houses, have been more than doubled. A statute of what was then called Upper Canada was passed in 1850, enacting that—

It shall be the duty of the trustees of each school section to do whatever they may judge expedient with regard to the building, repairing, renting, warming, furnishing, and keeping in order the school-house and its appendages, wood-house, privies, enclosures, lands, and movable property, which shall be held by them, and for procuring apparatus and text-books for their school; also, to rent, repair, furnish, warm, and keep in order a school-house and its appendages, if there be no suitable school-house belonging to such section, or if a second school-house be required.

In the Act just quoted it was also made lawful for the Governor-in-Council to authorize the expenditure of eight hundred dollars a year to procure plans and publications, for the improvement of school architecture and practical science in connection with the common schools.

The newness of the country and the difficulties encountered by the settlers in making their homes in the forest were not the only causes that retarded improvement.

The townships as a whole were not originally laid out into school sections; but according as settlements were made, school-houses—very often rude log structures—were built in locations convenient to the group of settlers, and the sections were carved out around these nuclei. Such an irregular mode of forming sections caused them to be very unequal in size, resources, and population. The opponent of the new school-house was always present at meetings to advocate procrastination on the ground that the sections must be equalized, and then, most probably, the new house would be in the wrong place.

Notwithstanding these obstacles but few of the primitive school-houses now remain. Some of them succumbed to the scythe of time and decay, others fell into disuse by changes in the section boundaries, and many condemned by the good sense of the people gave way to the laudable determination of the majority to have better school accommodation.

Improvement in school buildings, furniture, and surroundings thus proceeded steadily but slowly until 1871, when a bill was passed by the Legislature of Ontario making the duty of providing "adequate accommodation" imperative upon trustees under penalty of forfeit of the government grant, for the loss of which they became personally responsible. Under that Act the Education Department by regulation defined adequate accommodation to be—

- (1.) A site of an acre in extent, but in no case less than half an acre.



(2.) A school-house (with separate rooms where the number of pupils exceeds fifty), the walls of which shall not be less than ten feet high in the clear, and which shall not contain less than nine square feet on the floor for each child in the section or division, so as to allow an area in each room for at least one hundred cubic feet of air for each child. It shall also be sufficiently warmed and ventilated, and the premises properly drained.

(3.) A sufficient paling or fence round the school premises.

(4.) A play ground, or other satisfactory provision for physical exercise, within the fences and off the road.

(5.) A well, or other means of procuring water for the school.

(6.) Proper and separate offices for both sexes, at some little distance from the school-house, and suitably inclosed.

(7.) Necessary school furniture and apparatus, viz: desks, seats, blackboards, maps, library, presses, books, etc., required for the efficient conduct of the school.

At the same time county school inspectors were appointed, one of whose plainly stated duties was to inquire into and report on the mechanical arrangements and the sufficiency of the accommodation of every school, and to urge the local authorities to comply with the law and regulations respecting these details as rapidly as their circumstances would permit. So fully did the most of these officers feel their responsibility in this matter, and so well did they discharge their duty, that complaints were made against them for undue urgency. The Department stood firmly by them and, in 1873, issued the following circular of instruction:

#### SCHOOL PREMISES AND ACCOMMODATIONS.

We would request the attention of inspectors to Note *a* of Regulation No. 4 of their "Duties," in which they are directed to call the attention of trustees to the condition of the school premises. In many school sections the school-house has been allowed to remain in the same state for fifteen or twenty years and longer, often on a bare open space, or on the road-side unenclosed, without a tree or shrub near by to shade it, or any provision being made by the trustees for the convenience or health of the pupils, or even for their observance of the decencies of life. The Legislature has wisely decided that this state of things shall not continue, but that, as soon as possible, a remedy shall be applied, where necessary. A reasonable time should of course be allowed to trustees in all cases to set things right; but in the meantime inspectors will, we trust, not fail to urge upon trustees the necessity of complying, as soon as possible, with the provisions of the law on this subject.

About the same time the *Journal of Education*, supplied monthly to every school section through the Education Department, rendered valuable assistance. The editor, Dr. Hodgins, who has done much more than any other man in the country to advance the cause of school architecture,<sup>1</sup> kept this subject prominently before the attention of the readers of the Journal. In 1873, particularly, every number contained elevations, plans, and description of one or more fine school-houses. In 1872, the late Chief Superintendent offered prizes for the best interior plans and block plans of sites. The offer drew forth a lively and fruitful competition. All these causes combined to give a great stimulus to improvement of school accommodation in the Province. The statistical

<sup>1</sup> J. G. Hodgins, Esq., LL. D., is the author of *The School-house, its Architecture, Arrangements, and Discipline*, published in 1858. In 1876 he brought out a revised, enlarged, and greatly improved edition. Besides treating fully of the architecture of public and high school buildings, it contains illustrated papers on school hygiene and ventilation, and suggestions as to grounds, furniture, and apparatus. Dr. Hodgins received awards of merit for these works at the Centennial Exhibition, 1876, and at the Paris Exposition of 1878.

reports showed a sudden and large increase in the expenditure for buildings and sites. In 1866 the amount expended for this item was only \$111,371; in 1870, \$207,500; but in 1875 it ran up to \$702,330. In ten years from the passing of the last mentioned bill the number of log school-houses decreased from about one-third of the total to one-seventh, and, besides, many of the old frame and brick ones were re-built or greatly improved.

Now the great majority of our 5,000 or 6,000 sections rejoice in the possession of a good brick, stone, or frame school-house. Some of our cities, many of our towns, and even villages can point with pride to their beautiful and substantial school buildings. Indeed it is probable that our rural and urban school architecture will compare favorably with that of any other country, and yet it is not on the whole a feature of our school system of which we have much cause to boast.<sup>1</sup>

Proper ventilation, lighting, warming, and seating are desiderata, the importance of which in respect to both the mental and physical welfare of the children cannot be overrated. Our law now requires that the school-room shall contain at least 120 cubic feet of air for each child. Few, if any, schools have so small a quantity. In the writer's division, containing over 100 schools, the average per child is 267 feet. The minimum ought to be 300 cubic feet, even where there are ample facilities for removing impure, and supplying fresh air of proper temperature. But in most of the rural schools there is not provided any effective means of ventilation during the time that the weather is too cold to keep the windows open.

"Our own breath is our worst enemy," and until we learn how and practice to subdue this enemy in the school-room, our educational systems will be greatly hindered in fulfilling their best intentions.

In respect to lighting we have less to complain of. The windows are generally placed in the sides only, and as high as possible; the window area varies from one-fifth to one-ninth of the floor area. The common mode of heating is by means of the old-fashioned, oblong wood-stove.

In some schools the stove is partially jacketed by a closely-fitting case of zinc or galvanized iron, making a hot-air chamber, into which pure air is drawn from the outside by a duct. The air thus drawn in is warmed, ascends, and escapes through the opening made in the top of the chamber around the stove-pipe, or is carried up a foot or two along the pipe before it is let out. Some rural schools are heated and ventilated by means of a furnace in the basement; in some cases the basement is fitted for a gymnasium or class-room. Many schools are furnished with modern folding seats and desks, of dimensions varied to suit the different sizes of the children.

Here and there are to be found rural schools where most commendable taste has been manifested in the construction of the building and planning the surroundings. We are not compelled to draw on our imagination to see a pretty country school-house with porches and

<sup>1</sup>A new and wide-spread stimulus to the cause of improvement in school-houses and their appendages is expected from the contemplated action of the Hon. G. W. Ross, Minister of Education. He has announced his intention of offering prizes for the best six or eight plans and specifications of one- and two-room school-houses. The prize plans, with general principles and directions for building under varying circumstances, and suggestions for improving existing school-houses and surroundings, are to be incorporated into a circular of information similar in some respects to that prepared by Mr. T. M. Clark for the Bureau of Education, Washington. The pamphlet is to be sent to every section in the Province. We expect it will be a valuable guide to trustees in building new school-houses, and rich in suggestions as to improvements in existing ones.

class-rooms furnished with graceful and comfortable seats and desks, supplied with wide blackboards on the end and sides, a good stock of well-mounted wall maps and charts, globe, clock, thermometer, and miscellaneous apparatus, and surmounted by an ornamental belfry, in which is hung a good bell that can be heard all over the section; the building is erected on an eligible site of rather more than an acre, which is well fenced, supplied with the necessary sheds and outhouses and a good well, and ornamented and protected by rows of evergreen and deciduous trees.

Too generally, expense for adornment is regarded as little better than wasted. Many people do not consider that the "shield of beauty thrown over property checks and often finally eradicates the rudeness which is stimulated to destruction by deformity." They lightly value the excellent influence exercised upon the tastes of the children by architectural beauty in the building in which they spend so much of the formative period of their lives.

## A. L. A. CATALOG.

BY MELVIL DEWEY,

*Chief Librarian, Columbia College, New York.*

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Every close student of libraries finds two pre-eminent difficulties staring him in the face. The first is the great expense of making the catalogs, which to the casual observer seem to absorb a portion of the funds out of all reason as compared with the cost of new books. The second is the unsatisfactory character of these catalogs after they are made.

To the high cost, those familiar with such matters very soon get accustomed. They see beyond doubt that, at whatever cost, catalogs must be had, or the library loses much of its value; and as the ablest men, who have studied this subject for years, have found no cheaper way of making them, they accept the immense expense as a necessary evil. The more thoughtful always hit upon the scheme of co-operative cataloguing, and many an eloquent essay has been written on the enormous saving that will be effected when the book will be catalogued once for all as a part of its publication, no more leaving each of the thousand libraries that buy it to go through all the processes, than leaving each to make his copy of the work itself as the monks copied their Bibles before the invention of printing. Toward this ideal we are slowly but steadily working.

The completion of the great "Poole's Index to Periodical Literature" by the co-operation of fifty libraries, showed how much might be saved. Hundreds of libraries that were spending much time and money in making MS. indexes to a few sets, now have, at the most trifling fraction of the cost, a full index in print of all the leading serials.

The American Library Association, whose first work was to carry through this scheme under Mr. Poole's able leadership, have been constantly preparing the ground for other co-operative measures. A great number of libraries have adopted the recommendations of the standing co-operation committee and are using cards of identical size for their card catalogs, filling them after the standard model and by the standard rules, using the same abbreviations, and, in short, doing hundreds of things in harmony, thus making practicable through co-operation what in the old diversity was simply impossible.

For several years this Association has been maturing a plan for a select catalog of the best books, to be made and kept under constant revision by the co-operation of the leading authorities. In this work there were more important considerations than the great money saving.

Some functions of a library catalog are very like those of a city directory. If a stranger goes to New York and wishes to find John Jones, plumber, he has only to look in the directory under Jones till he finds John, plumber, and he can go at once to his street and number. So

when one goes to the library and wishes a specific book by a specific author, it is comparatively easy to make a finding index that will serve him as well as the directory; and with more labor the index, or catalog, as it is called, can be made to serve as well for specific titles, though the author is not known. But the greater function of the ideal catalog is to tell *which are the best* books on any given subject, and this is the main question before the trustees in buying, before the librarian in answering the demands of readers asking advice, and before the reader himself when he uses the catalog.

To return to the directory. If our stranger wishes to know what plumber in New York will be the best for him to employ, what can he do? He goes to the business directory and is confronted by the names of hundreds. If he tries to select by referring to their various advertisements, he remembers constantly that these are all written to *bring customers* rather than to state the exact merit of the advertiser. If he asks the advice of some acquaintance, he must allow for his prejudices or personal interests, and for his probable ignorance of this particular subject. So, if his work is important, he will make inquiries of builders and property owners of long experience, and from general agreement among them he will learn what plumber he can best employ for his work if it be in a cottage, or what other had best be consulted if it is in a great hotel.

The subject catalog, or bibliography, has the same difficulties as the directory. A reader has heard of three books on this subject, and is in doubt which he had best consult. He goes to the catalog to help him decide, and finds three hundred instead of three to choose from, with no direct clue as to which will best serve him; and often, after all the expense lavished on making the lists, the last state of that man is worse than the first. If he goes to the publishers' lists, it is advertising and he distrusts the statements; no one is interested in pointing out the faults as well as the merits. If he ask a friend he must make large allowance for his meager knowledge of the subject and for his personal equation. The most of the books which propose to help are open to one or both these objections: they are colored by the interest of the publishers or by the prejudices of the editors; and yet for the buying committee, for the library, and for the reader, there is nothing more important than guidance of just this kind. If every reader had several wise friends familiar with each subject in which he became interested, to whom he could go for advice, he would feel great confidence that he was selecting the best books. The scheme which this paper presents is the result of seven years' study how to provide for this infinite number of readers, interested in an almost infinite range of subjects, such wise guidance.

In these years of discussion the Association and its special committees on the A. L. A. Catalog concluded that certain things were essential to its highest success. The difficulty of meeting these conditions has delayed the preparation and publication, till the way now seems clear and active work has been commenced. The plan adopted and outlined below will show how fully the difficulties are met, and how well the work will answer the many questions for which it is designed. Some of the essential features are as follows:

(1.) Such help can be available to all only by printing. Oral or MS. advice, however good, is exceedingly limited in its field.

(2.) No man or half-dozen men can furnish this advice on all subjects, and this guide must be made by the co-operation of a large number of librarians, scholars, and specialists, in order to give the needed confi-

dence in its accuracy, reliability, and freedom from personal idiosyncrasies.

(3.) To secure such co-operation from our best authorities in preparing and keeping the work revised up to date, and to remove all prejudices against it as being in the interests of any special publishing house, it must be printed without the regular publishers, none of whom would be likely to undertake it guaranteeing that its revision and handling should be determined by the amount of good it would do rather than the amount of profit it would yield; and it must be without copyright or royalty to any editor. In short, no one should have a pecuniary interest in the work, for that might modify its character, either now or in the revisions.

(4.) It must be limited to a selection of the best books on each subject, for at present a universal catalog is practically an impossibility, and even were it possible would be less useful to 99 per cent. of its users than the condensed list from which all but the best had been omitted.

(5.) At present it is practically better to limit it almost entirely to books written or translated into English.

(6.) Most books need some indication of the grade of readers to whom the book is best adapted, whether for scholarly, popular, or juvenile reading. The "best book" is a relative term, meaningless till we know *for what*, and *for whom*, it is best.

(7.) There must be brief notes, for the titles alone are often misleading, and the chief value of the work will consist in such advice as one familiar at once with the subject and with each special book could give to a reader who took it for the first time. There are many books too good to be omitted from the choicest list, but yet colored by some prejudice or motive of their authors, and a timely word would be invaluable. Many historical and biographical works are written from the standpoint of a partisan or a "hobby rider," and the young reader ignorant of this fact gets a distorted idea of his subject. Such a note as "From a Roman Catholic standpoint," or "Intensely anti-Roman," appended to certain titles might be worth a week's time to a student ignorant of the author's motive.

Notes would indicate the scope of certain books; *e. g.*, "Scott's Talisman. A. D. 1193. Third crusade in Palestine. Richard (Cœur-de-Lion) and Saladin."

For most historical works, where the title page does not fully describe or indicate it, the time and space included by the author should be noted.

"Should be read with—— [giving title], to which it is a rejoinder," or the real names of persons often worked into literature under other names, or references to specially important reviews of the work that ought to be read with it, are other types of useful notes.

Other notes will make clear the character and purpose of different prominent editions of works published in many forms. And so on, with hardly a limit to the kinds of most useful information that may be packed into the fewest possible intelligible words and added to the title, so that in all the libraries of the land each reader using the catalog will receive with his book that concise advice that a wise friend, specially qualified, would give if lending him the book with his own hand. The notes are to be as brief as is consistent with clearness; and though it is expected that the work will average twenty titles to the page, yet no Procrustean limit will be made for notes, but space will be given for all necessary points. The successful completion of this select list will doubtless be followed by a similar treatment of current new

books, so that the libraries using the catalog may receive regularly a supplement mentioning whatever has been published during the preceding month that ought to be included in the annotated catalog.

(8.) The catalog must be classified by subjects, in order that these notes may be more economically, compactly, and intelligibly given. If scattered through a dictionary, many notes would lose half their meaning unless much was repeated from notes on books just above or below in the classified arrangement, but in the alphabetical widely separated. General notes on whole classes, divisions, or sections thus become practicable, and in the use of the catalog a much clearer idea of the relation of the subject to other subjects is gained from classification. This plan is also necessary in order that class lists may be printed and circulated separately; *e. g.*, a library may wish one hundred or one thousand copies of the notes on Historical Fiction, while it needs only ten on Speculative Philosophy. This plan also allows of preparing the work in sections and printing each as completed without waiting for the whole.

(9.) The catalog must be kept under constant revision by the members of the Library Association and all others interested in its great educational value, and suggestions for omissions, additions, or changes, are to be sent to the editor-in-chief whenever they occur. As each edition runs low, all these suggestions will be carefully collated, and such alterations as will improve the work or bring it more nearly down to date will be made. It is hoped that the wide-spread interest the catalog will awaken will result in so much critical examination of the lists and notes that later editions will reach the highest standard as reliable guides. In many cases new editions or new works will appear that without question supersede at once those last given, and the change will be made; but for those where authorities differ as to merit both titles will be given with indication of the fact. Each edition is to be considered as proof under revision, and each reader as in honor bound to help in every way to perfect so valuable a work, in which no one has a selfish interest.

(10.) We propose to start a catalog on a basis of the five thousand best books in the English language for a general library, with notes explanatory only, colored by no personal opinions whatsoever, but telling the reader what he needs to know and what no one will contradict. It is hoped and expected that the extent will be gradually increased in each edition, and that the separate sections will become the authoritative brief bibliographies on all topics of general interest.

#### ITS USES.

Such a list, so made, will command the confidence of all users, and will be of service in many different directions, among which we note:

1. As a guide to book-buyers, whether for private or public libraries. It is not uncommon for a library to pay some single individual hundreds of dollars for making a list representing merely his individual choice of books, not only on subjects with which he is familiar, but also on the much larger number of which he knows practically nothing.

A copy of this catalog will be vastly more valuable, will be in print instead of MS., and several duplicates can be checked up for getting estimates and for other purposes at trifling cost.

2. As a guide to readers in choosing what books they had best take from the library or from their own shelves, for few men with a collection of books do not feel at times that it would be a great saving if they could ask of some competent authority the very questions which this cat-

alog will answer. Perhaps this guidance to the individual reader is the most important of the many uses of the new catalog.

3. As a manual to teach the younger and prompt the older librarians or booksellers in answering most wisely the constant question, "What is the best book on my subject"?

4. To take the place of the printed catalog in small public libraries. This will contain in print all the books most used. Those in the library and not on this catalog can be catalogued in MS., or printed cheaply as a supplement. The location number of all books included in the library can be written on the margin, thus showing at once that the library has the book and where it can be found, and the unmarked titles will be the best conceivable list for early purchase. Or, better still, the special location numbers of the library could be printed beside the electrotype plates of the A. L. A. Catalog, thus making from these plates at trifling cost an annotated catalog, far excelling in usefulness the costly efforts that so cripple the finances of most of our public libraries.

Catalog printing is more costly than common book-work. When printed very few copies can be sold, even when offered at half the cost price. Practically the entire investment is charged up to loss. The edition becomes out of date in a few months and revision is prohibited for years by the great cost, while the A. L. A. Co-operative Catalog can be frequently revised, because of the large number using it.

An ordinary catalog of five thousand titles will cost for composition, at an average of \$2.00 per page of twenty titles, \$500. Press work, paper, and binding will cost as much more for five hundred copies, making a total of \$1,000, besides a much greater outlay in salaries for time spent in preparation; and when all is done the result cannot be compared for usefulness with the annotated A. L. A. Catalog, which would supply the demand at one-tenth the cost. These reasons apply with the greatest force to the smaller libraries, because as a rule they buy substantially the same books, and because they specially need to save the money.

5. As the most convenient form of catalog for most private libraries. An edition printed with very wide margins or interleaved would admit of adding other titles in MS., and thus completing in convenient classified form the list of one's private library.

6. As a check-list of books read, with personal notes. Here again the wide margins and interleaves would be useful. To the young, especially, such a check-list of the best books with notes so carefully prepared would be simply invaluable, and a copy marked with the time and place of reading and the reader's impression of the book would have rare value in shaping the reading habit.

But further illustrations of its manifold use are needless. They will occur to every thoughtful mind. Its chief interest to the American Library Association, which is its godfather, is in its direct helpfulness to libraries. The work is the most important, undertaken through co-operation. It will remove the necessity of that greatest terror of librarians and finance committees of the smaller and poorer libraries, the printed catalog. In spite of everything that may be done, a printed catalog will cost much money, much time, and, after it is printed and subjected to the critics, much regret. No expense incurred by libraries is more unsatisfactory. It is a necessity to the best work; but that the labor should be repeated over and over again for each library, seems little less than a crime. This time of the completed co-operative catalog has been looked forward to by the most thoughtful librarians of every country as a kind of library millennium.



## PREPARATION AND PUBLICATION.

The material for this work has been largely prepared. The famous annotated catalogs of Boston and Quincy, with the scores that have followed, as far as they have been able, in the same direction, have given a great body of notes from which to select, condense, and edit. Many eminent specialists have already contributed lists of books and notes. A half-dozen lists of the "best books," made by as many different persons, some of them of very great ability, have been printed and can be utilized in bringing together matter for the first edition. Copies will be marked with colored pencils indicating omission or doubt or approval. These will be consolidated by the editors, and the first list made of the books generally approved. This list will again be submitted for revision, and then put in type to be submitted to the larger circle of proof-readers who will take up the first small edition. By this plan the judgment of a large number of competent associate editors can be secured without too great calls on their time, and once in print it will be easy to consolidate the criticisms and suggestions for each revision.

All interested are cordially invited to send titles or notes suitable to be included, and proofs will be sent to those who are willing to read them critically.

The editor will also gladly receive suggestions of names of competent associates who will be likely to take interest in the work. All communications concerning the Catalog should be marked "A. L. A. Catalog", and addressed "Melvil Dewey, Chief Librarian, Columbia College, N. Y."

The problem of publication without reducing the work to a commercial plane has been happily solved by the U. S. Bureau of Education, which recognizes a most potent educating force in such a printed manual, and will print and distribute an edition where it will awaken new interest in the People's University. We believe that this catalog will not only help readers but will tempt them to read, by a direct leading from the first reference to allied matters of interest; that it will transform many libraries from mere storehouses where, through much weariness of the flesh, information may be found, to aggressive centers of culture, whose influence will be felt like that of a vigorous school; in short, that they will be no longer cisterns, but fountains.

## LIBRARIES AND THE LIBRARY SYSTEM OF ONTARIO.

BY JOHN HALLAM,  
*Chairman Toronto Public Library.*

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### TOWNSHIP AND SCHOOL LIBRARIES.

The school library system of Ontario had its origin at a period of the provincial history seemingly little favorable to the initiation and accomplishment of so laudable and public-spirited a project. When the scheme was launched Upper Canada, as the Province was then termed, had only just emerged from the political disturbances incident to the passing in Parliament of the Rebellion Losses Bill. Political reforms and material prosperity were at the time matters of more concern to the people of the Province than educational advancement or any means by which the intellectual well-being of the masses might be secured. Agriculture and the development of trade were then the all-absorbing topics of interest, and the resources of the country were being strained to aid commerce in extending its sway. The St. Lawrence Canals had just been completed, and the railway era was about to set in. Yet the intellect of the period (we are speaking of the beginning of 1850) was not wholly unmindful of the country's higher needs.

From an early period the idea of purchasing and circulating books through the machinery of the schools seems to have been present to those who had to do with education in the Province. Though grammar schools had been founded in 1807 and common schools in 1816, it was not until 1822 that a Board of Education was created for educational purposes and for the management of university and school lands in Upper Canada. Two years after the establishment of this Board, an Act was passed by the Legislature authorizing \$600 a year to be expended by the Provincial Boards of Education in the purchase and circulation through the District Boards of Education of books and tracts designed to afford moral and religious instruction. In 1834 this grant was, however, discontinued. In 1840, in a Report of an educational commission, a recommendation was made that a fourth of the fees of each school should be applied to the maintenance of a school library. Whether this practical recommendation was ever acted upon, and if so, how long it remained in force, it is difficult from the history of the time to make out. This is the first mention, however, of any movement in aid of school or municipal libraries in Upper Canada.

In 1841 legislative provision was made for re-establishing common schools, and this was shortly followed by a more efficient system of public instruction. Three years afterwards the public school system of Ontario was originated by the Rev. Dr. Egerton Ryerson, who had been appointed Chief Superintendent of Education, and who for the long period of over thirty years was to become its watchful guardian and wise administrator. In the functions of his office Dr. Ryerson was for

the whole period of his administration ably assisted by Dr. John George Hodgins, his zealous deputy and active co-operator in the management of the Educational Bureau of the Province.

To assist the founder of the school system in his laborious task, the Government, in 1846, called into existence a board of education, styled the Council of Public Instruction. One of the important functions of this council was to examine, and at its discretion to recommend or disapprove of text-books for the use of schools, or books for school libraries, when these adjuncts to the educational system of the Province came to be introduced.

The first we hear of the latter is in 1848, when Dr. Ryerson submitted to the Government the draft of a Bill proposing to make an annual grant of \$8,000 for the purpose of founding and maintaining a system of provincial township libraries. In furtherance of this project we find the Chief Superintendent addressing a letter in the following year to the Provincial Secretary, in which he warmly urges the adoption of the scheme. In this letter Dr. Ryerson remarks that—

There can be but one opinion as to the great importance of introducing into each township of Upper Canada as soon as possible a township library, with branches for the several school sections, consisting of a suitable selection of entertaining and instructive books in the various departments of biography, travels, history (ancient and modern), natural philosophy and history, practical arts, agriculture, literature, political economy, etc. It is not easy to conceive [the Doctor goes on to say] the vast and salutary influence that would be exerted upon the entire population, the young portion especially, in furnishing useful occupation for leisure hours, in improving the taste and feelings, in elevating and enlarging the views, in prompting to varied and useful enterprise, that would flow from the introduction of such a fountain of knowledge and enjoyment in each township in Upper Canada.

In the School Act of 1849 provision was partially made for carrying the libraries scheme into effect; and by the years 1853-'54, through the liberality of the Legislature, we find it in full working order. The provisions of the scheme were that any municipal or school corporation might, on raising a certain sum and remitting it to the Department of Education, obtain library and prize books, approved by the Council of Public Instruction, to double the amount of the sum transmitted. Some years later the same facilities were given by the Department for the purchase of maps, apparatus, charts, and diagrams by school boards applying for the same. It was further provided, with obvious good purpose, that no work of a licentious, vicious, or immoral tendency, and no works hostile to the Christian religion, should be admitted to the libraries. By the preparation of catalogues of suitable collections of books imported by the Department, checks were placed on the introduction into the libraries of all books of a hurtful character, as well as "of controversial books in theology and works of denominational controversy." In respect of all other literature, with the exception of fiction, the field of choice was liberal and wide. It may here be said that, some fifteen years later, namely, in 1868, the Council of Public Instruction, responding to a generally expressed wish for a judicious selection of standard works of fiction which would supersede the use of pernicious literature in the country, consented to authorize a selection of the better class of novels to be placed on the catalogue.

This, in brief, was the scheme which, as we have said, was in full and satisfactory operation in the years 1853-'54. Within ten months of the library project going into effect, statistics show that no less than 63,000 volumes were issued by the Department; while so fraught with good was the enterprise that Lord Elgin, the then Governor-General of Canada, in a report to H. M. Principal Secretary of State for the Colonies,

characterizes the township and county libraries feature of the educational administration as "the crown and glory of the institutions of the Province." And well may it have been called so, for scarcely a greater service could be rendered to the country than that which Dr. Ryerson's public-spirited project had secured to it. With the material growth of the country no statesman could fail to see that it was of equal importance to make provision for the concurrent intellectual development of the masses; and well was it for Canada that there was a man at the head of the educational system who had the foresight to devise, and the energy and unremitting care to expend, on so beneficent a scheme as that of township libraries. The Government, it is only fair to say, gave the project a hearty and enlightened support, and the Legislature cordially voted adequate sums annually for the furtherance of the object in view. The wide scope of the scheme will be better understood by a quotation from the School Act, which sets forth the various classes of libraries the Department had in view to create, and succeeded in large measure in creating.

Under the regulations of the Department [such are the provisions of the School Bill] each County Council can establish *four classes* of libraries in their municipality, as follows: City, town, village, and township councils can establish the first three classes, and school trustees, either of the first or third classes.

(1) An ordinary *Common School Library* in each school-house for the use of the children and rate-payers.

(2) A *General Public Lending Library*, available to all the rate-payers of the municipality.

(3) A *Professional Library* of books on teaching, school-organization, language, and kindred subjects, available to teachers only.

(4) A library in any *public institution* under the control of the municipality, for the use of the inmates, or in the *county jail*, for the use of the prisoners.

For the uses of these various libraries the Education Department opened, and for nearly thirty years maintained, a depository for the importation and sale of library books, secular and religious, school text-books, prize-books, maps, charts, diagrams, and other requisites, which were supplied at cost to the municipal and school corporations, *plus* one hundred per cent. in kind of the amounts raised and forwarded to the Department. This depository was, in 1881, abolished, having served its purpose while the facilities for obtaining books, etc., through the regular channels of trade were few or non-existent.

The bulk of the operations of the depository, it is proper to be said, was in school prize-books; though, obviously, the service rendered to the youth of the country in the dissemination of a wholesome literature of reward books, was no unimportant one. The statistics of the Department show that the annual "out-put" of library and prize-books had risen from some 23,000 volumes in the year 1853 to over 61,000 in the year 1869; while the moneys sent to the depository by trustees and others during the period for books and requisites was close upon \$300,000. The total number of books, of all kinds, despatched during the whole period of the depository's existence, viz, from 1853 to 1881, amounted to 1,407,140 volumes. The number of the latter that found their way into the township and school libraries up to the period of the closing of the depository was 307,743 volumes, the net cost of which was over \$183,000—an amount which was partly contributed by the Government and partly by the local boards. To the above book dissemination has to be added 35,400 volumes issued during the same period to mechanics' institutes and Sunday-schools. The balance of the total issue of 1,407,140 volumes, consists of prize-books. The number of libraries, exclusive of sub-divisions, supplied during the period was 1,566.

The classification of the books issued by the Department to the township and school libraries from 1853 to 1880 is as follows: History, 49,648; zoölogy and physiology, 17,019; botany, 3,069; phenomena, 7,030; physical science, 5,236; geology, 2,499; natural philosophy and manufactures, 14,414; chemistry, 2,701; practical agriculture, 10,609; literature, 29,244; voyages, 27,545; biography, 33,071; tales and sketches of practical life, 83,500; fiction, 5,041; teachers' library, 8,118.

In the above classification some 9,500 volumes, issued in the last year of the depository's existence, are not included. The total of all is 307,743 volumes.

With these statistics we must leave the subject of the township and school libraries, which, at a period in the annals of Ontario when it was of the utmost importance that the intellectual wants of the community should be provided for, did good service in putting in motion a stream of wholesome literature which was to irrigate and enrich the land. That they contributed, in some fair and satisfactory measure, to stimulate the thought, direct into beneficent channels the brain-power, and diffuse refinement and mental culture among the people of the Province, must have been the result of their initiation and long maintenance by the Education Department. This much with all justice may be said, whatever need was shortly to manifest itself, in the growth of the country, for other and more efficient modes of contributing to the mental appetite and the intellectual advancement of the Province.

#### MECHANICS' INSTITUTES.

We now turn for a little to work at another agency, set in motion by the people themselves, for literary recreation and intellectual self-advancement, which, with township and school libraries, also received from an early period in the history of the Province substantial and ever-increasing aid from the State. We refer to the mechanics' institute associations and the libraries founded by their agency. The aims of these associations seem to have been anticipated in the year 1835, when the two chief cities, Toronto and Kingston, received grants from Parliament for the purchase of books and philosophical apparatus to be intrusted to the care of the literary and scientific societies founded in these towns. It was not until 1847, however, that a mechanics' institute, so-named, was legally organized. In that year the Toronto Mechanics' Institute was incorporated by a special Act of the Legislature for the purpose, as it was expressed, "of forming a library and reading-room, and of organizing a system of instruction by means of lectures and evening classes." Two years afterwards the city of Hamilton secured an Act of incorporation for the Hamilton and Gore Mechanics' Institute, the design of which was "to diffuse scientific and literary knowledge by a library of reference and circulation; by the formation of a museum of specimens in geology, zoology, or other subjects of nature, science, or manufactures; by lectures; by philosophical apparatus, conversations, etc., etc."

An Act was passed by the Legislature in 1851 to provide for the incorporation and efficient management of literary associations and mechanics' institutes, and a scale of government aid, based upon the amounts locally raised, was drawn out. Under this Act many institutions were called into existence, and much good was accomplished. In 1859 an amended Act was embodied in the Consolidated Statutes of Canada, which Act, we may say, is still in force for the incorporation

and management of these and other literature institutes. Two years before the passing of the latter Act the Board of Arts and Manufactures was incorporated, with the design "of co-operating with mechanics' institutes and of promoting the development of mechanical talent, by disseminating instructions in mechanics and kindred sciences." The government grant to the mechanics' institutes was distributed through the agency of this Board of Arts and Manufactures, and under its direction a healthful stimulus was given to the establishment and operation of libraries and reading-rooms.

At Confederation this Board, which previously had had independent powers, though nominally under the administration of the Department of Agriculture and Statistics for Canada, was abolished, and the Association of Mechanics' Institutes of Ontario was incorporated in its place. This Association was placed under the supervision of the Department of the Commissioner of Agriculture and Public Works for Ontario, and legislative aid was granted through it to mechanics' institutes to the extent of one dollar for every dollar raised from local sources up to a maximum amount of two hundred dollars. In 1869 twenty-six institutes were in operation, and received government aid to the extent of \$3,300. In 1870 an amendment to the statute under which the incorporated Association of Mechanics' Institutes was working, passed the Legislature, by which the maximum to each institute was increased from two hundred to four hundred dollars. In this year the number of institutes receiving legislative aid rose to forty-three, and the money grant was increased to \$12,600. In 1877 the statute was further amended by authorizing school inspectors to audit the financial affairs of the institutes, and instructing their boards of management to forward to the Government their annual reports, and a statement showing how the legislative grant had been expended. In 1880 the Association of Mechanics' Institutes for the Province was transferred from the supervision of the Commissioner of Agriculture to that of the Minister of Education, and in that member of the Government its affairs are now vested. In the same year the number of institutes receiving legislative aid was seventy-four, and the amount disbursed by Government close upon \$23,000.

These institutes spread broadcast over the Province are important agencies for the diffusion of useful knowledge, and most helpful in giving facilities to the artisan classes in making themselves proficient in the principles and methods of their industries and arts. While contributing to this practical work, and giving invaluable aid to the manufacturing industries of the Province, they are at the same time doing much to enlarge the mental possessions of the people, and to enrich the intellectual resources of the country.

#### FREE PUBLIC LIBRARIES.

We now arrive at a new stage in the record of public library progress in Ontario—an era which saw a great stride taken in engrafting popular education on municipal government. Something more was wanted than the voluntary effort, on the part of the few, to originate and maintain mechanics' institute libraries and reading-rooms, and to bring to the masses the facilities and beneficent influence of a free and readily accessible public library. This want found expression in the spring of 1882, when an Act to provide for the establishment of free libraries was passed by the Provincial Legislature. The provisions of that Act gave

opportunity to the people of any incorporated city, town, or village, to vote upon a by-law for the founding of a free library, and to assess themselves for its support, in a sum not exceeding half a mill on the dollar, the amount to be levied as other rates and assessments are levied for municipal purposes. Permission was also given in the Act to raise money by the issue of debentures for the erection of necessary buildings and for the purchase of books. The libraries, news-rooms, and museums established under the Act, it was provided, shall be open to the public free of all charge. In an amendment to the Bill, passed in the following year, provision was made for transferring the library, reading-room, buildings, and other property of existing mechanic's institutes, to the Board of Management of any free library that may be established under the Act, and for securing to the said free library board the annual grant given by the Legislature to mechanics' institutes. Among the first cities to take advantage of the passing of the Act was Toronto, the provincial capital.

*Toronto.*—In the case of Toronto we have an instance of a mechanics' institute, one of the oldest and most successful in the country, merging itself into the larger life of a free public library. The by-law submitting the projected library to the rate payers was passed by a large majority vote on the 1st of January, 1883, and a board was shortly afterwards organized in accordance with the statute. The board presently proceeded to work; raised \$50,000 by debentures; altered and enlarged the old mechanics' institute building; furnished and equipped the library and reading-room; and appointed its officers. The library was formally opened, with considerable ceremony and enthusiasm, on the 6th of March, 1884, and shortly afterwards two branch libraries, in other parts of the city, were furnished and opened to the public. The result of the experiment is exceedingly gratifying, and the library has been put on its feet with the happiest auspices and with great promise of usefulness. The number of books in the central and branch libraries up to the end of 1884 is in the neighborhood of 35,000. Their cost, exclusive of donations, was close upon \$25,000. The total number of books issued to the public for the portion of the year during which the library was in operation, viz, 229 days in 1884, was 179,503, or an average daily issue of 783 books. It is estimated that some 400,000 persons visited the reading-rooms during the above period.

*Guelph* is another city in Ontario that has taken advantage of the Free Libraries Act, and in 1883 commenced its operations. It is of course on a more modest scale than the Toronto library; but with its population of only 12,000 the experiment may be said to be highly successful. It has a collection of books amounting to 3,776 volumes, classified as follows: Biography, 370; fiction, 926; history, 380; voyages and travels, 341; general literature, 398; poetry and the drama, 98; periodicals (bound), 420; theology and religion, 177; science, 220; industrial science and art, 211; works of reference, 121; illustrated books, 96. The number of householders using cards of admission to the library is about 1,400, and the issue of books exceeds 23,000 annually. Its reading-room is well supplied with newspapers and periodicals, and is a profitable place of resort—it is admitted—to the thousands who take advantage of the institution.

*Brantford* (population, 12,167) and *St. Thomas* (population, 11,157) have also opened free public libraries under the provisions of the Act, and have been most successful in the experiment. The former has 5,300 volumes in the library, and the latter 2,674.

## UNIVERSITY AND OTHER LIBRARIES IN ONTARIO.

Besides the four different series of libraries we have treated of in the preceding pages, there are collections of books, of greater or lesser extent, in the libraries of educational and other institutions in the capital and other cities in the Province of Ontario. The total number of books in these various libraries cannot be short of 320,000 volumes. The Dominion Parliamentary Library, at Ottawa, is the chief of these collections, and is rich in all the important works in French and English literature, and especially in the departments of Canadian history, biography, jurisprudence, parliamentary government, and miscellaneous literature. Appended is a list of these various libraries, with an approximate estimate of the number of books each contains:

Parliamentary Library, Ottawa, including works in Canadian archives, say .....	125,000
Parliamentary Library, Toronto .....	18,000
University of Toronto, Toronto .....	26,000
Canadian Institute, Toronto .....	5,000
Law Society of Upper Canada, Toronto (Osgoode Hall) .....	18,000
Toronto Baptist College, Toronto .....	7,500
Education Office Library, Toronto .....	6,500
Knox, Trinity, and Wycliffe Colleges, Toronto, say .....	20,000
Queen's University, Kingston (Presbyterian) .....	15,000
Victoria University, Coburg (Methodist) .....	7,000
Agricultural College, Guelph—a nice library of works on agriculture and chemistry .....	2,700



## THE RISE OF COLLEGE GYMNASIA IN THE UNITED STATES.

BY EDWARD MUSSEY HARTWELL, PH. D., M. D.,

*Associate in Physical Training and Director of the Gymnasium, Johns Hopkins University, Baltimore.*

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Montaigne has well said, "Our work is not to train a soul by itself alone or a body by itself alone, but to train a man; and in man soul and body can never be separated." In accordance with a more or less clear apprehension of this idea, a considerable number of colleges and universities in the United States have established departments for the systematic training of the body. In connection with these departments gymnasia and play-grounds have been provided, as well as lectureships on personal hygiene. In several instances the heads of these departments are college-bred men, who have taken also a medical degree; and it is their business to counsel and direct students in regard to exercise and regimen, such counsel and direction being based upon a careful examination into the peculiar needs of each individual.

It is the main object of this paper to describe the aims and methods of the best organized of these departments of physical training, after a preliminary historical sketch of the growth of this branch of educational work in the United States.

In order to understand why the claims of the body have been so often ignored or contemned in collegiate and university education, it is necessary to recall briefly some of the doctrines concerning the nature and relations of body and mind. Educational schemes have been contrived and administered too often by men who believed that body and mind were distinct entities at war with each other.

The Greeks, indeed, with their keen insight into the laws of symmetry and their surpassing love of the beautiful, recognized the worth of bodily as well as of mental perfection. Careful nurture and training of the body played a very considerable part in the education of Grecian youth—in the education of the schoolboy and the university pupil no less than in that of the soldier and the professional athlete.

Although the early Fathers of the Christian Church viewed with horror and detestation the gladiatorial sports of the pagans, yet, as defenders of the faith against the heretical doctrines of the Manicheans and Gnostics, they could not do otherwise than champion the dignity and worth of perfect, or at least perfectible, bodies. But under the influence of those saints, who looked and longed for the speedy extinction of mankind and the end of the world, during the first thousand years of our era, the most debased asceticism gained sway; and mortification of the flesh, to the extent of rendering the body enfeebled and impotent, was preached and practiced as a means to attain to mental and moral excellence. It was distinctly held that bodily weakness was a prime requisite to mental strength and to the soul's salvation.

With the Renaissance and the rise of chivalry came a sharp challenge of the monkish ideal; and though bodily exercise, as a means to secure grace, vigor, and skill, came to be deemed indispensable to the education of all youths of gentle blood, still ecclesiasticism was too dominant in the colleges and universities for the enlightened care of the body to form any considerable part in the training of a scholar. Knightly exercises found but little favor with the heads of colleges, and "honest sports," far from being promoted, were scarcely tolerated by them.

In modern schemes of education the part allotted, or allowed, to bodily training and to recreation has been determined chiefly by the dominion exercised, singly or in combination, over the minds of faculties and boards of trust by the Greek, the monkish, or the knightly ideal of manly excellence. The Germans, under the head of Guts Muths and Jahn, the father of the famous turnvereins, have been enamored of the example of the Greeks, and have striven in an elaborately systematic way to embody Greek gymnastics in modern forms. France, apparently out of respect for Prussia, has recently given physical training a prominent place in its revised educational code.

In England, where there is more or less of aversion to systematic efforts to train the bodies of scholastic youth, gymnasias exist chiefly as private ventures, or in connection with the recruiting service of the army; they are but rarely maintained or regulated by the great educational foundations. Certain national sports are considered by the educated classes to be an important factor in British supremacy; and, in spite of the marked survival of mediæval ideals and forms in the organization and administration of Oxford, Cambridge, and the public schools, chivalric notions as to bodily force and grace are clearly traceable in the sober passion of the British schoolboy and undergraduate for athletic games and manly sports; which, it should be remembered, are regulated almost entirely by the force of custom among the pupils themselves.

When we recall the fact that our oldest American colleges, like their early British models, were established primarily to furnish trained recruits to the ranks of the clergy, there remains no ground for wonder that physical training has been slow to win recognition as a necessary part of a sound education. American educators were long ruled by British notions as to curriculum and discipline, which notions have never been in favor of systematic physical training. Certain national sports, however, have long been considered by the educated class as constituting an important bulwark of the British constitution; accordingly American collegians, those who were not too serious to play, disported themselves after inherited British fashions.

The means afforded students a hundred and fifty years ago were decidedly meager, if we may judge from the only mention concerning them in the "Ancient Customs of Harvard College Established by the Government of It," in which "Custom 16" reads thus:

The Freshmen shall furnish bats, balls, and foot-balls, for the use of students, to be kept in the Buttery.

The first President of Dartmouth College, Dr. Wheelock, admonished his students in 1771, two years after the college was opened, "to turn the course of their diversions and exercises for their health to the practice of some manual arts, or cultivation of gardens and other lands, at the proper hours of leisure and intermission from studies and vacancies" [*i. e.*, vacations]. We learn from a letter written by Dr. Benjamin Rush, of Philadelphia, in 1790, on "The Amusements and Punishments

proper for Schools," in which, by the way, he commends the Methodists for "wisely banishing every species of play from their college," that the experiment had been tried, "with the happiest effects," of introducing the care of vegetable gardens as an amusement "in the Methodist college at Abington in Maryland." He also says that all the amusements of the children of the Moravians at Bethlehem, Penn., "are derived from their performing the subordinate parts of several of the mechanical arts; and a considerable portion of the wealth of that worthy and happy society is the product of the labor of their little hands."

Forty years later manual labor societies came into vogue in several of the New England colleges, but, proving failures as a means of putting wealth into the hands of their members, they fell into desuetude as educational agencies. In some colleges the authorities used to grant holidays "for the purpose of fostering in the students the habit of physical labor and exercise, so essential to vigorous mental exertion," which holidays were devoted to "raking off the chips and clearing the grounds, and graveling the college walks."

When such notions and practices obtained with our forefathers, it is hardly strange that the first impulse to a physical training deserving of the name should have come from without. As a matter of fact, it came from Prussia, where, during the last fifteen years of the eighteenth century and the first two decades of the nineteenth, Guts Muths and Jahn accomplished a great work in reviving physical education.

The first gymnasia in this country were constructed out of doors, in bold imitation of Græco-German models, and a very considerable, though, as it proved, a very transient interest in gymnastics was evoked by the German exiles. Drs. Beck, Follen, and Lieber were foremost in the matter. In 1828 there was published in Northampton, Mass., "A Treatise on Gymnasticks, taken chiefly from the German of F. L. Jahn." This translation was by a pupil of Jahn's, Dr. Beck, who had in 1825 been instrumental in establishing a gymnasium at the Round Hill School, at Northampton. On page IV of the Preface Dr. Beck states that—

The School of Messrs. Cogswell and Bancroft, in Northampton, Mass., was the first institution in this country that introduced gymnastick exercises as a part of the regular instruction, in the Spring of 1825.

I am greatly indebted to the venerable Dr. George C. Shattuck, of Boston, who was a pupil at Round Hill, for the following account of this gymnasium:

Dr. Beck, the teacher of Latin, afterwards the Professor of Latin in Harvard University, was the first teacher of gymnastics. A large piece of ground was devoted to the purpose and furnished with all the apparatus used in the German gymnasia. The whole school was divided into classes, and each class had an hour three times a week for instruction by Dr. Beck. At the same time there were a dozen riding horses, and classes for riding three times a week. Gardens were assigned the boys, in which they raised plants and vegetables. A piece of land was set aside for building huts. Base-ball, hockey, and foot-ball were the games. Though the school had only an existence of twenty years or less, and failed from the want of pecuniary support, I believe that its influence has survived. Developing the bodily powers and strengthening the constitution were there first recognized as of great importance in the education of boys.

Dr. John C. Warren, who for forty years was Professor of Anatomy and Surgery in the Harvard Medical School, was about this time in the habit of delivering annual lectures to the students at Cambridge on the preservation of health. He was the first President of the Tremont Gymnasium in Boston, in the establishment of which, in 1825, he took

a prominent part. It is a matter of interest that Dr. Warren attempted to secure the services of "the distinguished philosopher and gymnasiarch, Professor Jahn," who could not be led at the salary offered "to abandon his own country and establish himself in ours." Dr. Francis Lieber, who later attained such eminence as a publicist and as a professor in the Columbia Law School, was for a time connected with the Tremont Gymnasium. In 1826 Dr. Follen, who, like Dr. Beck, was a teacher at Round Hill and finally became a professor at Harvard, established a gymnasium at Harvard College, being seconded in his efforts by Dr. Warren and others of the "Medical professors." One of the unoccupied commons halls was fitted up with various gymnastic appliances, and other fixtures were erected in the Delta, *i. e.*, the college play-ground. In the same year, 1826, the corporation of Yale College voted the sum of \$300 for the fitting up of a gymnasium in the College Green. Dr. Warren states that "small gymnasia were established in connection with most of the schools, academies, and colleges, male and female." The following extract from the published works of Dr. Warren—though I am uncertain whether it was originally penned in 1830 or 1845—affords good evidence that the interest in gymnastics became feeble after the first teachers of the art became ordinary college professors:

The establishment of gymnasia [says Dr. Warren] through the country promised at one period the opening of a new era in physical education. The exercises were pursued with ardor so long as their novelty lasted; but, owing to not understanding their importance, or some defect in the institutions which adopted them, they have gradually been neglected and forgotten, at least in our vicinity. The benefits which resulted from those institutions, within my personal knowledge and experience, far transcended the most sanguine expectations. The diversions of the gymnasium should constitute a regular part of the duties of all our colleges and seminaries of learning.

It would appear that no well-considered and systematic course of physical training was maintained for any considerable length of time in the period extending from 1826 to 1860, in any American college. It may be possible that the University of Virginia presents an exception to the above statement, inasmuch as there was a large out-of-doors gymnasium maintained on the grounds of that institution from 1852 till the outbreak of the war. A competent gymnast and fencer had it in charge; but in order to support himself he was obliged to eke out the small sums received from the students by cultivating a kitchen garden and keeping a Russian bath house.

Although in the period from 1855 to 1860, under the combined influence of the example and writings of Dr. Winship, Dio Lewis, and Thomas Hughes, much interest, especially among young men, was awakened in gymnastics, feats of strength, and athletic sports, still, prior to 1859, no college in the country possessed a commodious and well-furnished building devoted to the purposes of physical training. In the year 1859-'60, however, Amherst, Harvard, and Yale erected gymnasia which cost respectively \$15,000, \$10,000, and \$13,000. These, for their time, were costly, elaborate, and well-furnished. Those at Amherst and Harvard, having been outgrown, have recently been replaced by more costly and vastly improved structures, of which we shall have occasion to speak further on.

Amherst College, situated within ten miles of the site of the original Round Hill School gymnasium, was the first college in America to establish a department of physical culture. This it did in 1860. That it did so was chiefly owing to the wise suggestions and zealous endeavors of the late Rev. W. A. Stearns, D. D., then its president. President

Stearns had argued, in 1854, on the occasion of his inauguration, "that no course of education is complete without devoting special attention to secure a good development and healthy state of the physical system." He returned again and again to the subject in his annual reports to the trustees of the college. In his Report for 1859 President Stearns said:

By the time junior year is reached many students have broken down their health, and every year some lives are sacrificed. Physical training is not the only means of preventing this result; but it is the most prominent of them. If it could be regularly conducted, if a moderate amount of physical exercise could be secured as a general thing to every student daily, I have a deep conviction, founded on close observation and experience, that not only would lives and health be preserved, but animation and cheerfulness and a higher order of efficient study and intellectual life would be secured. It will be for the consideration of this Board, whether for the encouragement of this sort of exercise the time has not come when efficient measures should be taken for the erection of a gymnasium and the procuring of its proper appointments.

He concluded with the statement that two of the most promising students in the senior class had just died, and that their deaths had probably been occasioned by the violation of the laws of health during their life in college. Other students, moreover, were fast breaking down their constitutions and seemed likely to follow them.

The trustees acted immediately, and voted that it was expedient to erect a suitable gymnasium; and, provided a certain amount could be raised by subscription, they recommended that an equal amount be appropriated for that purpose from the treasury of the college. The result was, that a building of stone, two stories high, fifty by seventy-two feet, was completed in the summer of 1860, at a cost of \$10,000. An additional sum of \$5,000 was expended for its apparatus and fittings. It contained on the ground floor two dressing-rooms, an office for the director, and four bowling alleys. The second floor contained the gymnasium proper, a well-lighted hall open to the roof.

Having finished the gymnasium, the Amherst trustees voted—

To establish a department of physical culture in this college; and that the duties of its professor shall be: (1) To take charge of the gymnasium, and give instruction to the students in gymnastics. (2) To take general oversight of the health of the students, and to give such instruction on the subject as may be deemed expedient, and under the direction of the Faculty like all other studies. (3) To teach elocution so far as it is connected with physical training. (4) He shall give lectures from time to time upon hygiene, physical culture, and other topics pertaining to the laws of life and health, including some general knowledge of anatomy and physiology. (5) The individual appointed to have charge of this department shall be a thoroughly educated physician, and, like other teachers and professors, shall be a member of the college Faculty. It is distinctly understood that the health of the students shall at all times be an object of his special watch, care, and counsel.

J. W. Hooker, M. D., a graduate of Yale College, was appointed the first Professor of Hygiene and Physical Education. He was forced by ill health to resign his position before he had held it a year, and E. Hitchcock, M. D., a graduate at Amherst and of the Medical School of Harvard University, was appointed on August 8, 1861, to the vacant professorship. Dr. Hitchcock still holds the position.

Originally all able-bodied students were required to practice both light and heavy gymnastics, but after a few years' trial it was decided to require practice only in the light gymnastics. Each of the four classes meets at an appointed hour in the gymnasium four times weekly for thirty-one weeks. The required exercise consists of a series of concerted movements made with a pair of wooden dumb-bells, weighing a pound each. The movements are executed simultaneously by the entire class, their "time" being regulated by the music of a piano. The class

exercise occupies from twenty to thirty minutes; such as choose to may then exercise upon the heavy gymnastic machines. Each class has its distinctive uniform, consisting of a loosely fitting shirt and trousers of heavy flannel, and no member of the class is allowed to engage in class exercise without his uniform.

In 1881 Dr. Hitchcock published a "Report of Twenty Years' Experience in the Department of Physical Education and Hygiene in Amherst College." It contains a full account of the organization of the department and the means employed to secure the interest and attendance of the students. It is only possible to refer here to the claim set forth therein to the effect that the Amherst system has proved itself equal to improving the carriage, physique, and health of the students trained under it; and to note the fact that certain interesting anthropometric observations have been regularly made by Dr. Hitchcock since 1861.

In the fall of 1861 [he says, p. 3, *loc. cit.*] I took measurements of all the college students in seven particulars, and have faithfully made these examinations of almost every sound man since connected with the college. The measurements are made of the Freshmen soon after entering, and are repeated upon them near the end of each year of the course. Thus every man who goes through college has been observed five times. These observations during the first year were the age, weight, height, chest girth, arm girth, fore-arm girth, and body lift. The second year the capacity of the lungs was added, and for the last years the finger reach and the chest expansion, and for the last two years the comparative strength of the two hands.

Six highly interesting statistical tables are appended to the report. It should be said that the duties of the professor are still substantially those originally laid down by the trustees, except that he does not teach elocution.

It was not until 1879 that any marked advance was made beyond the principles embodied in the Amherst system of physical training. That advance was made when the Sargent system of developing exercises was introduced into Harvard University on the completion, in 1879, of the Hemenway Gymnasium, which is by far the finest in the United States.

The Hemenway Gymnasium, at Harvard University, is named after Augustus Hemenway, Esq., of Boston, Mass., and a graduate of Harvard in 1876, who gave \$110,000 for the erection of a new gymnasium.

A description of it, condensed from the *Harvard Register*, is subjoined:

The building is built in the colonial style of architecture, of brick with trimmings of sandstone. The roof is covered with red slate, and is surmounted by a cupola, the top of which is 98 feet from the ground. The building is 125 feet long and 113 feet wide. Over the main window the coat of arms of the college is carved in freestone. The exterior is very attractive, and is a great ornament to the city of Cambridge. The main entrance is by way of an elaborate porch. There is an outer and an inner vestibule. From the latter is a flight of stairs made of North River bluestone, with iron balusters. On the right is a reception-room finished with enameled bricks. Opening from this room is a dressing-room 103 feet long, with numerous lockers, through which steam pipes pass for drying the clothing. On the same side of the building are two large bath and toilet rooms; and between these is a room arranged for vapor and needle baths, with appliances for giving a lateral, vertical, and descending shower. Three doors open from the dressing-room into the main hall, over which extends an iron frame-work arranged with sliding eyebolts and beams, so that the swinging apparatus can be suspended from any point. On the left side of the hall is an apartment for developing apparatus, and a semicircular room intended for an armory. The main hall is very elegant, the walls being of red and yellow bricks, and the woodwork of hard pine. It is 113 feet long, and in the widest part 90 feet wide, with an open roof, having hard-pine, open-timbered trusses resting on large brackets. On the second floor there is a room for the exhibition of trophies and for committee meetings, and also the rowing room, shut in by a high wooden screen, and containing sixteen rowing machines. Around the hall is a gallery which can be used

as a running track. On this floor is the office of the director, the measuring room, the janitor's room, etc. In the basement are eight bowling alleys with suitable ap-purtenances. The whole north end of the basement under the main hall is reserved for base ball, lacrosse, and tennis practice, and is enclosed by heavy wire netting. In the basement are also sparring and fencing rooms, and a boiler and store room. The whole building is heated by steam and thoroughly ventilated.

Concerning the apparatus introduced into the Hemenway Gymnasium, Dr. D. A. Sargent, its inventor and the director of the gymnasium, says:

Everything has been planned and arranged to meet the probable wants of the average student, and to satisfy the claim of the greatest number. The old-fashioned gymnasia are filled with crude appliances that have been handed down in stereotyped forms for several centuries. To use this apparatus with benefit it is necessary for one to have more strength at the outset than the average man possesses. When it is considered that only one man in five can raise his own weight with ease, the need of introducing apparatus to prepare one for the beneficial use of the heavy appliances becomes quite apparent; it was the realization of this need that led to the invention of the numerous contrivances that have been introduced into the Hemenway Gymnasium; the desire to strengthen certain muscles, in order to accomplish particular feats on the higher apparatus, was the original motive of these inventions. The results which followed were so satisfactory that the same appliances were afterwards used as a means of attaining a harmonious development. For this last-named purpose each machine has its own use. Each is designed to bring into action one or more sets of muscles, and all can be adjusted to the capacity of a child or of an athlete. Easy adaptation to the capacity of the individual, and facility of application for remedying local defects and weaknesses, are the distinguishing characteristics of the apparatus. Local defects and weaknesses are only to be discovered through physical examinations. By means of these examinations the physical condition of the individual is accurately ascertained. The relative proportions of the different parts of the body; the undue development of certain muscles, and the relaxed and enfeebled condition of others; the comparative size of body and limbs; variations of height, breadth, weight, and muscular strength, from the normal standard for a given age,—must all be taken into account in prescribing any useful course of physical training. This information, together with a variety of facts concerning personal history, bone and muscle measurements, and acquired or inherited tendencies to chronic or functional disease, shows at once the immediate needs of the person under advice. These needs having been ascertained, the proper amount of exercise on the proper machines is then prescribed.

The chief characteristics, then, of the Sargent system of training as originally introduced at Harvard are as follows:

1. It is based on careful physical diagnosis.
2. Exercise, diet, etc., etc., are prescribed in the light of such physical diagnosis.
3. Besides the ordinary light and heavy gymnastic appliances, machines designed to produce certain definite localized effects in development can be employed to insure symmetry, and remedy specific defects, or departures from the normal standard of strength or development.

It may be well to remark in passing that the anthropometrical observations made at Amherst were not used to determine the needs of the individual examined; that every member of the class was subjected to the same kind of exercise; and that the Sargent system of measurements has been adopted at Amherst.

The era of gymnasium building which opened in 1860 may be divided conveniently into three periods, viz: First period, 1859-'60 to 1870 inclusive; second period, 1871 to 1880 inclusive; third period, 1881 to the present writing (February, 1885). A table showing the date and cost of construction of the gymnasia built during each of these periods is given on the following page.

# 432 EDUCATIONAL CONVENTIONS AT NEW ORLEANS EXPOSITION.

## FIRST PERIOD.

Institution with which gymnasium is connected.	When built.	Cost.
<i>(a)—Institutions for superior instruction.</i>		
Amherst College, Massachusetts .....	1859-'60	\$15,000
Dartmouth College, New Hampshire .....	1866	24,000
Harvard University, Massachusetts .....	1860	10,000
Princeton College, New Jersey .....	1869	38,000
Washington University, Missouri .....	†	7,000
Wesleyan University, Connecticut .....	1863	5,000
Wisconsin University, Wisconsin .....	1868	5,000
Yale College, Connecticut .....	1860	13,000
Pennsylvania College, Pennsylvania .....	1870	3,000
<i>(b)—Institutions for secondary instruction.</i>		120,000
Claverack College, New York .....	1861	6,000
Allen's English and Classical School, Massachusetts .....	1860	500
Williston Seminary, Massachusetts .....	†	20,000
Total for the first period .....		146,500

a Estimated.

Williams College in Massachusetts and Bowdoin College in Maine, for young men, and Vassar College for women, in New York, each fitted up a gymnasium during this period in a building since devoted to other purposes.

## SECOND PERIOD.

Institution with which gymnasium is connected.	When built.	Cost.
<i>Institutions for superior instruction.</i>		
Beloit College, Wisconsin .....	1874	\$5,000
University of California, California .....	1878	12,000
Harvard University, Massachusetts .....	1879	110,000
Smith College, Massachusetts † .....	1880	24,000
Vanderbilt University, Tennessee .....	1879	22,000
Newton Theological Seminary, Massachusetts .....	1876	4,000
Hartford Theological Seminary, Connecticut † .....	†	25,000
Total for the second period .....		163,000

a Estimated.

## THIRD PERIOD.

<i>(a)—Institutions for superior instruction.</i>		
Amherst College, Massachusetts † .....	1883-'84	\$65,000
Bryn Mawr College, Pennsylvania † .....	1884	18,000
Cornell University, New York † .....	1882-'83	40,000
Dickinson College, Pennsylvania .....	1884	8,000
Johns Hopkins University, Maryland † .....	1883	10,000
Lafayette College, Pennsylvania † .....	1884	15,000
Lehigh University, Pennsylvania † .....	1882	40,000
Massachusetts Agricultural College, Massachusetts* .....	1883	6,000
University of Minnesota, Minnesota* .....	1884	34,000
Nashville University (State Normal College), Tennessee † .....	1884	5,500
National Deaf-Mute College, District of Columbia † .....	1881	14,000
Tufts College, Massachusetts .....	1882-'83	10,000
University of Wooster, Ohio .....	1882-'83	4,200
<i>(b)—Institution for secondary instruction.</i>		
Shattuck School, Minnesota .....	1880	20,000
Total for the third period .....		290,200
Total for the second period .....		165,000
Total for the first period .....		146,500
		601,800

\* Used at present for military drill.

† This is unique among our college gymnasia, as it contains, on the ground floor, a swimming pool, which is 40 by 26 feet, 6 feet deep, sloping upward to a depth of 3 feet at the other end.

‡ At the institutions whose names in the above list are marked thus ‡ the Sargent system is in vogue to a great extent.



## CONCERNING SCHOOL AND COLLEGE GYMNASIA NOT OCCUPYING AN ENTIRE BUILDING.

The following list comprises the names of a few of the more important colleges and schools known to possess gymnasia. In some cases a special building exists; in the greater number a hall has been fitted for the purposes of gymnastic exercise. It is impossible, owing to the meager returns to our inquiries, to state accurately the amount of money expended for buildings and apparatus by institutions not noted in the above lists; but we may safely "guess" that \$150,000 have been expended on the class of gymnasia under consideration, since 1860, in addition to the \$600,000 accounted for above.

Augustana College, Illinois.  
 Boston University, Massachusetts.\*  
 Carleton College, Minnesota.  
 Haverford College, Pennsylvania.\*  
 Hamilton College, New York.  
 Hobart College, New York.  
 DePauw University, Indiana.  
 Iowa College, Iowa.  
 Kansas State Agricultural College, Kansas.  
 Kenyon College, Ohio.  
 Marietta College, Ohio.  
 Nashville University (State Normal College), Tennessee.\*  
 Oberlin College, Ohio.  
 Seton Hall College, New Jersey.  
 Swarthmore College, Pennsylvania.\*  
 Union College, New York.  
 Vassar College, New York.  
 Wellesley College, Massachusetts.\*  
 United States Military Academy, New York.  
 United States Naval Academy, Maryland.  
 Bellevue High School, Virginia.  
 Boston English High and Latin Schools, Massachusetts.\*  
 Concordia Seminary, Missouri.  
 Connecticut Literary Association, Connecticut.  
 Cushing Academy, Massachusetts.  
 Morgan Park Military School, Illinois.  
 Mt. Holyoke Seminary, Massachusetts.  
 Pennsylvania Charter School, Pennsylvania.\*  
 Phillips Academy (Andover), Massachusetts.  
 St. Paul's School, New Hampshire.

The gymnasia whose names in the above list are followed by an asterisk, are chiefly fitted with the Sargent appliances.

Funds are either in hand or are being raised for gymnasia at Phillips Exeter Academy, New Hampshire; Michigan University, Michigan; the University of Pennsylvania, Pennsylvania; and Williams College, Massachusetts.

New gymnasia are projected at the United States Military and Naval Academies.

It appears from the Report of the Commissioner of Education for 1873, that out of a list of 119 normal schools in the United States, only 17 claimed to possess a gymnasium in 1873. The Commissioner's Report for 1882-'83 shows that 19 out of 119 public normal schools, and 16 out of 114 private normal schools, had gymnasia. As regards preparatory schools, the same Report notices the fact that 56 out of 157 of them had gymnasia.

One of the most potent factors in bringing about the revival, in recent years, of an interest in games, exercises, and training, was the war. With the war came a genuine appreciation of the worth of a good physique and of the educational value of bodily training. After the war the youth of the country engaged more actively, enthusiastically, and intelligently than ever before, in athletic sports; and collegiate and inter-collegiate contests in great variety gained unexampled prominence and favor in the estimation of the general public as well as of the college world. I do not propose to enter into the discussion of the vexed question of athleticism in colleges. My belief is that in the larger colleges the athletic spirit has gained such headway that no college can afford to crush it; that it ought not to be crushed, and that under control it is susceptible of being turned to the utmost advantage of the students. The spirit of intercollegiate rivalry should be kept within reasonable limits, and every tendency towards professional methods and practices should be discountenanced.

A few facts concerning the play-grounds of Harvard, Yale, and Princeton, and the sums raised and expended in a single year, may serve to indicate how highly developed an interest that in athletics has become; and it should be remembered that it has been developed and organized chiefly by the students and alumni of the last twenty years, who have contributed munificently towards the erection of our finest gymnasias. Dr. H. J. Bowditch, in his Centennial Address on Hygiene in America, in 1876, predicted what is in a measure already fulfilled. "Meanwhile," he said, in speaking of hygiene in colleges, "although the instructors of the colleges thus neglect important duties, the youths of their own free will, and at times, lately, with the aid and counsel of the college governments, have commenced athletic sports. This will gradually force the colleges to take, on their own parts, a higher position."

The playing fields at Harvard, on grounds belonging to the college, embrace about ten acres of land in the heart of the city of Cambridge. Within two years about \$6,000, of which the college contributed \$2,000, have been expended in improving them; so that the facilities for ball-playing, tennis, lacrosse, bicycling, and running are ample and excellent. The new Athletic Field at Yale will, by the time it is ready for use, have cost about \$56,000, which sum was chiefly contributed by students and graduates of the college. "It will embrace a quarter-mile cinder track, two ball-fields, a foot-ball field, and a cricket-field. It has on it a \$6,000 grand stand, and is inclosed by a wire fence, surrounding nearly thirty acres of land." The Director of Field Sports at Yale, who was in college distinguished both as a student and as an athlete, was appointed a year ago by the graduate and undergraduate athletic interest at a salary of \$1,200, toward which the Faculty paid nothing. Both Harvard and Yale have large and valuable boat-houses. Princeton has an athletic field of nearly ten acres, well appointed for field sports. The following table shows the financial condition of the athletic departments of Princeton, Harvard, and Yale, for the year 1882-'83.

Name.	Numbers.	Expenditures.	Income for 1882-'83.
Harvard.....	1428	\$15,542 44	\$18,656 82
Princeton.....	500	4,252 17	4,293 78
Yale.....	1050	17,476 04	18,048 03
Totals.....	2978	37,270 65	40,998 63

It may be said in passing that but a tithe of the attention given to athletic sports at the Northern colleges is discernible in those of the South. Military drill is the favorite form of physical training at the South. Since the war, military schools for boys have multiplied at the North, and all State colleges, organized under the Morrill Land Grant Act, are obliged to teach military drill. A few have evaded this provision, but most are glad to secure the services of a specially detailed officer of the U. S. Army as Instructor in Drill and Tactics. Military drill is well adapted for preparatory students, and has worked well in many new institutions; but he should be a bold man who would undertake to make it compulsory at Harvard, Yale, or Princeton. Paternal government is breaking down in our best colleges, and military discipline cannot be erected on its ruins.

Unquestionably the best considered and most successful experiments made to secure physical training in this country are those which have been carried out at the U. S. Military Academy and at the U. S. Naval Academy; and it is eminently desirable that the recorded experience of those institutions, touching the physique, health, and longevity of their cadets and graduates, should be made available as an example and stimulus to the managers of our scholastic youth. I am convinced that no class of our students, with the possible exception of the picked athletes, will bear comparison with the West Point and Annapolis cadets, as regards mental and bodily vigor.

There are probably not far from fifty college gymnasia or drill halls in the United States. Of these the best are the Hemenway Gymnasium, costing \$110,000; the Pratt Gymnasium at Amherst, just completed at a cost of \$65,000, named from C. S. Pratt, Esq., of Brooklyn, and a graduate of Amherst in 1879, who gave \$38,000 toward its erection; the Lehigh University Gymnasium at Bethlehem, Pa., built out of university funds in 1882 at a cost of \$40,000. These three gymnasia are far superior to any others in the country. The Harvard, Amherst, and Lehigh Gymnasia are all sightly and elegantly furnished structures, fitted with the most recent gymnastic and sanitary appliances. Each has a running track, commodious dressing rooms, generous bathing facilities, and convenient offices for the directors. Each has several bowling alleys; and those of Amherst and Lehigh have billiard rooms, with tables. The gymnasia at Amherst, Cornell, Harvard, and Johns Hopkins, are in charge of regularly educated physicians.

There are new gymnasia just completed at Bryn Mawr College for women, Dickinson College, and Lafayette College—all in Pennsylvania, and a new gymnasium is projected at West Point. These will cost upward of \$40,000, it is estimated.

The colleges are, however, not yet emerged from the building stage of development, as regards their departments of physical training. It is easily susceptible of proof that the best of them has not yet reached such a highly organized and differentiated state as to promise the best results. More generous endowments are needed, and a fuller complement of teachers is called for. There is a crying need for scientific medical direction on the one hand, and for competent teachers of gymnastic specialties on the other; but there is reason to hope that this need will be met before many years elapse.

Before physical training shall constitute a part of the regular course of instruction in the public schools of even the most enlightened States, a vast number of trustees, committee-men, teachers, and physicians must be educated, as they are not now and never have been, in regard

to Personal Hygiene in all its branches. As a rule, the medical schools make almost no attempt to teach those who bear away their diplomas, how to recognize a normal man or woman; and so long as the average medical man is indifferent to or ignorant of the subject of physical training, which in the last analysis is a training of the nervous system, we cannot expect teachers, either in school or college, as a class, to have intelligent practical notions on this subject.

## PLAN AND ARRANGEMENT OF PRIMARY SCHOOLS.

BY M. EDOUARD LOUIS CHARLES JOSSE,

*Member of the Dunois Historical and Archaeological Society, Foundation Member of the French Society for the Aid of Wounded Soldiers, etc.*

### CONSTRUCTION OF SCHOOL BUILDINGS.

When a school building is to be erected the first thing to be considered is that the locality be healthy, easy of access, and not near a cemetery. If the soil is malarious let it be well drained. The size of the grounds should give at least 10 square meters (about 108 square feet) to each pupil. The school and the teacher's lodgings should be in separate buildings, so that the one is entirely independent of the other. The school-room and the covered play-room should be connected, and both receive air and light from opposite sides. This arrangement is favorable to health, and also admits of a general oversight of the class during the hours of recreation.

### SCHOOL-HOUSE AND TOWN BUILDING.

*Commune of Autels-Villevillon, Department of Eure-et-Loir.*

(See PLATE I at close of Paper.)

School-room large enough for sixty pupils; dimensions as given in Fig. 6. The materials used in building should not be permeable to

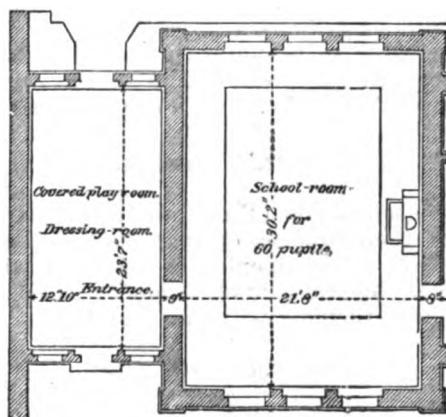


FIG. 6.

water; all substances which, like unbaked bricks, retain moisture, should be excluded. Each locality furnishes the materials best adapted for

use therein; in some it will be found advisable to use stone, either dressed or in the rough; in others, brick. The style of building, too, must be often made subservient to the amount of funds available. The lighting of the school-room should be a matter of profound study. It is absolutely necessary that the following suggestions be carried out as far as possible:

1, Light enough for all purposes. 2, Suitable proportions between the height of windows and size of room. 3, Apertures (3 feet 4 inches by 6 feet 8 inches) should be made opposite to the windows, so as to admit both light and air during the absence of the pupils. Such apertures should never be opposite either pupils' or teachers' desks.

Reference is also made to the following plans, which are subjoined to this Paper:

Plate II. Boys' school, Commune of Gasville. This school cost the commune about 33,500 francs (\$6,565).

Plate III. Mixed school and town building, Commune of Maisous.

Plates IV and V. Mixed school and town building, plans, sections, and elevations, Commune of Corancez.

### *Open Play-ground or Court.*

The size of the play-ground should be at least 5 square meters (about 54 square feet) for each pupil, and not less than 200 square meters (2,152 square feet) in all. The surface should be sandy and not paved or covered with asphalt. Trees should not be planted nearer to the school-rooms than 6 meters (19 feet 8 inches) at the least. The best plan is not to plant too many trees, as they interfere with the exercises and games of the children. Around the grounds at different points should be arranged benches with open-work seats, the supports of which should not interfere with sweeping.

### *The Gymnasium.*

Attached to every school there should be a gymnasium; this is rather impracticable in a poor community, but there ought to be at least a covered gallery with proper gymnastic apparatus.

Schools which are able to provide a gymnasium hall will find it of great service as regards the preservation of the apparatus, and particularly in that it permits the exercises to be carried on in all sorts of weather.

### *Covered Play-room.*

In addition to the school-room there should be a covered room where the pupils can eat their lunches or take their recreation. They can gather here, too, prior to the opening of school, or while awaiting the return of their comrades from lunch at home. Also in case of stormy weather they can have their recess here.

### *Urinals and Water-closets.*

Each school ought to be provided with four water-closets for the first hundred pupils and two for each hundred following. The seat, of stone or cement, should stand about 8 inches high, and form an inclined plane towards the orifice. There should be as many urinals as water-closets, divided by partitions of slate or other impermeable material.

## THE ARCHITECTURE AND HYGIENE OF SCHOOL BUILDINGS, LIBRARIES, AND MUSEUMS.

As will be seen by the following plans and diagrams, France is not only trying to ameliorate the lot of the teachers, both in city and in rural schools, but also to improve the condition of the schools themselves. Appended are some forms of desks, etc., used in the newer buildings.

*Seats and Desks.*

Fig. 7 represents a seat and desk for two pupils, used in the public

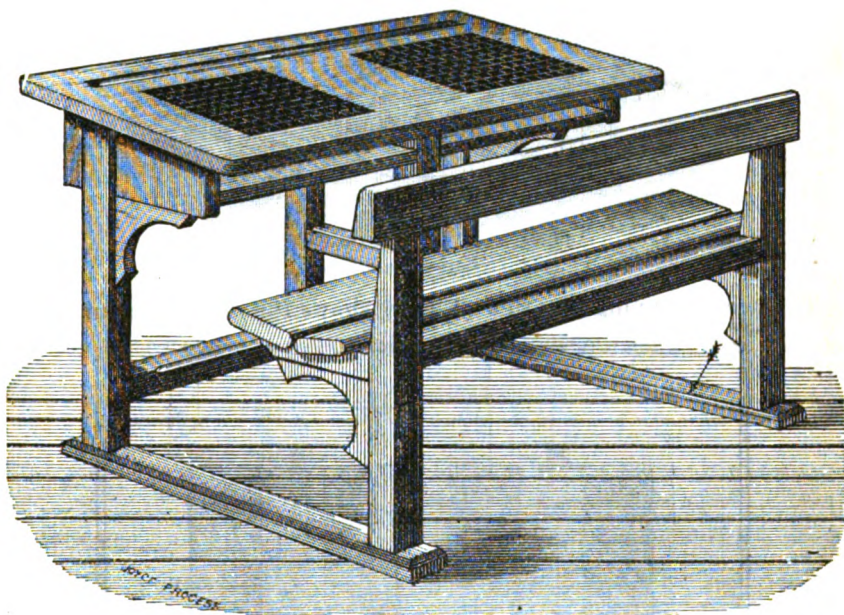


FIG. 7.

schools of Paris; the seat proper of beech, the tablet inlaid in the desk of oak, stained black and waxed. The whole costs about 22 francs (\$4.24).

In Fig. 8 is shown the form of seat and desk used in rural schools, also for two pupils; base of beech; sides, seat, etc., of fir; top of desk of fir, stained black and waxed. Approximate value, 18 francs for the whole (\$3.47). If the top of desk be of oak stained and waxed, it will cost nearly 2 francs (38.6 cents) more than if of fir.

According to ministerial decree of June 17, 1880, the dimensions of desks and seats of the above models are as follows:

Number.	1.	2.	3.	4.	5.
	<i>Ft. In.</i>	<i>Ft. In.</i>	<i>Ft. In.</i>	<i>Ft. In.</i>	<i>Ft. In.</i>
Height of pupil .....	3 3.4	3 7.7	3 11.6	4 5.5	4 11
to 3 7.3	to 3 11.2	to 4 5.1	to 4 11	and over.	
Height of desk-edge next to pupil.....	1 5.3	1 7.3	1 9.7	2 0.4	2 3.6
Length of desk for one pupil .....	1 9.7	1 9.7	1 11.6	1 11.6	1 11.6
Length of desk for two pupils.....	3 3.4	3 3.4	3 7.3	3 7.3	3 7.3
Height of seat.....	0 10.6	0 11.8	1 1.3	1 3.3	1 5.7

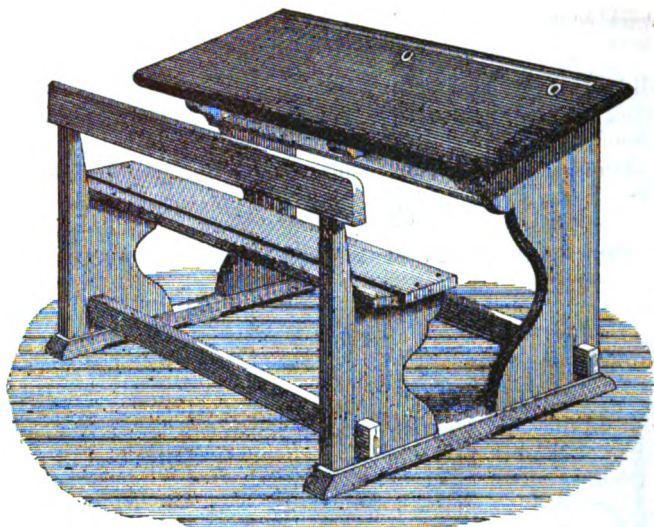


FIG. 8.—Desk for rural schools.

The accompanying diagram (Fig. 9) shows the interior arrangement

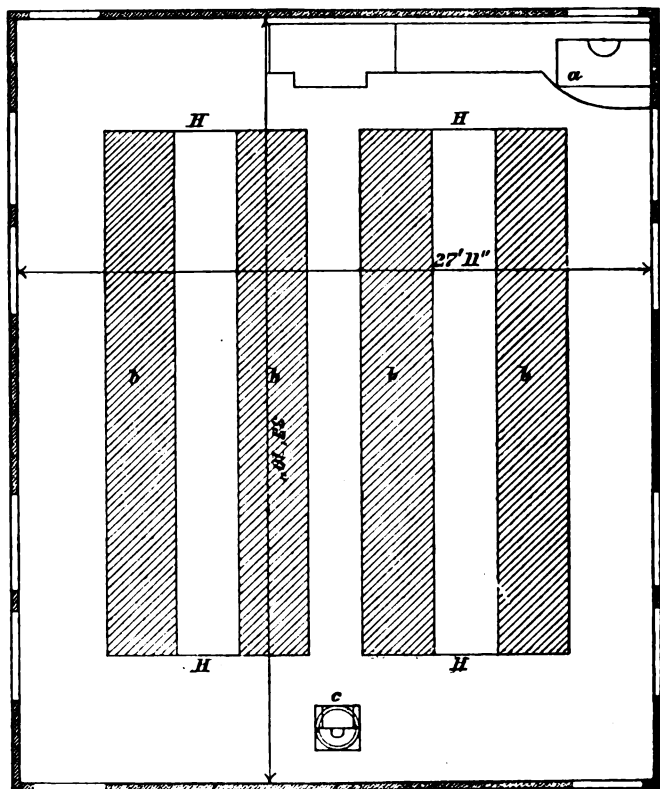


FIG. 9.—Interior arrangement of boys' school. *a*, Master's chair. *b*, Pupils. *c*, Monitor.



of the boys' school, Commune of Aulnay-sur-Auneau, Department of Eure-et-Loir. The school-room has accommodations for eighty pupils.

A space is left purposely between the desks so that the master or the monitor may have an opportunity to watch each pupil, in order to prevent disturbance in the school-room. The aisles *H* may be occupied by desks, if it is desired to provide for more pupils. Back of the master's chair there is a platform for the pupil to stand on when called to the blackboard or maps. This enables the pupils to see clearly what is being done by those reciting. By means of such methods the pupil becomes accustomed to reciting in a loud voice, and in time he acquires sufficient confidence in himself to pass an examination at the close of the year.

### *Libraries.*

Each of our schools has a library and a museum. The library is made up of the usual classic authors and works in science, mathematics, chemistry, and physics. It is also advisable that the young should have a knowledge of ancient and modern literature; so the communal authorities provide for the purchase of works of history, biography, voyages, and travels.

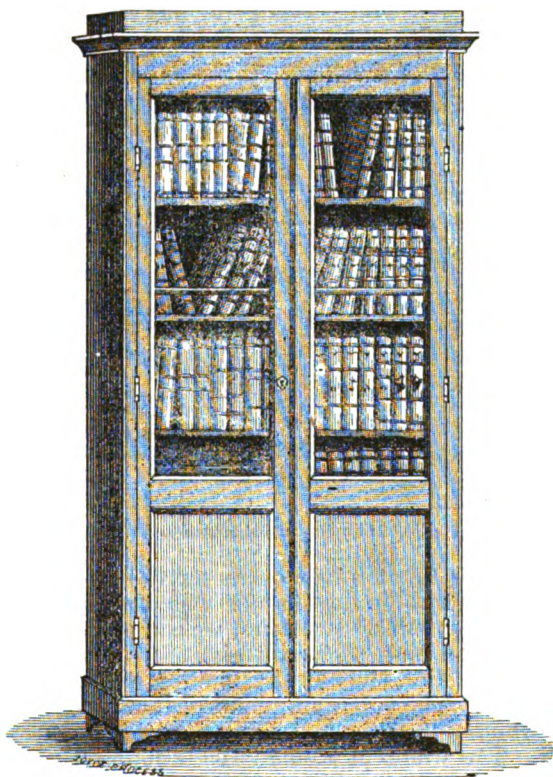


FIG. 10.—School library.

If there are wealthy property owners in the community efforts are made to obtain from them gifts of similar works. It is impossible to say precisely what a library should contain, as the character of the

contents depends somewhat upon the wealth of the canton. The government, however, endeavors to furnish aid to school libraries as far as possible.

### *Museums.*

The abundance of minerals, ruins of human habitations, and antediluvian objects to be met with in France, furnishes an opportunity to the French instructor to teach his pupils geology, archæology, and history. Each department preserves all records of the physical and political

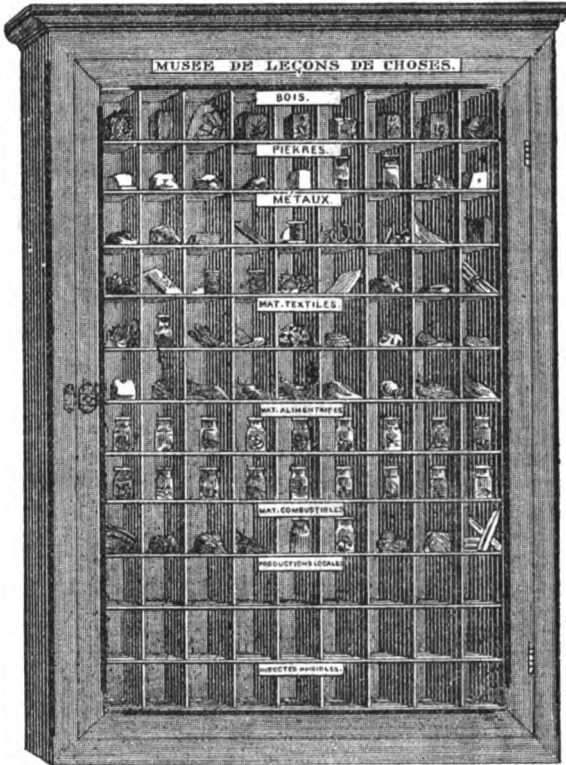


FIG. 11.—School Museum.

changes which have taken place on its territory. In certain districts can be followed step by step the changes which resulted in the dying out of great families of animals. In others, we can arrive at a knowledge of the Stone Age, when man seemed a giant by reason of being able to work, without tools, flint, marble, etc., making weapons and other sharp-edged implements. The skill and genius of the Romans is shown by the instructor to the pupil, while analyzing the rude defense of the Frank and the Gaul. The different Roman roads found throughout France are evidences of the great public works executed in the time of Julius Cæsar. Thus by degrees we come insensibly to the present epoch, and at each step the earth yields up some valuable object for our study. Museums of rural schools therefore are often made up of objects which would be of no special value to the outsider, but which aid the instructor in giving interesting and valuable information.

I will not dwell on the form which the library or museum should take. In rural communities it is well to group their contents in the school-room, unless, as in the large cities, there is a room especially set apart for a library and museum.

In this brief *résumé* I have endeavored simply to call attention to the means of instruction which are made use of in the smallest of the French communes, and will leave the more pretentious academies and colleges to parties more competent to treat of them.

#### SCHOOL HYGIENE.

Each school should have gymnastic apparatus, in order to develop the muscles of the child and render them flexible. One hour at least should be devoted each day to various exercises of this kind, under charge of a monitor. Provision should be made for the future military needs of the country, and patriotic sentiments inculcated in the minds of the youth. Instruction tending towards this end is comparatively easy at present, as each commune of France has its school battalion, well equipped, and ready for maneuvers similar to those of the regular troops. It is necessary to accustom the children to obedience and discipline, so that, in case of war, all will be ready to take up arms against the invader.

#### HOURS OF STUDY.

As for hours of study, from 8 to 11 A. M. and from 1 to 6 P. M., with an hour for gymnastics in the middle of the afternoon session, would seem amply sufficient, and such an arrangement would not fatigue the student too much. On each Thursday afternoon it would be well for the teacher to accompany the boys on a ramble, during which he should talk with them about the physical features of the land, its plants, &c. He should question the pupils from time to time, and then explain how trivial is man as compared with the great immensity around them.

#### THE CHARACTER OF THE TEACHER.

After having given of its resources in the construction of school buildings, the commune has a right to inquire into the character of the person who is to hold the position of teacher. It is necessary that the teacher should have certain marked qualities, among them patience and an even temperament.

Happily many who intend to become instructors realize early in life the high mission to which they are to be called; they rival each other in their zeal for the education of youth, and hold out bravely against the sarcasms of their pupils, who are too apt to forget how sacred is the teacher's calling.

To those comprehending the mission of the teacher I send this expression of my devotion to their calling, and, in defending them, I glorify them as "Apostles of modern civilization."



SCHOOL-HOUSE

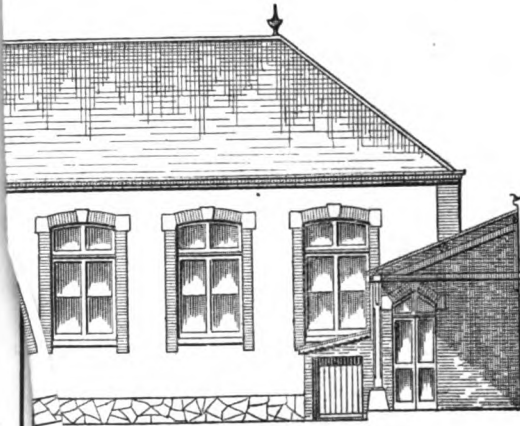
Commune of









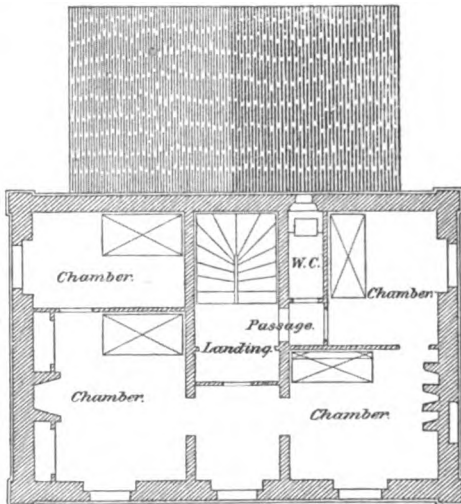


ATIO

SCHOOL FOR BOYS AND GIRLS,  
AND  
TOWN HOUSE,  
Commune of Maisons.

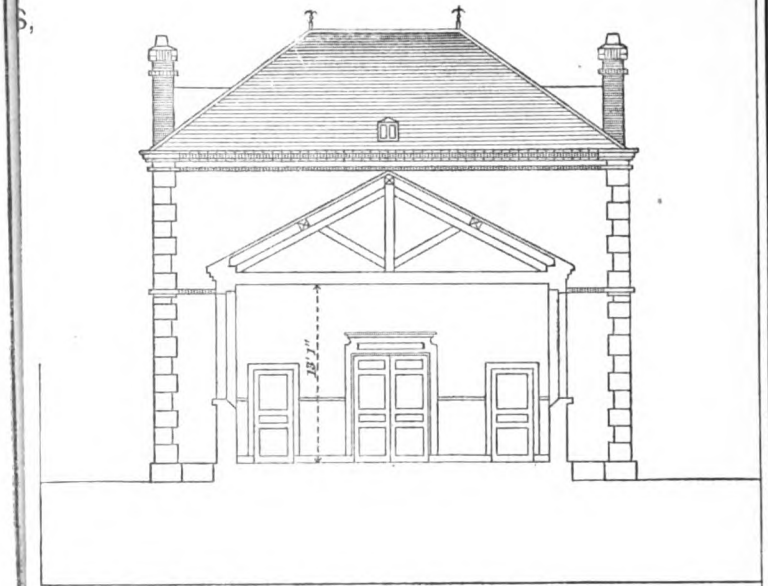


SCHOOL FOR BOYS AND GIRLS,  
AND  
TOWN BUILDING,  
Commune of Corancez.



PLAN OF 1<sup>ST</sup> STORY.







**SECTION F--MISCELLANEOUS.**

**683**





## RESPECT FOR AUTHORITY DEVELOPED IN THE SCHOOL-ROOM.

BY BROTHER JUSTIN,  
*Of the Christian Brothers.*

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Man is a rational being. He has ideas of right and wrong. This is brought home to him in childhood. He obeys his parents; he depends on them for all his wants and he looks to them for instruction. He never thinks of questioning their right to command. He is too young to know the why or the wherefore. He does this and he does not do that, because such is the will of his father or mother. That is the law for him, and this is true of all orders of society, of the child of the savage, as well as the child of the civilized and cultured man. He does not know what doubt is; he trusts implicitly in his natural protectors; his nature, his instinct draws him to them; he prefers them to all others; he loves them as only the child can and obeys them unhesitatingly.

And as he grows up and his reason begins to develop, he finds evidence of submission and dependence everywhere; he sees it in the mutual relations of confidence and reliance that he observes wherever he goes. In the school-room he has both the theory and practice of the principles of authority, of government, of society, of equality, of justice, and of mercy. In his tender years he admires beauty of character more than beauty of form; or kindness and gentleness have more effect on his young mind, than physical beauty and comeliness of person. In school he sees that the good and industrious pupils are held in esteem, while the idle and rude are not. The latter fill none of the posts of honor; nor do they receive any of the privileges given for good conduct and successful effort. Sometimes they may be deemed unworthy of the society of their companions and are required to withdraw.

All this brings home more clearly the distinction that exists, and that must be made to exist in every well-ordered society, between the child or the man amenable to discipline and order, and those whose life appears to be a constant struggle against the principles on which society is based. As the boy grows into the youth and enters on the broader theater of the busy world, he is surprised at the deep earnestness and restless activity that are visible in every department of life. He soon realizes more fully, as he sees more clearly, the necessity of choosing his course. He needs no proof to be convinced that success in whatever he undertakes demands attention and constant application, with a proper respect for those in authority, no matter in what department.

Does he carry the brief of his employer to the court? He sees the judge on the bench, the jurors in position, the officers each in his place. A case is called, the lawyers begin, and the trial proceeds. On the issue, the life or death of the prisoner may depend. Bitter words are sometimes exchanged, excitement characterizes the proceedings, the judge

calls to order; and such is the respect ingrained in all classes of the people that if any lawyer fails to respect his authority, no matter how pure his character, how high his standing, how long his honorable practice at the bar, he is condemned for contempt of court, and he can plead there no more until he has repaired the injury done to the authority he has offended.

The judge may not be an able man; may not be a popular man; the reverse may be the case. It is not the man that is here in question; it is principle; it is respect for authority.

We read in the history of England that the Crown Prince insulted Judge Gascoigne in open court. The judge ordered the Prince under arrest. When the King heard of the incident he said, "Happy the King who has a judge who understands his position, and who has the courage to exact respect for authority; and still happier in having a son who knows his duty, and gives evidence of due respect in cheerfully submitting to the officer of the law."

The young man now finds himself face to face with responsible public life. He is a member of society; he has duties to fulfill; and in their performance he is compelled on many occasions to forego the gratifying of his natural inclinations. He depends on this man for one thing and on that one for another. He has needs and is not himself able to supply all of them; but he is provided with faculties by means of which he can ask for what he wants. In turn he supplies his quota to the common fund and thus does his duty to society.

All this supposes the existence of certain modes of action, customs of society, founded on principles that are universal and immutable. Among these we everywhere find the principle of authority; therefore it is necessary for the well-being of society, and being necessary, it is easy to prove to all intelligent minds, that its sanction is unquestionable. Since it is necessary, the reason for its existence is found in its very nature. It is the outcome of the natural law, for it inheres in it, as dominion and supremacy are by virtue of the natural law. But the natural law is the law of reason, and emanates immediately from the Sovereign Reason—God. But reason is essential to man's nature, to his personality. The principle of authority then being by a law above and anterior to man has not its sanction from man. It therefore does not depend on him, and therefore government, which is the application of this principle to society, is divine in its origin and has God for its author. This principle being admitted, society has the right to select the form of government that best suits its wants. The celebrated Cardinal Bellarmine says: "Particular forms of government are by the law of nations, and not by divine law, since it depends on the people to select kings, consuls, or other magistrates, and for a legitimate reason to remove them."

History tells us that in all nations and among all peoples however rude the principle of authority was not only acknowledged, but held in great respect. The case of the prophet Daniel is very interesting as an illustration of how far this was carried. He had disobeyed a decree of the King Darius. The king would gladly have passed over the violation of the decree, but he was reminded by his nobles that it was a thing unknown among the Medes and Persians that a decree of a Persian king once issued could be recalled.

When St. Paul was reminded that he should not speak too freely to the High Priest, his answer was, "It is written, 'the Prince shall be in honor among the people.'" The people were, from time immemorial, taught to respect authority in the persons of those in whom it was

vested, and they could not and would not tolerate its violation. This is evident from the remark, "Speakest thou to the High Priest thus?" The Romans, so remarkable for their code of laws, were no less remarkable for the vigor with which they punished its violation. In the early days of the Republic under the elder Brutus, you will find examples of their inexorable justice. No stronger proof of this truth can exist than the execution of his own sons by the decree of the Consul, their father, because they had been convicted of conspiring against the newly established government.

The most enlightened nations of antiquity,—the Babylonians, the Egyptians, the Greeks and Romans, all provided to a degree that is scarcely credible, for the education of their people in all that regarded their respect for the law and obedience thereto. Not only the nations of antiquity, but modern Christian nations have done the same.

Has not the common law of the civilized world made the person in whom the supreme power is vested sacred? We all recall the shocking outrage perpetrated on society by the atrocious assassination of our late lamented President, Mr. Garfield.

Great, however, as is the dignity of rulers, great as is the authority they wield, sacred as are the functions of their position, equally great is their responsibility. "By Me kings reign," says Almighty God. Reigning in God's name and as God's representatives in the human order, their obligations to administer the sacred trust confided to them cannot be overestimated. Rulers, magistrates, or princes, are the ministers of God for good. When they are faithful to their charge, their rule is a blessing to society, authority is in respect, prosperity grows up about them, peace characterizes their administration, or if war come, it is prosecuted with vigor and brought to a speedy and successful issue. The condition of all classes is satisfactory. The just claims of the poor are recognized and attended to equally with those of the rich. Justice reigns and man's sense of right is as fully realized as human institutions can make it. Thus the name of Alfred is honored to-day not only in England, but throughout the world. He was a noble prince, a good ruler. He loved his people and devoted his great energies to improve their condition; he encouraged education, and was himself a hard and successful student. This did not prevent his subduing the enemies of his country, and giving to the administration of justice among his people such vigor that crimes against person and property became unknown during his reign, and tradition has attributed as the fitting monument to his memory, the great, the world renowned Oxford.

Charlemagne was a ruler of the same type. He, too, was as successful in war as he was glorious and happy in peace. Having subdued his enemies at home and abroad, he everywhere established courts for the administration of justice among the people; he opened schools throughout his dominions, he invited scholars from foreign countries to his court, he opened an academy in the royal palace, and with his sons attended the lectures of the professors whom he honored as the lights of the world. We need not go to England or France nor to the remote past for examples. There is not in the world's history a nobler name than that of our own Washington.

Here were men in whom the principle of authority was not only recognized, but revered and loved, and their names are a sacred heritage to the race. While too much praise cannot be given to those who administer wisely and successfully the authority with which they are vested, we cannot too severely condemn the infamy of unjust and tyrannical rulers, who are worse scourges of humanity than either pestilence or

famine, and whose names are a synonym for infidelity and baseness. Contrast the conduct of a Rehoboam, a Nero, a Robespierre, with an Alfred, a Charlemagne, a Washington. The latter made it their delight to redress the grievances of their people, the former were infamous. See it in the division and subjugation of Israel; in the burning of Rome; in the innocent victims of the guillotine.

Take our own case: George III and his Parliament were most respectfully petitioned for a redress of grievances by a loyal and brave people. The petition was spurned with contempt. It is unnecessary to point to the consequences; we, at least, may be permitted to say, if any people ever could, Happy fault, which has led to such magnificent results! The old bell that hangs in yonder hall tells more eloquently than any effort of man can, the grandeur of the achievements that followed the Declaration it tolled out on the air from Independence Hall more than one hundred years ago.

Authority, wherever respected by rulers and people alike, has been productive of the happiest results to society; and the contrary has been the case where either people or rulers have failed in recognizing its due importance, and faithfully carrying into effect its just requirements.

The principle of authority can never be revered nor honored as the needs of society imperatively demand, nor can it have its proper and necessary influence with the young, unless its high origin and sacred sanction be fully unfolded, and the reason for its existence, usefulness, and necessity pointed out. This cannot be done without explaining clearly what are the rights and duties of men in society in their relations with one another.

God is the author of society. It comes from Him, and without Him it cannot live. But God has certain attributes or perfections, such as justice, truth, wisdom, mercy, which are characteristic of His nature, the law of His being; and in creating man—the unit of society—to His image, He impressed this law on his heart; and this law, thus divinely impressed, becomes the standard of right and wrong; the ultimate rule against which no man is ever justified in acting. This law is defined by St. Augustine as the Divine Reason, or the will of God commanding the observance, forbidding the disturbance, of the natural order of things. This is indeed high sanction, and establishes on the firmest of all foundations the principle of authority. St. Thomas, in speaking of this fundamental law, says it is the impression of the Divine Light in us, a participation of the eternal law in the creature, in man. Cardinal Goussell says that it is the supreme rule of actions, thoughts, words, and acts; all that man is—is subject to the dominion of the law of God, and this law is the rule of our conduct by means of conscience.

This law is in all men, and therefore all men have ideas of justice, truth, goodness, and duty; if, then, we would perpetuate our institutions throughout all time and make them loved and cherished by the people, let us see that in all things they are found to be in conformity with the natural law, the law of God, the ideals of which are in the minds of all,—and fix the truth of this so firmly in the minds of the young that it cannot be shaken. In doing this we convince them of their responsibility to an infinitely just God, of the priceless value of integrity of character and of uprightness of conduct. On this base, the heritage of liberty is secure; and the conviction that these principles are based on eternal truth will so captivate the mind that not only will they accept it, but will, if true to the conviction, be always ready to defend it, and if necessary sacrifice life for its preservation and perpetuation. On this, the foundation of permanency rests secure. Unity is the

corner-stone of the edifice, Justice is the cement that binds the parts together, and as Society is the creation of God, for man's benefit, His blessing must rest upon it. But where are we to teach this? Everywhere, when the circumstances will permit. What is the sanction for it? The highest, the best; read it in the Holy Bible:

"And these things which I command, thou shalt tell them to thy children; thou shalt meditate on them—and thou shalt bind them as a sign on thy hand—and thou shalt write them on the doors of thy house."

He that builds on any other foundation, builds in vain. Lycurgus made himself the victim of his code for the benefit of his country, but his code is no more, and why? Because it was not in conformity with the Divine Law; and so it is with all the codes of the ancients; the Mosaic only survives, and that because it is of God.

There can be no stability in error, for weakness is of it; and strength is impossible without virtue. Corruption falls by its own weight; decay is in it, and the period of its existence is short. History, the memory of the world, brings before us a sad record of the changes of dynasties, of the disease and death of nations.

On the tomb of each it has written its appropriate epitaph. It tells why the pyramids live while the Egyptian is a slave; why the Greek wears the Turkish turban, the badge of a servitude more degrading than that of the galley slave; it points out that because they had forgotten the conditions of rational life, morality and justice, liberty perished, and they have been crushed by a tyranny as base as it is vile.

Thus, wherever men have forgotten God and ignored His law, degradation has come upon them and slavery is their lot. Look at the 100,000 Romans, refined, educated, fastidious—women as well as men—in the amphitheater, crying out for the blood of their fellow creatures, "Give the Christians to the lions," and this for a Roman holiday! We shrink with horror from the contemplation of such a spectacle, and why? Because we know more clearly than they our rights and duties; we recognize in a fellow man a brother and the image of our God, and consequently a life that is dear and sacred to us. Why to-day does the South Sea islander kill and eat his prisoner of war, while with us he is treated as the victim of misfortune, not of crime, and his wants and even comforts are attended to by societies of educated and refined women? Why is there such a difference between a Gladstone and a ruler of Burmah? The one, though a ruler of one of the greatest nations of the earth, knows that he cannot injure with impunity the least of his fellow creatures; the other butchers them without a scruple. The one is educated under the influence of an admirable public conscience, and he is conscious that he is amenable to the bar of an enlightened public opinion; the other heeds no conscience, but the impulse of passion, nor does he recognize any public opinion he is bound to respect. In a word, the one is brought up under Christian auspices, the other under Pagan. Would we escape the fate of the Egyptian, of the Greek, of the Roman? Then we must show our gratitude for the priceless blessings that a kind Providence has bestowed upon us; we must give our youth a standard worthy of their high origin, their noble destiny; we must develop in their minds by proper training the germs of those principles that know no decay, that never die, that are ever buoyant, ever true, ever good, ever beautiful.

Many of the primary truths are in the child. They grow with his growth and develop with his years. He has a conscience. It is the voice of God, his Father, in his heart. Its formation in accordance with truth and justice is of the utmost importance. He loves the truth;

it is the object of his intelligence. His mind rests in it and is satisfied with it. To develop his intelligence in any direction is either to bring a new truth home to it, or to perfect his knowledge in a truth already known in part. To do this successfully, it is necessary to proceed in accordance with his aptitude, his years, and his acquirements.

He knows some things because he sees their truth; and until he sees their truth, he does not know them; for to know anything is to see it, as it is. When his intellect sees a truth for the first time it is a revelation of joy; it is a triumph; he feels it; he sees in it an advance, and the realization of this fact gives a strong, a new impulse to the will to acquire more. The love of knowledge begets the desire to know, and as the desire grows in the proportion in which knowledge is assimilated, it not unfrequently happens that a strong love of study is engendered.

Love, being the preference of an object on account of the good, real or imaginary, in it, attracts in the degree in which it appears desirable. The love of knowledge is the love of intellectual culture; it is the love of truth, the love of the good; and the good being the object of the will, its possession is fruition, is happiness; and here begins the culture of the heart.

The moral nature of the child grows strong and vigorous as his intellect expands under proper development, and the growth of both under happy, intelligent, virtuous auspices is the formation of his character. To the child so brought up it is easy to bring home the truth that evil is the absence of good, and where good is not, happiness is not and cannot be; union, harmony, justice, and liberty are not, and cannot be; but disorder, and anarchy, and injustice are, and must be, and they are the very worst enemies of society. These truths gradually developed in the mind, the love of good increases, and as it increases the will grows stronger in the preference of all that is good and in the resolve to be faithful to what it feels and knows is its duty. Pessimists will tell us that this is utopianism. But we know it is the truth. We have made the test; we have tried and experienced the correctness of what we state. We have proved it to be the truth; it commends itself to our judgment; and the conviction remains that it is not only the best mode of procedure, but the surest road to success in the most important work ever given man to perfect. History proves that in all civilized nations great care has always been taken that those who were called to the administration of public trusts should be qualified, and for that purpose they generally underwent a long course of preparation. In a democracy every citizen takes a part in the government, and therefore should be educated in such a way as to do so intelligently. "There can be no doubt," says the late Archbishop Spaulding, "that whenever the character of the people can bear it, a well-regulated democracy is preferable to all other forms of government." In a democracy all have a share in the government; the people select the rulers in accordance with the constitution or fundamental civil law of the land; hence the necessity of self-restraint, of self-government, of intelligence and integrity, to be in a position to fulfill so grave a duty fittingly. The case is our own—we have no standing army, no privileged classes; we do not fear conspirators. Why should we? Whence would they come? What their object? Would they destroy our government? How could they do that? There is no reason for such a course; every man has his share in the government—it is his own. He is therefore, and must be, interested in upholding it. If a true man, he loves it and is ready to peril prosperity and even life for its preservation.

But to do this a man must be virtuous; he must be a man of high

principle; and this in general he will not be, unless he has been properly educated. Good government implies restraint, and there are times and occasions when this restraint is of a nature to call for great sacrifice of feeling. If the government rests for support on the moral power of the people, it is clear that that moral power must be of no uncertain character. Were it otherwise the gravest interests might at any moment be compromised, the right of property would not be respected, the sacredness of person would not be secure, and life would be at the mercy of the mob. Then what guarantee would there be for the permanency of our institutions and for the preservation of our liberties? The consequences are too appalling to contemplate; immediate loss of confidence, our name a by-word among the nations, business unsettled, legitimate enterprise abandoned and general discontent growing out of universal distress, would be everywhere; riot and rapine, bloodshed and incendiarism, would be the order of the day. Is there, can there be, any danger of such things as these coming upon us? Any one who has read the proceedings of the late socialist meetings in Chicago can hardly doubt that there is a dangerous element abroad, small, thank God, and of little influence, but still it exists; and it grows bolder with impunity and utters blasphemies of so horrid a nature, that we wonder that such things are possible among enlightened men and in our day, where there is not the slightest shadow of an excuse for such intamous proceedings.

Our people are law abiding and hold these men and their shameless proceedings in utter contempt. Their sound, practical sense and cool self-reliance in the hour of danger are our immediate and certain guarantee against any and all disorders coming from such people.

The school, however, is the radical cure for the ills of the social, the political body, because it is in a great measure in the school that character is formed.

The child of to-day is the man of to-morrow. He goes to school at 6 or 7 years of age and stays until he is 14 or 15, and some longer. Day after day, and while his mind is so easily impressed, he is under the influence, good, indifferent, or bad, of the teacher. How necessary then to the well-being of society is the selection of teachers. They should be equal to the mission and realize its importance. No work is more essential to the common good than theirs. They are the architects of the living temple of the Republic; they are the wise and prudent men that are chiseling its pillars and polishing its columns. To-day it is a Marshall, to-morrow a Lincoln. Honor them, and enable them to give their time and talent, their best energies to the perfecting of methods and the carrying into daily practice systems that will bring about good results. Do not compel them after 8 or 10 years of successful service, when they understand the work and have by diligent study and careful practice become familiar with its difficulties and mastered them, to seek in other fields of labor a recognition and compensation that they deserve and which all interests demand that they should receive. At no time and in no country was this ever more important than in our day and in our country. Our wealth is untold; our resources are immense, the enterprise and energy of our people is unparalleled. In the race for success they dare anything and everything; they are fearless and self-reliant, generous and independent, and nothing in the human order appears impossible to them. The spirit of a Jones, a Wayne, a Decatur, is seen in the boldness with which works of magnitude are undertaken. Our mines, our railroads and other enterprises are proof of this. To control this spirit, to give it a true and right direction, is in a large degree the work of the teacher. Surely then his selection is a matter of real con-

sequence, the issues that depend upon it being so weighty and so varied. The promise of good that it contains for society; the evils to be foreseen and avoided; the means to be given; the motives that most strongly appeal to the mind, and that are best adapted to influence the young heart rightly and wisely in its course—all these are in the hands of the teacher. It is essential, then, that he knows well what he is to teach; and no less essential—indeed it is much more—that his life is blameless, his character unimpeachable, and his record without a stain. He should be refined in character, gentle in his treatment of his pupils, firm in exacting duty; he should understand character, know how to develop it, and withal be able to realize the importance of giving his best efforts to the development and perfection of his work. If he does this, he cannot fail to gain the respect, the admiration, and even the love of his pupils; his word will be law to them; his advice will be cherished and never forgotten; his views, his sentiments, his principles, imperceptibly grow into the life of his disciples; they learn to think as he thinks and to act as he acts, and to give a direction to their conduct in accordance with the principles they daily imbibe. Had the brave but unfortunate Arnold such a teacher, one who would have won his confidence and warned him against the danger of the punch bowl and gambling table, he never would have been a traitor, and his name, instead of being infamous, would stand on the roll of fame beside that of the immortal Washington. Had the brilliant but wretched Byron been kindly treated in early life, he would in all probability have lived longer and would have blessed the world by the splendor of his genius.

But, if the teacher be narrow-minded, exacting in trifling matters, pedantic and selfish, snappish and unkind, or indifferent in moral character, he can never be worthy of his profession, nor fulfill its high requirements with credit to himself or profit to his charge. What a misfortune to the youth placed under his direction! How can he educate? How form the heart? He has none. The genial sunshine of love and confidence never enters his cold soul, and out of it come bitter words and sarcastic criticism, that kill the fairest germs of thought. Though this man be as well versed in mathematics as Newton, as acute in philosophy as Leibnitz, and in theology as profound as St. Thomas, he will never acquire the ascendancy over his pupils essential to the happy and successful formation of their character, nor will he be in a position to aid them in becoming good and useful citizens. He may make clever scholars; they may excel in their studies; but the grand base of all useful and profitable knowledge, moral character, will be wanting. He has no moral influence, and he cannot communicate that which he has not.

Here we come to the practical application of the preceding remarks. You, gentlemen, represent the teaching element of the civilized world. In your hands in no small measure is the destiny of nations. I know this is saying much, very much, but not too much. A good teacher is a true missionary; he lays the foundation of the social edifice. You know it, your experience is world-wide, and your reading, study, and labors entitle your opinion to great weight.

If, then, you believe that the duty of the teacher is so important, would it not be well for all, where the interests are so vast, each one in his own sphere and in accordance with his convictions, to endeavor to bring the matter home more nearly to the minds and hearts of all concerned?

A good government is one of the greatest earthly blessings; a good education is one of the chief elements in procuring and preserving it;



then without doubt this truth is worthy our most serious consideration. The position of the teacher should be hedged in, all around, with every security. The interests at stake are so vast that none should be allowed to enter the precincts of the school, to exercise its functions, unless thoroughly qualified for the work. To secure teachers having all these qualities may seem difficult, but the difficulty is not very great. The profession of teaching has risen very high within the last few years in the estimation of all men of thought, and just in proportion to the respect it commands, is it desirable as a calling, to good and able men. Remove the temptation of this class of men to use it as a stepping-stone to something better, something higher, something deemed more honorable, and you secure the best and ablest talent of the land for the school; and out of such schools will come high character, sterling integrity, morality, and patriotism, the elements most essential to the preservation and happiness of society.

# LITERARY AND SCIENTIFIC HABITS OF THOUGHT: A COMPARATIVE STUDY.

BY BROTHER AZARIAS,

*Rock Hill College, Elllicott City, Md.*

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The philosophical problems that come up for solution at the present day are very ancient. We find them all debated in Plato; and in the light of modern issues his pages become instinct with life. Whether we sit with Socrates in the forum and listen to him discussing with Theætetus the limits of science and the relativity of knowledge; whether we recline with him under the lofty and wide-spreading plane-tree by the cool fountain, whilst he talks with Phædrus of love and art and beauty, and the soul in its relations in these things; whether we laugh at the inimitable irony with which he brings Georgias and his disciples to confusion; or whether with bated breath we listen to his sublime discourse on immortality delivered to his devoted followers in the prison in which he is about to drink the poisoned cup; be the occasion when it may, we still meet with the same questions that face us to-day. Now, as then, it is the human intellect beating against the bars of its limitations and seeking to compass the unattainable. It is the ever-recurring problem of knowing, in which men forget the very circumscribed limits within which thought moves. And after traversing a dreary waste of controversy with wrecks of systems scattered through the pages of Plato and the Schoolmen, of Locke, and Berkeley, and Hume, and Kant, and of Herbert Spencer in our day, we inquire, what is the outcome of it all? We have gotten no nearer to the solution. And in all earnestness we ask, is there a solution at all, or rather, is there a problem to be solved? We know; and after we shall have known how we know, we still only know. There is no going back of this. The mental labor of five and twenty centuries has been expended on that one problem of knowing; ought this not suffice? How long, maelstrom-like, will it continue to whirl within its eddy all issues? To our mind, the only practical solution to this problem—if problem there be—is, as hinted at in the following paper, to accept things as they are, to take upon trust our faculties with all their shortcomings, and to recognize both shortcomings and limitations in all our thinking.

## I.

There is a wide difference between the habits of thought engendered by literary pursuits and those begotten of scientific studies. The difference is as marked as are the diverse objects of thought. Literature we know to be personal in its nature, in its method, and, to a great extent, in its object. Science is impersonal, both in its subject-matter and in its treatment. Literature deals with persons and things, so far as they affect our humanity; every piece of written composition that appeals to the emotional element in our nature may be regarded as literature.

Science deals with persons and things as they are in themselves, or in co-ordinated relations. It examines, investigates, discusses from an impersonal point of view; utterly regardless of individual bias, it gropes its way through the entanglements and environments of a subject matter, and cautiously passes from the known to the unknown. Science, in a word, is concerned with the true as true. Its object is truth. Literature, on the other hand, ranges over a wider field. It may be personal and impersonal, subjective and objective, as best suits its inclinations. It accepts the true and the false, the good and the evil, the beautiful and the deformed, and molds them all to its own purposes, ultimately with the view of acting upon man's feelings—now arousing his curiosity, now exciting his wonder and admiration, again working upon his sympathies and stirring his soul. Its object is the ideal of all that is sublime and beautiful in nature.

Entering the interior of the thinking subject, we may note the process the mind goes through in developing a definite course of thought upon some object. Is the object one of a scientific nature? See how cautiously the mind proceeds. It lays down its postulates, it runs over the principles that it holds within its grasp, it casts about among the laws and facts already demonstrated and recognized as certain truth; these it groups together into classes and sub-classes; it compares them with one another; it considers their various properties; it views the modes and properties and behavior of other facts or groups of facts in the light of those well known and well understood; it applies to them its demonstrated formula, and draws its conclusions. Throughout this process the scientific mind remains unimpassioned, and regards persons and things as labeled abstractions, rather than concrete realities. It works within narrow and closely defined lines. It grows impatient of all that does not bear upon the question under consideration and rejects it as a distraction. The habit of mind thus developed is rigid and exclusive, and unfits its possessor for grasping and treating with facility other subjects than those upon which it has had life-long practice.<sup>1</sup> It lacks in extension what it gains in comprehension.

Is the object of thought one of a literary nature? Here the mind follows a process the reverse of that employed in a scientific pursuit. Its first effort is to grasp the conclusions and work backward to the starting principles. Nothing comes amiss to it. The thought apparently farthest removed from the main idea may throw upon it additional light. All that science, or art, or nature can contribute, the literary mind makes its own, not for the sake of science, or art, or nature, nor by way of determining some unknown truth, or reaching some scientific discovery, but as so many illustrations drawing out, exemplifying, clearing up more vividly the ideal which it has grasped, and which it labors to express. Against every literary mind may be made, and made as little to the purpose, the reproach that the sophist Callicles addressed to Socrates: "By the gods, you never stop talking about shoemakers, fullers, cooks, and physicians, as though our discourse were

<sup>1</sup> Since writing the above, I find a striking confirmation of its truth by the experience of Professor Tyndall. Speaking of his student life in Germany, about the year 1851, he thus describes the state of his mind: "In those days I not unfrequently found it necessary to subject myself to a process which I called depolarization. My brain, intent on its subjects, used to acquire a set resembling the rigid polarity of a steel magnet. It lost the pliancy needful for free conversation, and to recover this I used to walk occasionally to Charlottenburg, or elsewhere. From my experiences at that time I derived the notion that hard thinking and fleet talking do not run together." *My Schools and Schoolmasters*, in the *Popular Science Monthly* for January, 1885.

of these."<sup>1</sup> All such illustrations are the material out of which the literary mind constructs a body for its conception. Literature is an art, and the process of literature is the process of all art. Note that process. The soul conceives a thought. The thought grows into a central idea, around which group other subordinate ones. It becomes for the soul an ideal. That ideal is nourished by reading, or reflection, or study, or experience, or all of these combined, and quickens into life, and waxes strong, and takes possession not only of the intellect, but of the whole man, and gives him no rest till he finds for it an adequate expression according to the bent of his genius, be it that of a poem, a novel, or an historical study, a painting, a statue, or a musical composition.

In all this the literary mind experiences with a thoughtful writer, "how hard it is to think one's-self into a thing and to think its central thought out of it."<sup>2</sup> It is not the work of a few days or a few weeks. It is a slow and elaborate process. At the age of four Goethe first witnessed the puppet-show of Faust. He was still a child when he read the legend.<sup>3</sup> From that start, the idea enters his soul and takes possession of it, grows into a thing of life; and forthwith it becomes the ruling idea of his life, and he makes it the inspiration of his activity, and molds upon it in many respects both thought and conduct, and picking up all the traits and characteristics of his age, he weaves them into this legend, not hastily, but slowly, studiously, in the spirit of true art, till, finally, in his eighty-second year, he pens the last line of his great Faust poem. The first conception in his fourth, the last line in his eighty-second year; this is a lesson that he who runs may read. The example of Goethe illustrates the spirit of artistic genius. It takes the old, and remodels it into a new artistic whole. The scientific genius builds upon the foundations already laid. A Newton or a Descartes may add to the sum of mathematical knowledge; he may give new methods of demonstration and calculation; but he leaves untouched every principle and every proposition that science had previously established. Even when such a scientific genius grasps by anticipation a new law or a new truth, he co-ordinates it with other known laws, and corrects his first impressions accordingly. Not so the literary genius; for, whilst both have this in common, that the terms they use possess a recognized value, he of the literary habit makes not—nor does he seek to make—a connection or a continuity with aught of the past; having grasped the ideal, he labors to give it full and adequate expression independently of any other ideal, past or present. He lives and breathes in an atmosphere of opinion and assumption that permeates his thinking and colors both thought and language; he takes it all for granted; he draws from it the material with which to shape and strengthen his own creation. Richter, in contemplating this literary habit of thought, is filled with admiration: "I fear and wonder," he says, "at the latent almightiness with which man orders—that is, creates his range of ideas. I know no better symbol of creation."<sup>4</sup> It is, indeed, the process of molding something entirely new and distinct out of material hitherto used for other purposes. It is a creation because it is a launching into existence of an artistic type that pre-existed only as an ideal in the author's mind. It is an imitation—as indeed is all art—in a finite manner, and within the limits belonging to finiteness, of the creative act by which the Infinite First Cause drew all things from nothingness.<sup>5</sup>

<sup>1</sup> Plato, *Gorgias*, Cap. XLV.

<sup>2</sup> Hare, *Guesses at Truth*, p. 275.

<sup>3</sup> In an abridgment of Wedemana's *Faust-Book*.

<sup>4</sup> *Wit, Wisdom, and Philosophy of Jean Paul Friedrich Richter*, § xi, p. 129.

<sup>5</sup> See Gioberti, *Del Bello*, Cap. VI. *Del Modo in cui la Fantasia Estetica si può dire Creatrice del Bello*, p. 105.

But there are certain habits of thought in which literary and scientific methods interlace and overlap, to the detriment of both letters and science. Here is a case in point. Science pretends, and even seriously undertakes, in the study of things, to discover the laws according to which they are, and move, and act. But does science always succeed? Are the laws it claims to have discovered really and indeed in the things themselves or in the mind of the observer? Let us see. In the natural sciences a law is a generalized experience. Its validity depends upon the range of experience or observation which it covers. Now, that range is frequently very limited. Not unfrequently is it inadequate. Oftener still, is it confined not so much to things themselves, as to certain aspects of things. Imagination, at a single leap, transcends the facts within the range of observation and experience, and under the same generalization includes all possible facts and all possible experiences. Sometimes imagination hits the truth and discerns the order governing a certain number of phenomena. Sometimes, also, it misses reality; and, after establishing so-called laws, and erecting theories upon a plausible hypothesis, some unexplained phenomenon reveals the underlying fallacy, and science constructs another theory, and announces another law, that may or may not be more correct. And sometimes, again, the explanation is inadequate. A wider range of experience informs us that the so-called law is only a half-truth, or one aspect of a larger law regulating the order and harmony of things. A glance at the history of chemical, physical, and geological theories will suffice to bear me out as to these various modes in which so-called laws of nature proved to be only false translations of nature's language. Instance Newton's law of gravitation in physics;<sup>1</sup> the phlogiston and atomic theories in chemistry; and in geology the revelations made by the deep-sea dredgings of Carpenter and Thomson.<sup>2</sup> This issue leads to many interesting lines of thought; but the point I would here make is this: That scientists are apt to forget that what they call the laws of nature may be really such only to a very limited extent; that some of them may be simply their interpretation of certain aspects of certain sets of phenomena falling within the narrow range of their experience; that these interpretations may, as likely as not, be fabrications of their imagination; that, therefore, it ill becomes them, in the name of science, to be intolerantly dogmatic concerning them; and that such dogmatism is opposed to the scientific spirit. They are no longer following the scientific method. They are simply misapplying the literary method. The intellectual structure of their theories is of a piece with the construction of a parable or a fable.

On the other hand, scientific habits of thinking cause the scientist to look upon persons and things no longer in their concrete nature, but rather as so many abstractions, or, at most, as concrete specimens of an abstract principle. His very feelings and emotions he learns to classify and, as far as possible, separate from himself. He measures the worth of things accordingly. They possess value in proportion as they explain a difficult problem, or contribute a new truth to the sum of knowledge. It has been well remarked, "Even the feelings of speculative men become speculative. They care about the notions of things and their abstractions and their relations, far more than about the reali-

<sup>1</sup> See Faraday on this law in his paper on the conservation of force. Youmans' ed., pp. 359-383.

<sup>2</sup> With H. M. S. *The Challenger*.

ties."<sup>1</sup> So that, whilst the scientist may unwittingly bring literary habits to bear upon scientific issues, to the detriment of science, unwittingly also may he bring his scientific habits into affairs of everyday life, and measure persons and things by a false criterion. So also may the man of a literary way of thinking use false weights and measures in forming his estimates. "An author's blood will turn to ink. Words enter into him and take possession of him, and nothing can obtain admission except through the passport of words."<sup>2</sup> And, because words do not always represent the full measure of things or are at times totally inadequate to express them, the mind living in words becomes guilty of blunders no less egregious than the mind living in abstractions. What, then, is the normal state of the mind?

## II.

The normal function of the human intellect is to apprehend truth. Its activity feeds upon truth, and by truth it is nourished. For truth it was created; by the light and warmth of truth it develops in strength and grasp; without the truth it gropes in darkness, restless, yearning, in misery, hungering and thirsting for that which alone can satiate its desires. There may be barriers in the way; it may require enduring labor to remove the barriers; opposition only sharpens the eagerness with which the quest is pursued. In this life, subject to the present order of things, with body and sense standing between the soul and the apprehension of all knowledge, it is not easy to determine which is the true and which the false. The gratuitous and unquestioned notions acquired in early training; the habits of thought in which the intellect works; natural likes and dislikes; feeling, sentiment, inclination; prejudices of the age and the race; assumptions and opinions that are the outcome of one's environments—are all so many hindrances in the way of the clear and simple apprehension of truth. But they are not insuperable barriers. The human intellect, acting in its normal state and according to the laws of its nature, may with time and patience, and without deceiving itself in the process, attain to the knowledge of certain truth. It cannot accept error as error; and if error does, as error will, enter into its calculations, it first assumes the garb of truth, and as such alone is it admitted. Thoughtful study, comparison, careful reasoning upon evident principles, truths, and facts, will furnish sufficient light to penetrate the mask and reveal the underlying falsity, if falsity there be.

It is within the province of the human mind not only to apprehend the truth, but also to recognize it as truth. In this recognition consists the mind's certainty. It is with absolute certainty that I know and distinguish that two and two make four, and not five or three. There is nothing relative either in my knowing this truth or in my being certain of it. The Hottentot and the Indian are equally certain. The Agnostic who denies this absolute certainty is also equally certain: It is an ultimate fact of consciousness. If you would inquire how I know that I am certain with an absolute certainty, I can give you no further reason than that, being constructed as I am, I cannot think differently. It is of the very essence of my reason so to think. Nor could it be otherwise. God could not create a reason whose normal condition of thinking would be such as to make two and two equal to any other number than four, without annihilating Himself. Such an act were to destroy the very essence of reason; it would therefore be an infinite

<sup>1</sup> Hare, *Guesses at Truth*, p. 495.

<sup>2</sup> *Ibid.*

contradiction of God's Infinite Nature. The one is as unthinkable as the other. I am what I am. I find myself to be what I am as a thinking being independently of myself. I take myself on trust. I take on trust all the faculties of my soul. I use them as I find them. What they report to my consciousness—my inner self—as true, I accept as true. I cannot do otherwise. The attitude of my mind towards all knowledge is the same to this extent, that in all, it seeks to discern the true from the false, to reject the false and to accept the true.

For this reason, I cannot agree with Mr. Herbert Spencer when he tells us that "we are not permitted to know—nay, we are not even permitted to conceive—that Reality which is behind the veil of Appearance."<sup>1</sup> Why not? Where is the hinderance? Since we recognize this reality, do we not conceive it? It seems to me that the knowing and thinking of Mr. Herbert Spencer is not the knowing and thinking of the normal intellect. If we are not permitted to know or conceive this reality back of appearance, how come we to know that it exists? And yet Mr. Spencer is sure of its existence and recognizes it as essential to our thinking. Recently he has explained himself more fully in these words: "Phenomenon without noumenon is unthinkable; and yet noumenon cannot be thought of in the true sense of thinking. We are at once obliged to be conscious of a reality behind appearance, and yet can neither bring this consciousness of reality into any shape, nor can bring into any shape its connection with appearance. The forms of our thought, molded on experiences of phenomena, as well as the connotations of our words formed to express the relations of phenomena, involve us in contradictions when we try to think of that which is beyond phenomena; and yet the existence of that which is beyond phenomena is a necessary datum alike of our thoughts and of our words."<sup>2</sup> Underlying this assertion is an important fact, ill apprehended I fear, by Mr. Herbert Spencer. It is the fact that thought is always more than its expression. But why quarrel on this account with either thought or expression, so long as each is evolved according to the law of our intelligence? That intelligence is limited in its operations; but it is not we who have defined the limits or set the boundaries. We find ourselves with those limitations; we cannot change them. Our consciousness reports to us the phenomenon; our reason infers that there is no meaning in phenomenon without noumenon. The one connotes the other in our thinking. What substance is to accident; what the ideal is to the actual; what essence is to existence—the noumenon is to the phenomenon. We perceive the one in the other. We perceive it and we know it. We accept the vouchment of our intellect on the subject. True, we cannot pass beyond this vouchment and give this noumenon a local habitation and a name. What then? At this point we discern the fallacy of Mr. Herbert Spencer's conclusions. He seems to forget that the ultimate analysis of any and every thought brings home to us the fact that the clearly defined image of the thought does not represent the whole thought; that that image is only a symbol; that the word in which that image is expressed is also a symbol; and that in this manner every expression is only a symbol, symbolizing a symbol of the thing expressed. And it may happen, and it does happen, that we think correctly in terms of things of which we know nothing beyond their existence and relations. Such is the case with space and time. The great intellect of an Augustine wrestled with the problems of these

<sup>1</sup> *First Principles*, p. 110.

<sup>2</sup> *Last Words about Agnosticism*; in the *Nineteenth Century*, December, 1884.

two ideas; the more he sought to fathom them the greater was his awe. And his verdict on the problem of time is that in which all thinkers must rest. "If nobody questions me, I know; if I should attempt an explanation, I know not."<sup>1</sup> In other words, we know these things to use them rightly in our thinking, but we cannot grasp at a sufficiently clear image of them to explain them to others. Therefore, in opposition to Mr. Spencer, we may lay down the proposition that we not only think the noumenon, but we know it and conceive it back of the phenomenon—not, indeed, as an image distinct from the phenomenon, but as an element in the existence of the phenomenon without which the phenomenon would be unthinkable. Furthermore, whilst our thinking is circumscribed, words and images are not the measure of its limits.<sup>2</sup>

Nor can I agree with Pascal when he tells us, "It is a natural disease of man to believe that he possesses truth directly; whence it comes that he is always disposed to deny whatever he does not understand; whereas in reality he naturally knows only falsehood, and he should take for true only those things whose opposites seem false."<sup>3</sup> Why call that conviction of direct knowledge of the truth a malady? What would become of reasoning and inferring, of all indirect knowledge, if that which we hold directly is not valid? It is all based upon this very conviction. Man is born for the truth; how comes it that falsehood should be more acceptable? "If our intellect," says Mivart, "is to be trusted at all, it must be trusted in what it declares to be the most certain of all, namely, necessary truths."<sup>4</sup> But our intellect is to be trusted even as we trust the reality of our own existence; and necessary truths do not come to us by a process of indirection, but are directly and immediately self-evident. We have no other vouchment than that we take upon trust our whole nature, and with it the normal workings of our intellect. You may call it an assumption or any other name you choose to give, but it is none the less a fact, the most primary of all facts, underlying all action, be it physical, moral, or intellectual. Universal skepticism is an absurdity; the very act of doubting all things is a positive mental act. Therefore the habit of confidingness is the healthier habit of mind. Speaking of these two habits, Cardinal Newman, with that keenness and practical grasp of his subject for which he is pre-eminent, says: "Of the two, I would rather have to maintain that we ought to begin with believing everything that is offered to our acceptance, than that it is our duty to doubt of everything. The former, indeed, seems the true way of learning. In that case, we soon discover and discard what is contradictory to itself; and error having always some portion of truth in it, and the truth having a reality which error has not, we may expect that when there is an honest purpose and fair talents, we shall somehow make our way forward, the error falling off from the mind, and the truth developing and occupying it."<sup>5</sup>

When, therefore, we are told that "error is inextricably bound up with the spirit of man," we may interpret it in the sense that it is with difficulty, and after long search, man is enabled to discover truth, and disentangle it from the errors with which it not unfrequently is bound

<sup>1</sup> Quid ergo est tempus? Si nemo ex me quærat scio, si quærenti explicare velim, nescio. (*Conf. Lib. II, Cap. XIV.*)

<sup>2</sup> Were this the place, it might be shown that this fallacy runs through all of Mr. Spencer's reasoning regarding personality and all the elements of Christian philosophy.

<sup>3</sup> *Pennées*, T. I, Ire Partie, Art. II, p. 154.

<sup>4</sup> *A Philosophical Catechism for Beginners*, p. 25. This is indeed a marvel of clearness and condensation.

<sup>5</sup> *Grammar of Assent*, 2d ed., p. 377.



up. But we must keep this fact distinct from the no less palpable fact that in itself and by the light of reason, man's intellect recognizes at sight, and accepts with a certainty beyond cavil, all necessary, self-evident truths as truths necessary and self-evident. Be it remembered that it is the truth that is necessary, and not the error. Truth is of things. Truth is reality. Error is only accidental. And when the writer whom we have just quoted, making error necessary, adds the following remarks, we feel bound not only to dissent from him, but to disengage the truth from the sophism in which he has enveloped it. "This necessary error," he tells us, "is the ideal. Man has an innate tendency to form ideals. It would be blocking the way to every deeper insight into things, did we hesitate to consider the first stirrings of religion in man as the first emergence of the ideal."<sup>1</sup> It is to be borne in mind that Herr Von Hellwald takes care to tell us that all religion is based upon error and illusion. So he makes the ideal the outcome of necessary error. This is the latest word of the philosophy of negation. Certainly, it is a remarkable intellectual feat that bases that which represents whatever is perfect in man's conception and positive in the order of things, as the outcome of mere negation. Art has its ideal; life has its ideal; religion has its ideal; civilization has its ideal. Are these ideals the outcome of error and illusion? Has it indeed come to this, that men gather grapes of thorns? that the seeds of error grow up and give forth the ripe and luscious fruit of truth? that deception may be sown and confidence reaped? No! error exists but as the excrescence cast off by truth. There could be no wrong if there were not first a right; there could be no error if truth did not have a prior existence; there could be no ideal if there were not a foundation of absolute truth, absolute goodness, and absolute beauty upon which to build it up. Surely literature and art cannot be the outcome of error. Think you the ideals after which Shakespeare and Dante, Beethoven and Haydn, Raffaele and Murillo, and Michael Angelo, worked and constructed their masterpieces, are the growth of error? We defy pessimism to come forward and say as much. Error and mistake may enter into every human expression of the ideal; but the error and the mistake are not of the ideal. It is rather because human hands are unskilled, and human expression is stammering, and human judgment is feeble. Let us dwell a moment on the nature, the origin, and the functions of the ideal, and we will be in better position to understand how it is that genius is not a living in error, nor art a groping after illusions.

### III.

A genius conceives and expresses a great thought. The conception so expressed delights. It enters men's souls; it compels their admiration. They applaud and are rejoiced that another masterpiece has been brought into existence to grace the world of art or letters. The genius alone is dissatisfied. Where others see perfection, he perceives something unexpressed beyond the reach of his art. Try as best he may, he cannot attain that indefinable something. Deep in his inner consciousness, he sees a type so grand and perfect that his beautiful production appears to him but a faint and marred copy of that original. That original is the ideal; and the ideal it is that calls forth men's admiration.

An analysis of this admiration will lead us to an understanding of

<sup>1</sup>F. von Hellwald, *Culturgeschichte*. See *Dublin Review*, art. *The Battle of Theism*, by Rev. W. Barry, D. D., Oct. 1834.

the ideal. It is universal. It is a sense as innate to a man as is his sense of taste or touch. Savage and civilized admire whatever appeals to their admiration. Now, not everything does so appeal. The trivial, the contemptible, the weak, the inferior, are all beneath man's sense of admiration. The virtuous, the noble, the heroic; whatever expresses strength or power; whatever is beautiful or sublime; in a word, whatever raises man's thoughts and aspirations to a superior plane,—that is for him an object of admiration. Man has within him two opposing elements. One seeks to raise him up into a spiritual and spiritualizing sphere of thought and action; the other tends to drag him down to things earthly and debasing. They are the two steeds that Plato represents the soul as driving, likening it to a charioteer; one steed "leans and presses heavily towards the earth, if he be not well-trained by his charioteer;" the other, "beautiful and noble and of a godlike character."<sup>1</sup> They are the opposing elements, the law in his members fighting against the law of his mind, of which St. Paul speaks in language less allegorical.<sup>2</sup> Now, it is the function of this sense of admiration to raise up and spiritualize the inferior parts of man's nature, so that they grovel not in things earthly, and to strengthen and improve his nobler aspirations. Where man may not imitate, where he may not even love, he can still admire. Wherever an ideal is expressed, there is an object for his admiration. We may not explain this mysterious correspondence, but we all have the experience of it. Our souls are so attuned as to give out a music responsive to the chords that are touched. This we know and feel. Let us study the impression.

Take a Raffaele or a Murillo. We gaze upon the painted canvas till its beauty has entered our soul. The splendor of that beauty lights up within it depths unrevealed, and far down in our inner consciousness we discover a something that responds to the beauty on which we have been gazing. It is as though a former friend revealed himself to us. There is here a recognition. The more careful our sense-culture has been, the more delicately our feelings have been attuned to respond to a thing of beauty and find in it a joy forever, all the sooner and the more intensely do we experience this recognition. And therewith comes a vague yearning, a longing as for something. What does it all mean? The recognition is of the ideal. "The memory," says Plato, "on beholding the beautiful object, is carried back to the nature of absolute beauty."<sup>3</sup> Thus there is not only a recognition; there is also a reminiscence of a higher spiritual order of things of which the soul has had occasional glimpses; there is a yearning for the home to which it belongs. Caviel as men may, the artistic ideal is a reality, and speaks to something higher than the material sense. There are moments when, beneath the spell of some great masterpiece, man feels the nearness of the Godhead, and his soul is thrilled with emotions that vibrate beneath the Divine touch. There is no denying it. A year ago, a newly elected member of the French Academy, amid the applause of his fellow-members, quoted those words of Charles Blanc: "The ideal is the primitive Divine exemplar of all things; it is, so to speak, a reminiscence of having already witnessed perfection, and the hope of seeing it once again."<sup>4</sup> Charles Blanc was only repeating the magnificent definition of the ideal, which has come home to every soul not buried in the inert material, and

<sup>1</sup> Plato, *Phædrus*, Cap. XXV, p. 712, T. I, ed. Hirschigii.

<sup>2</sup> Romans vii, 23.

<sup>3</sup> *Phædrus*, Cap. XXXV, p. 718.

<sup>4</sup> M. Edward Pailleron, *Discours sur Charles Blanc dans l'Académie*; in *Le Temps*, January 18th, 1884.

which has been echoed down the ages ever since Plato gave it expression: "It is," says this wonderful seer, "a recollection of those things our soul formerly beheld when in company with God, despising the things that we now say are, and looking upward towards that which really is."<sup>1</sup> Without admitting the Pythagorean doctrine of a pre-existent state, here implied,<sup>2</sup> we may go farther, and say that without the ideal there is no reality.

Nature recognizes the ideal. She has her types and works by them. Each of her products is a specific realization of a separate type. As genus is a reality distinct from, and causative of, the species, so is each of Nature's types a reality distinct from the concrete thing fashioned after it, and causative thereof. Hence it is that, in the animal and even the vegetable world, we daily witness reversions to older types, and the reproduction of ancestral traits of character. Nor is this all. Ascending higher still

"Upon the great world's altar-stairs  
That slope thro' darkness up to God,"

we come to the prototype of all created types, and find it existing in the Word. Here is the source and fountain-head of the ideal. In the Word—from the beginning—before there was a beginning of time, and the voice of God caused created things to leap forth from nothingness—throughout the cycles of eternity—God contemplated those types. And by the Word were they made real in the order of created things. Were the eternal type not in the Word, the actual existences fashioned after it would not be. And this is why we say that, without the ideal, there is no reality. We have at last found the origin and source of the ideal. In all earnestness have we sought it; and, hushed in holy awe before the Godhead, in a loving reverence do we contemplate its splendor. The Word is not only the source of all created existences; the Word is also the light that enlightens this world. Its glory is reflected, now dimly, now clearly, in every created thing. As the reason is illuminated with a light above and beyond the sparks that it throws out in its workings—that light giving it all necessary and self-evident truths; as the spiritual sense is nurtured and strengthened by that mysterious energy called grace; so the created ideal in each individual mind is enlightened and vivified by the uncreated ideal dwelling in the Word. This illumination of the ideal is the expression of the beautiful.

We now know whence it comes that a thing of beauty becomes for each of us a joy forever. It is the mission of the artist to rend the veil of accidents and accessories in which the ideal is shrouded, and present it to us in all its beauty and loveliness. And the beauty reflected therefrom lights up the folds and inner caverns of our souls, and reveals therein a recognition of this ideal, and reflected from our inmost souls is the image of Him from whom we come, and who is our Home—His image and a pale reflex of the splendor of His glory. On beholding this reflection we are moved; our souls are stirred to their very center; a yearning takes possession of us, a longing for the home whence we came, a groping after the Invisible Ideal, and we feel our souls vibrate beneath the touch of the Infinite. God is in us and we are in God, and the sense of our nearness to Him grows upon us. This is the experience that passes over us in the presence of the ideal. It is the experience that Plato has grandly recorded in his wonderful allegory.<sup>3</sup>

<sup>1</sup> *Phædrus*, Cap. XXIX, p. 714.

<sup>2</sup> In another work of mine may be found additional remarks on this doctrine: *Philosophy of Literature*, Part II, Chap. I, p. 124.

<sup>3</sup> In the *Phædrus*, Cap. XXXIII-XXXVIII.

## IV.

We are now in position to understand the importance of an ideal in literary habits of thought. It is essential to them. Literature is the form of art the most varied and complicated. Plato hath well and aptly said of a literary structure, "Every speech ought to be put together like a living creature, with a body of its own, so as neither to be without head, nor without hands, nor without feet; but to have both a beginning, a middle, and an end, described proportionately to one another and to the whole."<sup>1</sup> So to construct a literary masterpiece that part fits to part and each is subordinate to the whole, requires a central idea. As the parts in the animal organism are determined by the vital principle animating them, in such manner that all unconsciously develop into fitness and harmony, even so is it with the literary production. When the central thought, the animating principle—the ideal—is clearly grasped, it shapes the form in which it would be expressed. This teaching is clear and simple, and as ancient as art. It is the teaching on which all the masterpieces throughout the ages have been constructed. You may wonder why I lay stress upon what seems to be an elementary and incontrovertible principle. I will tell you.

It is because Agnostic science rejects this beautiful and ennobling doctrine of the ideal, and regards what we have here advanced as a play of fancy. The Agnostic can neither weigh nor measure this ideal; he therefore relegates it to the regions of the impossible. And yet, even the Agnostic knows and feels, and, so to speak, touches the ideal. By what right does he regard as an illusion a thing so intimate to him? He has no more reason for rejecting the ideal than he has for accepting some of the most positive conclusions of science. In his last analysis he would resolve the whole universe into an ultimate atom. But why should he? He has never seen, nor weighed, nor measured that atom. You say that he infers it. But what right has he to infer anything? Why should he deal in inferences? He does not accept the vouchers of his consciousness, or his reason, or his memory. He does not take himself for granted. The evident brings no evidence to him. Vouchers for error are to him equally convincing with vouchers for truth.<sup>2</sup> His knowledge is merely subjective impressions. He is himself but an impression. He recognizes only phenomenon. You will bear witness that I am not inventing; I am simply, almost in the Agnostic's own words, describing the habitual state of mind in which he lives and thinks. Are not the words of Plato as fresh and of as direct application to the Agnostic of to-day as they were to the sophist of his age? "Let us not admit into our souls," he says, "the notion that there appears to be nothing sound in reasoning, but much rather that we are not yet in a sound condition, and that we ought vigorously and strenuously to endeavor to become sound."<sup>3</sup>

Moreover, it never occurs to the Agnostic that, if there is nothing beyond phenomenon and phenomenal impressions, there is no true science; for, in order that a science exist, there must needs be more than the mere cataloguing of facts and observations. But this is all that is warranted on the assumption that all knowledge is made up of phenomenal impressions. Thus does the Agnostic contradict the primary facts of his nature and the elementary workings of his intellect. Consider the scientific method. Facts are observed, then classified and

<sup>1</sup> *Phædrus*, Cap. XLVII, p. 726.

<sup>2</sup> See Kant's *Paralogisms and Antinomies*. *Critique of Pure Reason*, Bk. II.

<sup>3</sup> *Phædo*, Cap. XI, p. 76.

methodized; principles are stated; laws are inferred or asserted; a reasoning process based upon known truths and facts is gone through, and leads up to other truths and other laws hitherto unknown. But all this implies an order of things above and beyond mere phenomena. It implies a world of ideas, and therefore the existence of an ideal. And in ignoring this world of ideas and of necessary truths, the Agnostic, in all logic, is compelled to abandon science and deny even the existence of the external world. The true scientist admits both the internal and external orders upon the same plane of evidence; and this is the criterion of true science, that it rejects no fact, accepts things as it finds them, and seeks for all an adequate explanation.

Plato, in one of those sublime passages that light up a whole world of thought, thus shows how our knowledge of things is not simply of the transient and the phenomenal, but of essences and eternal principles: "Essence," he says, "which really exists colorless, formless, and intangible"—which, therefore, let me remark, is above the conditions of time and space—"is visible only to intelligence that guides the soul, and around this essence the family of true science take up their abode. And, as the Divine Mind is nourished by intelligence and pure science, so the mind of every soul that is about to receive what properly belongs to it, when it sees after a long time that which is, is delighted, and by contemplating the truth is nourished and thrives. \* \* \* And it beholds justice herself, and temperance, and science, not that to which creation—*γένεσις*—is annexed, nor that which is different in different things of those we call real,<sup>1</sup> but that which is science in what really is."<sup>2</sup> This is the only science to think in. It is, indeed, the only true science. Agnostic science loses its claim to the title of science by placing itself in a habit of thinking inconsistent with itself and derogatory to the intellect, to thought, and to real knowledge. It is unscientific in another direction. All science worthy of the name confines itself to its subject-matter, and acknowledges itself incompetent to pronounce upon issues outside of its clearly defined limits. This rule Agnosticism does not observe. Pretending to deal exclusively with the visible, the material, the phenomenal, it passes judgment upon the invisible and supersensible, the spiritual and supernatural. Finally, Agnosticism, in regarding the ideal as an illusion and the outcome of error, is thereby, so far as in it lies, the death of the ideal and the bane of all literary excellence—indeed of all artistic excellence whatever. In what manner and how far it remains for us to note.

## V.

The shadow of Agnostic science has crept over the spirit of art and letters. Now, we have seen that there is no real art without the ideal, and that it is the function of art to appeal to our admiration by the presentation of the ideal in all possible beauty and vividness. But whilst the artist disentangles the ideal from such accidents and accessories as tend to conceal it, he still clothes it in nature. Out of the materials that nature furnishes, he fashions for it a body, and breathes into that body the ideal as its living soul, and forthwith the masterpiece stands out a thing of life and beauty and artistic excellence for undying admiration. Defects of detail may enter into its execution; but they are lost, forgotten, absorbed in the general effect produced.

<sup>1</sup> Or as Jowett more strongly translates it, "Not in the form of generation or of relation, which men call existence, but knowledge absolute, in existence absolute." Jowett's Plato, Vol. II, p. 581.

<sup>2</sup> *Phædrus*, Cap. XXVII, p. 713.

It is the *Transfiguration* of Raffaele. Who, in presence of that noble scene, would cavil about the posing of limbs or the laws of perspective? It is the *Hamlet* of Shakespeare. Surely, he who overlooks the power, the depth, the philosophy, the dramatic greatness of that tragedy, and quarrels with grammatical structure or obscure expression, has yet to learn the elements of true criticism. Or, it is the *Phædo* of Plato, whose sublime thoughts so frequently recur throughout the sentences that I now repeat to you. He who should stop at the hard metaphysics or the apparently pointless questions and obscure answers, and not soar with Socrates in his dying song into the pure regions of truth, proves that he lacks the sympathy and knowledge to appreciate Grecian thought in the days of Plato, and is, therefore, unable to place at its worth one of the sublimest pieces of writing ever penned by human hand.<sup>2</sup> Or, it is the *Divina Commedia*. What boots it that Dante's estimates of men and measures are not those of the historian? It detracts naught from the wonderful poem. Men are lost in admiration when they note the care with which word is built upon word, each having a special significance, and all made into a grand allegory wrought out of the politics and the philosophy, the strife and struggle, the fierce hates and the strong loves, in which the author lived and moved and fought. Or, it is Mozart's *Requiem*. The critic who would quarrel with that grand composition, because in its intricate and complicated structure, speaking of a life's hopes and fears, and the more awful hopes and fears beyond the grave, he misses the sweeter strains of other days, would fail to grasp the sublime conception of the piece as a whole. Or, it is the Gothic Cathedral. Who thinks of making faces at gargoyle or statued niche, where all is emblem and significance, the stone embodiment of a nation's aspirations? We read in it thought, satire, censure, desire, pathos, passion.<sup>3</sup> In all these instances, back of the mechanical structure, looking out upon us, and peering into our souls, is the ideal.

Now, Agnostic science would promulgate theories calculated to paralyze art, and render it incapable of producing such masterpieces as we have instanced. One is the theory that claims that all art has no other aim than to construct the form for the form's sake. Much that is done to-day, whether in words, or on the canvas, or in marble, is done for the simple pleasure of producing. Now the art that has only itself for its aim, may amuse, may please, may even cause admiration on account of the mechanical skill exhibited; but it is not the art that endures for all time. I will grant you that a Shakespeare or a Goethe may sing as the blackbird sings; but I deny that their art is without purpose. Distinguish between the art that is conscious and that that is unconscious. The *Æsopian* fable is conscious in purpose; it is written for a definite aim. But of the great masterpieces that we have been contemplating, can you say that they are purposeless, or that their end is simply this or that? In each of them one may read as many purposes as one takes aspects of them. Their authors may have had no other intention than that of unburdening themselves of the great thought that oppressed their souls; but as surely as their work

<sup>1</sup> For an instance of such caviling, see Taine's *Italy*, Eng. tr., pp. 142, 143.

<sup>2</sup> It is this lack of sympathy that makes the reading of Plato so laborious. Perhaps it is a failing to distinguish between the mental habits of the ancient Athenians and those of modern thinkers that has led Mr. Mahaffy, in his admirable *History of Greek Literature* (Vol. II, p. 173), to make the criticism noticed above as regards part of the dialogue.

<sup>3</sup> This idea has been grandly drawn out by Victor Hugo, in *Notre Dame de Paris*, Liv. III, Chap. I.

expresses an ideal, so surely does it embody a purpose. For the ideal, in calling forth our admiration and raising up our thoughts to things higher and beyond the scene of every-day life, or in purifying the incidents of ordinary duties, is educating our better nature; it is working with a purpose. And ideal and purpose combined determine the form. "To act with a purpose," says Lessing, "is what raises man above the brutes; to invent with a purpose, to imitate with a purpose, is that which distinguishes genius from the petty artists who invent to invent, imitate to imitate."<sup>1</sup> Be it remembered that nothing outside of the Godhead exists for its own sake. The art produced in this spirit is sheer pettiness. Nowhere is this more evident than in the world of letters. Just as a word has value only inasmuch as it expresses an idea, so any number of words strung together is meaningless and inane, unless it expresses a thought, not for the expression's sake, but for that of the thought. The sophists of Plato's day attempted to teach expression for the form's sake. He refuses the very name of art to such expression. "She lies," he tells us in his own scathing words, "and is not an art, but an inartistic trick."<sup>2</sup> And, in the domain of fiction, it hath well been said that one can no more conceive a great novel without a purpose than one can conceive an arch without a keystone.<sup>3</sup> All art worthy of the name is imbued with the earnestness of life. Consciously or unconsciously, the artist's is a mission to crystallize in his work the spirit of the age; it is, also, his mission to educate his age, to raise it above itself, and to sustain its aspirations upward and onward—

*"Artistry being battle with the age  
It lives in! Half life,—silence, while you learn  
What has been done; the other half,—attempt  
At speech, amid world's wail of wonderment—  
'Here's something done was never done before!'  
To be the very breath that moves the age,  
Means not to have breath drive you bubble-like  
Before it—but yourself to blow: that's strain;  
Strain's worry through the life-time, till there's peace;  
We know where peace expects the artist-soul."*<sup>4</sup>

## VI.

Another theory fostered and developed by Agnostic science is the so-called Realism in literature and art. It is the outcome of ignoring the ideal, or regarding it as the product of error. If there is no ideal, or if the ideal is only an illusion, then there is nothing beyond the nature we behold and live in; then the supreme effort of all art is to delineate that nature in detail with the greatest fidelity; then the sole rule of art is, "Copy, describe, imitate, express minutely whatever you see or hear: the more accurately you follow your model the greater artist you are." There is in this doctrine a mixture of truth and error. True it is that art cannot ignore nature. The world we live in is the material upon which it works. Therefore the artist observes men and things; he studies the nature without him and the nature within him; he experiments; he compares, judges, discriminates; in this way does he gather up and select the subject-matter upon which he afterwards labors for artistic purposes. But there is in all this more than mere imitation.

<sup>1</sup> Prose works, Bohn ed., Dramatic Notes, No. 34, p. 327.

<sup>2</sup> καὶ οὐκ ἔστι τέχνη, ἀλλ' ἀτεχνὸς τριβή. Phædrus, Cap. XLIII.

<sup>3</sup> This remark was made to the author by one of the most successful of living American novelists, Mr. W. D. Howells.

<sup>4</sup> Robert Browning: *Red Cotton Night-Cap Country*, p. 110.

It is a wholesome Realism, and does not exclude the ideal. It is the Realism that Millet paints and Ruskin commends. The art that merely imitates can only produce a corpse; it lacks the vital spark, the soul, which is the ideal, and which is necessary in order to create a living organic reality that will quicken genius and arouse enthusiasm throughout the ages. Let us make the distinction; it is a vital one. Art is not imitation; art is interpretation.

This distinction the Realistic school in art and letters loses sight of. Accordingly, it abandons all attempt at an ideal; it makes no effort to read the lessons of nature; it sees nothing in nature to read beyond the cold, hard lines that it traces. Here Agnostic science steps in, and directs this school in the ways it must walk. It teaches that, as the only knowledge is the knowledge of observation and experiment, upon these two lines must art work. And, as the novel is the most potent literary influence of the day, it would especially make the novel a mere study in nature and character, in which naught is to be set down save what has fallen under the eye or has been experienced in actual life. On the face of it, this theory is sound enough. By all means, let us have observation and experiment. But distinguish between the observation that takes in all the elements of nature, and the observation that regards only its material side. The latter alone falls under the scope of the Realistic school. It has no other field for development. In consequence, it deals only with man living and acting out his brute nature in all its cunning and sensuality. The writers of this school give us observations indeed; but they are of the street and the tavern. They picture human nature; but it is diseased human nature. They paint us life episodes; but what lives! Now it is the drunkard's; now it is that of the fallen woman; now it is that of actors and authors of Bohemian ways; again it is that of notorious criminals; invariably it is passion wallowing in the mire of depravity. This is no freak. It is a systematic procedure, and the logical outcome of the Realistic school as inspired by Agnostic science. Believing only in the animal man, naught else remains for the members of this school to depict. Not saintliness of life; for saintliness of life means to them only hypocrisy, or, at most, warped character. Not nobility of thought or word; for weak, erring, human nature is the only nature that the Agnostic recognizes. In his last word he is a pessimist. The conclusions of Schopenhauer on the misery of life, its worthlessness, its crime, its helplessness in the great machine of the universe, are those to which every logical Agnostic must come.<sup>1</sup> The only poetry he can weave is that which, with Ackerman, cries out in an agony of despair and rebellion worthy of Satan.<sup>2</sup>

But this is not the world in which we live and move. This is not the human nature that we are cognizant of. The circle of our acquaintance includes—we know intimately—men and women of a far different stamp; men and women who are true and faithful in their love and friendship; grand and generous souls, who are self-sacrificing whenever good is to be accomplished or duty to be fulfilled; who think and say the sweetest and sublimest thoughts; whose lives are pure and disinterested; whose intentions and aspirations are elevated and ennobling; who, in the daily round of their beautiful lives, shed around them loveliness and peace and joy and gladness of heart. These are the men and women that surround us, and beneath whose influence for good our own hearts and souls strive to rise in the scale of perfection. Here is the reality that we know. Here is the reality that even the Agnostic knows. It

<sup>1</sup> See Schopenhauer's *Essay on the Misery of Life*.

<sup>2</sup> *Poésies Philosophiques*, par L. Ackerman. Paris, 1877.



is only in his library that humanity is to him such a monster. The lowliest life has its sublime passages. It has wherewith to inspire the poet, for it has its ideal. In this thought we place our consolation and our hope for the future of art and letters. "Realism," said an eloquent French preacher, "is a chronic disease; it is the leprosy of art; it is the epidemic of literature in the nineteenth century."<sup>1</sup> This is the proper diagnosis of the case. Let it be treated as a leprosy or an epidemic. If Realistic works are left untouched and the home atmosphere is kept purified, both leprosy and epidemic will soon die out.<sup>2</sup>

## VII.

Such are the relations that exist between the literary and the scientific spirit. Each has a distinct sphere. Each may aid the other. But when one assumes the functions of the other or attempts to dictate to the other, collision and confusion are the result. We have noticed an interlacing and overlapping of literary and scientific habits of thought, greatly to the detriment of both literature and science. We may trace this cause to the present intellectual state of our own day. Every age may, in a sense, be said to be in a state of transition, for all time is a Becoming. But there are influences hovering over epochs and peoples that give them a characteristic coloring, and place upon them a distinctive impress. Our age is pre-eminently a transition period. New discoveries, new industries, and new sciences are calling for new terms, new habits of thought, and new methods of work. And yet, much of our thinking runs in old grooves. We are groping in mist and darkness, with new and complex problems pressing upon us harder and faster than we can solve them. Each decade brings its riddle. The conjectures of one decade become the conclusions of the next, and are made the elementary truths of the third. Hence it is that the books of the day are so many fleeting records of impressions as fleeting. Hence the mental entanglements and inconsistencies that beset men's thoughts and actions, their reasoning and their sentiments, their formal expressions and their inner convictions.

Now every age and every people whose spirit became crystallized in a literature that may be called classic, was possessed of a central thought, an all-absorbing idea—in a word, an ideal—that fired genius and laid its impress upon the form of expression. Thus, the Hindu literature teems throughout with the illusory and passing nature of all things earthly; the inmost feeling that this life is only a preparation for another form of existence, pervades its poetry and philosophy and

<sup>1</sup>R. Père Felix, *Conférences*, 1867; Conf. V, p. 251.

<sup>2</sup>There is an awakening to the danger all along the line. In Denmark, the poet Drachman, to the surprise of many, in his last volume of poems, *Deep Chords*, has entered protest against the Realistic spirit, and proclaimed himself the poet of "heart and home" (Viggo Petersen in *Athenæum*, No. 2983, Dec. 27, 1884). Speaking of this school in Italy, Signor Bonghi writes in the same number of this journal: "But while in the past years there was a great array of poets following this path, and one saw lying about in every bookseller's shop their elegant volumes of every kind of shape and type, but especially the Elzevir, *this year there is not one to be seen*, and their principal publisher, Zanichelli of Bologna, *tells me he no longer publishes any on his own account*." The fact is significant. M. de Pressensé writes words no less encouraging from the parent-soil of this school. "If it is true that in literature, as in everything else, the demand in the long run regulates the supply, it is indubitable—and this is a consoling prospect of which we have need—that a reaction will, before long, set in throughout France, and that our country will not endure to all eternity the debasement of the level of the imagination and the corruption of art" (*Athenæum*, Ibid, p. 833).

in a great measure molds the Hindu life. So with the literature and art of ancient Greece. The one absorbing idea that became a passion for her, was beauty of form and corresponding harmony of expression and action—a beauty and harmony everywhere reflected from her sculpture, her architecture, her poetry, and her life. So it was with ancient Rome. All Rome's greatness, all her conquests, all her jurisprudence, her public and domestic life, her art, her worships, her literature, were centered in, and became the outcome of, the one idea of Rome. To be a Roman citizen was the supreme badge of honor; to live for Rome was the sole aim of life; to die for Rome was the most heroic of deaths; to sing Rome's glories, to record her deeds, or to perpetuate the names of her heroes, was the highest ambition of her greatest poets and historians. The literature of mediæval days has also its distinct mark. It reflects throughout the spirit of chivalry and feudalism. This is the one idea into which all thought is translated. Even the popular religious writings of the day represent the soul as standing towards its Maker in the relation of serf or yeoman to his baronial lord, and as going through life in a spiritual combat with the powers of darkness.

But the idea of chivalry and feudalism is for us a matter of history; it no longer comes home to us as a living reality; we are outgrowing the forms of thought into which it so largely entered. Our modern life has little or nothing in common with those days of adventure-seeking, and wonderful feat-performing. Commerce and the industries and sciences are the absorbing occupations of the present. But we lack, or we fail to see, a distinctive centralizing thought, predominating over our lives and molding action and expression into a harmonious whole. Our business affairs are one thing; our literature and its topics are another thing. Agnosticism is making strenuous efforts to impress its spirit upon life and thought. It has enlisted under its banner genius, culture, learning, and passion. But the underlying principle of Agnosticism is negation, and a reversion to what is brutal and debasing in the pagan ideal; and the age is not prepared to accept such a principle. The heaven of Christianity permeates too intimately the world's thinking.<sup>1</sup> There is profound truth in the sublime expression of Tertullian, that the human soul is naturally Christian. It loves positive, wholesome truth; it pines in bondage till it possesses truth; but holding the truth, the truth shall make it free. Too long has it fed upon the nourishing meats of Christian truth to be content with the winnowed husks of negation that Agnosticism would impart. Through long and dreary ages, the world fed upon all that Agnosticism has to offer it, and souls became starved, and civilizations went down and were buried in the grave of materialism. Agnosticism cannot harmonize the clashing elements of the age.

In the meantime it is the life-work of each of us to harmonize in his own nature all the elements that go to make it up. Socrates, on that memorable day when he drank the hemlock cup, told the faithful followers who were gathered around him, how at different times a dream visited him in diverse forms, exhorting him to apply himself to the cultivation of music.<sup>2</sup> By music, Socrates meant not simply that combina-

<sup>1</sup> I am glad to present this corroboration from one whom all will regard as a not over-partial witness: "To deny that Christianity in its various forms has been, and still is, one of the greatest powers in the world, or to deny that its leading doctrines have, in fact, been associated in many ways with all that we commonly recognize as virtue, is like denying the agency of the sun in the physical world." (James Fitzjames Stephen in the *Nineteenth Century* for June, 1884.) The admission is a remarkable one, coming from Mr. Stephen.

<sup>2</sup> *Phædo*, Cap. IV, ed. Hirschigii, T. I, p. 46.

tion of sounds that catches up a few fragments of this world's harmonies, and with them moves our souls. There is another and a higher music. It is the music of a soul in which dwell order and method; which co-ordinates all knowledge; which recognizes the ideal; in which the good, the true, and the beautiful are cultivated, each according to its own nature, and by its own method. It is the rhythm of a thoroughly-disciplined intellect and a well-regulated life. That dream comes to us all. In its fulfillment, will we find the reconciliation of literary with scientific habits of thought.

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## THE MODERN GROWTH OF CITIES AND THE EDUCATION DEMANDED BY IT.

BY W. T. HARRIS, LL. D..

*Concord, Mass.*

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In 1790, only three and one-third per cent. of the population of the United States lived in cities of over eight thousand people. Twenty-nine persons out of thirty lived in small towns or rural districts. Sixty years later—in 1850—the city population had increased to twelve and a half per cent., or one-eighth, having doubled twice. In 1885, thirty-five years later, the urban population has doubled again, and now one-fourth of the population lives in cities varying in size from eight thousand to a million. If we count the suburban populations so connected by railway to the cities that their form and mode of living is urban, we may safely estimate the city population at one-half of the total.

This urban movement, extending throughout the present century, is not confined to the United States, but extends to all that part of the civilized world affected by productive industry and the invention of labor-saving machinery. The power-loom, the steam-engine and its uses in the mill and on the railroad, have initiated this urban development. The railroads in the United States aggregated, in 1870, about 50,000 miles, and in the fifteen years since have increased to 130,000 miles.

With the labor-saving machine came an immense stimulus to associative effort. Food, clothing, and shelter could be obtained in such larger quantities and at so much less expenditure of manual labor that every individual became rich in prospect. Just as the discovery of the California gold mines attracted a steady current of migration, and the distinction between rich and poor seemed no longer a fixed and cruel gulf requiring the sacrifice of an entire life to cross to the other side, so the superfluous masses of the population heard gladly of the new spinning and weaving mills, and flocked to the villages where they could obtain steady employment and such wages as seemed to them a golden harvest. Before 1760 they had formed an abject class of rural population, owning no land and dwelling in rude hovels, with only such food and clothing as could be procured with the small wages given them for occasional service on the farms near by. Instead of occasional seasons of work and most inadequate wages on the farms, this population obtained in the newly established mills of Manchester and Birmingham constant employment at remunerative wages, better dwellings, better food and clothing, and plenty. Hence villages grew and continued to grow wherever water-power could be obtained. Soon there were cities where there had been hamlets.

Then the products of manufacture demanded trade and transportation, reaching out to the far-off cotton fields in Alabama or the Indies, and a vast army of men received employment as sailors and teamsters

and traders, bringing in the supply of raw material and taking out the products of the mills. Seeking new markets for the ever increasing production, it became for the interest of English commerce to establish relations with all lands not yet occupied with productive industry. It offered a stimulus to the furnishing of some staple raw material, and gave in compensation articles of manufacture from its looms, its hardware mills, or its distilleries. Industries began in remote lands and colonization soon belted the globe.

Meanwhile the steam-engine had re-enforced the waterfall, and the railroad engine relieved the teamster; the steamboat had succeeded the flatboat and largely took the place of the sailing vessel.

Man, aided by the elemental powers of nature, had so far exceeded his powers as manual laborer, that it was reasonably estimated in 1870 that the 8,000,000 laborers of Great Britain directing machinery moved by the motive power of steam, produced an annual amount of manufactures equal to that of 300,000,000 of laborers, or the entire laboring capacity of the human race, previous to the invention of the power loom and the steam-engine.

Hence the accumulation of wealth in the countries that have adopted productive industry. Gladstone estimated the increase of wealth that could be transmitted from one generation to the next to be so enormous in our time, that in the fifty years from 1800 to 1850 the world had produced as much permanent wealth as during the entire 1800 years previous to this century. The rate of progression was so rapid that in the next twenty years (1850-1870) the accumulated wealth of the world had again doubled. The multiplication of steam-engines and the perfecting of machinery have been supposed to double our productive power once in seven years.

The emancipation of the laboring classes from the proletariat condition of landless and shiftless dependency on the farmers and their elevation into an industrious village population working in the mills, has continued in the direction of better food, clothing, and shelter, and higher wages with fewer hours of labor.

Our wise and careful statistician and political economist, Edward Atkinson, shows us that forty years ago the average wages in the cotton mills of Massachusetts amounted to \$175 per year for each laborer, while at present they amount to \$287, an increase of sixty-four per cent. Meanwhile the hours of daily labor have decreased from the frightful number of thirteen to the reasonable number of ten. The purchasing power of money has not become less, but is far greater in the items of manufactured goods and in the great staples of food. Cloth is nearly twenty-five per cent. cheaper than it was forty years ago. The improvement of railway transportation, thanks to Vanderbilt's invention of consolidated systems of railway lines, has rendered it possible that wheat flour enough to feed one thousand people in New York for one year may be transferred from the wheat fields of Dakota to the mills of Minnesota and thence to the Atlantic seaboard, at a cost equivalent to the labor of one and a half men. With the labor-saving inventions for the farm, one Dakota farmer can raise annually wheat enough to supply one thousand men with food for a year.

Counting the cost of the flour mill, and the baking and distributing of the bread in New York, one thousand five hundred miles distant, and making a generous estimate, Mr. Atkinson shows that ten men can feed one thousand. Two men can furnish iron for one thousand of a population that consumes more iron than any other on the globe. Four men can furnish cotton and woollen cloth for one thousand. One shoemaker can

furnish them with shoes, and so on through the catalogue of necessary supplies. Combination of man with man and of people with people is essential to this form of industry, that compels the elements to toil and spin for it and annihilates distance. Each human being is given a better chance. Such is the lesson of industrial civilization, always a wholesome lesson to study, and never more profitably studied than in your paragon of world's expositions.

The growth of cities finds its occasion in productive industry. Machinery has arisen through the application of natural science by invention. Whereas formerly the whole population had to struggle in a hand-to-hand fight with nature for a meager subsistence, it is now aided by machinery, and the few can supply the many with raw materials and leave two-thirds of the population to engage in manufacturing and the collection and distribution of goods. The manufacturers, and especially the collectors and distributors, of goods dwell in cities. Inasmuch as the conquest of nature by the aid of machinery is a progressive enterprise, constantly gaining ground and losing none, it happens that the city populations continued to increase in comparison with the rural populations, and this relative increase and predominance of the urban over the rural will go on indefinitely.

The amelioration of the city progresses apace. The modern city is not the ancient. With the modern miracle of rapid transportation the effective extent of the city is indefinitely increased. One-half of the business population of Boston goes out to rural villages at night and returns on the numerous railways in the morning. Whatever is salubrious and delightful in the country residence is thus obtained without losing the advantages of combined effort of the city.

The problems of education in our time concern directly this movement in civilization, which we here have described as urban or city development. The education of the family, the trade, the nation, and the church, has to be re-enforced by the education of the entire population for a limited period in the school. Other ages and other civilizations have been able to dispense with the school to a greater or less degree, especially with their proletarian classes. The modern city civilization cannot neglect school education with impunity.

Let us look at the requirements of the new citizen of the world.

First, it is obvious without tedious consideration and minute investigation that there is a necessity of general education in schools to such an extent as to fit each individual to direct and manage machinery; not a special apprenticeship to some particular machine is required, but a general insight into the conditions and laws of mechanism in general. Natural philosophy or physics, therefore, and mathematics, especially arithmetic and geometry, are required. Whatever gives man a knowledge of nature is useful as scholastic preparation for urban civilization.

The art of enumeration—the science of arithmetical calculation—is an essential prerequisite to the conquest of nature. A theoretical mastery precedes a practical mastery; a knowledge of how it is to be done comes before the application of such knowledge. Hence arithmetic holds the place of honor in the primary school curriculum next to reading and writing, and with them makes up the famous three “R’s.”

Universally regarded as the indispensable rudiments of all scholastic knowledge, arithmetic and algebra formulate for us the necessary logical laws of time and succession, while geometry and trigonometry formulate in like manner the logical laws of space.

Space and time are the fundamental forms of material existence. With a knowledge of the nature of time and space as formulated in mathe-

matics. man goes forth to take possession of the world and to make things serve his thoughts.

Man may work at hand-work to a limited degree without a knowledge of number. But the directive intellect must be near by to control the hand, and that directive intellect must know arithmetic. All division of natural objects, all analysis, presupposes the idea of number in the mind of the workman. "Divide and conquer," is the old maxim. All combination, too, presupposes such knowledge of number. We may therefore say, "Combine and conquer".

The rational direction of hand-labor demanding a knowledge of arithmetic, either in the laborer, or if not in him, then in an overseer appointed above him, it is clear that the management and direction of a machine require a constant use of arithmetical knowledge on the part of the workman.

The age of productive industry is marked by the ascent of the laborer from the position of mere drudge to the position of directing intellect. Formerly it was his muscle that furnished the motive power, and he was trained to become all hand and no brain. In the urban phase of civilization he is required to be primarily a directing brain, and only secondarily a laboring hand.

Mathematics and natural science are necessary to the laborer in the age of machinery. The more knowledge the school has given him, the higher his rank as directive power. The laborer who is all hand and no brain has little or no chance in this newest phase of civilization, except for a subsistence through the alms of his fellow men; he can be little more than a pauper. The weaver who uses the hand loom—and even the hand loom is a wonderful human invention—cannot earn a sufficient support. The weaver at Lowell earns \$287 a year. He produces 28,000 yards of cloth. The weaver with a hand loom produces less than 600 yards of cloth, and earns less than \$6 a year!

The most important characteristic of the age of machinery is its continual progress from the simple machine to the complex one. The simple machine is invented just at the point where division of labor has arrived at the extreme of simplicity in the application of the hand; when the hand labor is so simple as to require no special skill or intellectual adaptation, then the simple machine may be invented to take the place of the hand. After a series of simple machines are invented, the next step is the combination of these machines into one. Think of the progress from the old-fashioned printing press to the newest style of cylinder printing press of Hoe's patent! The old printing press enabled one man to make as many books as 400 copying scribes. The new printing press works by steam, and reduces the human labor to one-fiftieth of the amount required by the old hand press.

The machine changes the demand for muscular labor to a demand for brain labor. This is progressively developed: at first muscle is primary and brain secondary; then brain becomes primary and muscle secondary. The simple machine makes educated brain as important as muscle; but the progress of machinery in complexity of structure makes greater and greater demands on versatile intelligence and less demands on muscular strength.

This being the trend of our civilization, we see that universal education in the school has become very important already, and that it will soon become utterly indispensable in all civilized countries.

It does not matter what the form of political government may be so far as this demand for common schools is concerned. The age of science and the age of labor-saving machinery carries to all countries the

same dilemma: Either educate your people in common schools, or your labor will not compete with other nations whose people are educated up to the capacity of inventing and directing machinery. If you cannot compete with other peoples in the matter of the use of machinery, you must recede from the front rank of nations in every respect.

Such reflections as these force themselves on our attention when we contemplate the exclusively material phase of urban civilization. It is, however, only when we turn to look upon the spiritual phases of this new order of civilization that we see the full force of this demand for school education, and for studies of another sort than mathematics and physics.

The two R's, reading and writing, must open the windows of the soul that look out upon the world of literature, the world created by human genius for the revelation of man's insight into his own nature. Literature reveals to man his ideals of what ought to be; it elevates the banner of his march towards the beautiful Good and the beautiful True. It shows the ideal in conflict with the real, and educates man's insight into the distinction of good from evil. Through literature the genius of the race, appearing in exceptional individuals, instructs the multitude, and lifts all up from their lower level of prose reality to the high planes of insight into the ideal of the Godlike, the divine human.

The school teaches how to read, and this is the primary indispensable condition for participation in this higher world of ideal humanity. It then introduces the pupil to the what to read, and shows him how to master these treasures of literature and to take possession of the revelations made for his use.

In the next place, on this spiritual side of education the school opens the windows of the soul that look out upon human history, upon the realm of the realized will of mankind. History is the biography, not of individuals as individuals, but of institutions, the gigantic combinations of men especially as nations. Each man in his isolated peculiarity is only a partial and imperfect realization of the humanity that is in him. He is mostly a possibility; he has realized but little of what is in him. But when he looks out upon his community, upon his nation, upon the entire race through the window of history, he beholds his inner self reflected in a gigantic reality. He learns to know his greater selves, those selves that are too great in all-sided completeness to be realized in a single individual life, and which therefore take on reality through individual combination, thus forming the great institutions of the race. These cardinal institutions are the family, civil society, the State, the Church. Each of these institutions is beneficent towards the individual. Each institution reveals itself in history as an instrumentality by which a whole combination lends its aggregate aid to each individual member. The family enables the elder to assist the younger; the mature the immature; the well and strong, the sick and weak. It equalizes age and bodily condition. It performs a miracle: each gives only its feeble might to the whole, but is blessed in return for its gift by the multiplied gift of the whole. All institutions perform this miracle. In civil society the individual toils to produce a special product, something here and now, limited by the climatic conditions and by his own feeble strength. But for this gift of his day's labor the market of the world allows him to take a share of all productions of all climes, brought to him by the commerce of all nations, a perpetual process of united human endeavor. In the State each individual offers his puny aid to the whole, and the whole in return protects and defends him, and re-enforces his might by the might of fifty millions. In the Church he gives his sympathy



to his fellow-men, and assists at celebrating the fact of the revelation of the Godlike in Divine Human form. He aids the faith and hope of his fellow-men by manifesting his own faith and hope, but he receives the aggregate aid of the entire Church. His contribution is finite, but he receives in return an infinite gift. The school opens the window of the soul that looks out on human history, and lets the pupil contemplate in their unity and details these giant forms of human nature,—the institutions of the world in their genesis, development, and consummation.

Besides the windows of the soul that behold respectively the revelations of human nature in literature and history, the school opens also another window, revealing to man immediately his own reason, his logical and psychological constitution; for this is what is essential in the study of grammar. Each people reveals its experience and its solution of the problem of life in its language. The vocabulary of words of any language reveals to us the inventory which its people have made of the world, and the conceptions they have formed of the purpose of the whole. The logical framework of language, its grammar, goes beyond this, and brings to light and to consciousness the subtlest operations of the soul itself.

Any training in grammar is a training in the power to see essential principles themselves. All grammar teaches the pupil to distinguish things from mere relations and from qualities, functions and actions from substances and dead results. How else can the pupil classify the words in the language under the several "parts of speech," except by thinking of their meaning and use, and discriminating their several values as expressions of substance and attribute and relation, of subject and action and function, of independence, dependence, and co-ordination? And what is such training in discrimination but training in pure thought? What is all thinking in the world but an application of such logical discrimination as one gets in the mastery of grammar?

Thus the school opens five windows of the soul: two directed to outward nature in time and space, one of these looking at the mathematical conditions of inorganic nature and another to the processes of organic nature. The elementary school teaches these under the names of arithmetic and geography.

There are three windows looking towards human nature, opened, respectively, by the study of literature, history, and grammar, looking out upon the æsthetic ideal, in poetry and art, the will realization in history, and the theoretic nature of pure essence of Mind manifested in the grammatical structure of language.

It may be evident enough that the school has its important function in opening these five windows of the soul, and in training its pupils into such habits of self-control and industry as will make them co-operative with their fellows for the common good. Such would seem to be the general function of the school, and wholesome under any form of civilization,

But our question is, What is the demand of the new civilization, whose instrumentality is the labor-saving machine?

The answer to this question is to be found partly in the political issues of this civilization and partly in its industrial issues.

Machinery becomes possible through extreme division of labor, and consequently through the close commercial relations of—interdependence. Again, the direct effect of machinery is interdependence and close commercial and social relations. To make the increased rates of production possible there must be constant supply and constant demand, and this can only be secured in the world-market.

In order to make this wide world-commerce there must be rapid

transit, that of the railroad and steamship. In order to direct and control and adjust the supply and the demand, there must be constant and instant survey of the existing conditions of production and consumption in all parts of the world. Each must see the whole. Hence arise the telegraph and the daily newspaper.

The urban or city civilization is a newspaper civilization, if we characterize it by the most important instrument that it has invented. Into the daily newspaper as into a magic mirror the modern citizen looks and sees the spectacle of the doings of the entire world: the movements of commerce, the transactions of the various national governments in so far as these are outside of routine; extraordinary crimes and retributions; the events of society; the doings in science, art, literature, the drama, and in an indefinite domain of personal gossip—all these are presented to the citizen, and he regularly adjusts himself each morning to his world-environment.

Formerly, before the railroad and telegraph had rendered possible the daily newspaper, each person adjusted himself to his narrow environment through village gossip which he heard at the neighboring inn or at the club; now, instead of *village* gossip, he reads world gossip without leaving his fireside or breakfast table.

In the olden times each section grew more sectional, except in times of great wars that mingled the soldiery of different localities. In the modern civilization the daily newspapers of all lands have substantially the same presentation of the world, and reflect more and more nearly the same views. The newspaper is therefore a sort of world court in which passing events are brought up daily for judgment.

Under these circumstances there arises into power the majestic presence of Public Opinion—a might which controls the actions of kings, the deliberations of parliaments, and the ballots of electors. Public opinion is become the educator of nations. Formerly, through ignorance of the effect that overt acts might have, nations were often precipitated into war; now it is easy for statesmanship to feel the pulse of nations in advance, and by prudent diplomacy avoid extreme issues.

The newspaper is the organ of public opinion, and in this capacity it tries and judges criminals, and punishes all manner of sin that escapes the whip of the law. It rewards good deeds and sounds the trumpet of fame before the favorites of public opinion. The newspaper popularizes science and literature. It has a page for fiction, in which the modern literary artist paints the ideals of society with halos of glory or with satire and caricature.

Where each human being beholds the same spectacle beheld by all others, and assists all in forming the high court of public opinion, there is realized at once the most powerful educational means ever invented for uniting men in thought and sentiment. Even the village gossip is a powerful means in its way to eliminate from the individual his whimsicalities and idiosyncrasies. The modern public opinion is based on world-gossip and is far more potent for good. Mrs. Grundy's opinion becomes dignified and oracular when it voices the verdict of nations.

One consequence of this new realization of the magic mirror in which all humanity is reflected, is the rise of the true cosmopolitan spirit, a mutual toleration of all peoples. A profounder habit of considering one's fellow men sees the same humanity under strange disguises of costume, national customs, and diverse languages.

These thoughts regarding the newspaper as the characteristic instrumentality of the age of invention leads us back to our central theme: What sort of school education does the newspaper imply?

Certainly we may answer it implies a universal reading public and universal elementary education in its school.

The newspaper reader, if an intelligent one, is well versed in geography and knows the technique of the sciences. The newspaper itself cannot exist in an illiterate community, nor can its public opinion penetrate such a community. There is demanded a general training in the curriculum of the school, and when fitted for the newspaper and the library the citizen is in a way to continue his cosmopolitan education for life.

The newspaper civilization is moreover essentially inclined to local self-government. It is a government of the people, by the people, and for the people. Hence a city civilization demands universal school education for the highest of all secular reasons: it is necessary that its citizens shall be law-reading and law-obeying; still more is it necessary that its citizens shall be intelligent electors, and even able to make their laws.

The occasion for educated intelligence in a self-governed community is constant and unavoidable. But our industrial age increases the demand for educated directive power tenfold by its great and small business combinations. Companies for transportation, for insurance, for banking, for trading, for exporting and importing, for various forms of manufacturing and mining,—all large combinations demand as an essential prerequisite, educated directive power; and the school only can furnish the literary qualifications necessary.

With a scattered rural population it is not absolutely indispensable that universal school education exist. A sort of patriarchal rule may prevail, and the intelligence of one brain suffice for many hands.

Urban civilization is radically different in this regard, and no patriarchal rule ever sufficed for a city. Demagoguism with its bottomless abysses of corruption yawns beneath a city where the schools do not provide for all classes of people.

The city is the greatest instrument of human blessing when its citizens are enlightened; but an ignorant populace is sure to be used by demagogues or tyrants. In the presence of illiterate masses even the educated man becomes corrupted, and resorts to unscrupulous means to attain power over the hydra-headed monster of the mob. But though a demagogue may be a well-schooled man, he will never find his followers among the well-schooled; for schooling develops individuality and a centrifugal tendency that cannot be overcome by mere personal magnetism. Educated people, even if immoral, demand a cause or some general interest to attract their partisanship, and they will refuse to yield to the mere gregarious instinct which prevails over the illiterate man.

Participation in the blessings of urban civilization demands school education as its prerequisite, and the delicate machinery of free government finds such education absolutely essential to its successful operation.

## SOME PRACTICAL SUGGESTIONS RELATING TO NATIONAL AID TO EDUCATION.

BY THOMAS W. BICKNELI, LL. D.,  
*Boston, Mass.*

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One of the distinguishing characteristics of our state and general governments, in marked contrast with those of leading European powers, is their position with reference to public education. The primary idea of the American State is a body of intelligent and self-governing citizens. Freedom, secular and religious, implies knowledge, reason, self-control. As neither of these qualities is hereditary, it follows that an agency must be established to create and perpetuate the conditions of self-government.

To the Fathers it seemed that illiteracy degraded the individual, was a foe to social order, a constant menace to good government, and a corrupter of a pure spiritual faith. Within its loins, as they conceived, were generated base passions, criminal indulgences, and the agencies which destroy hope, happiness, and life. Hence the free school at Plymouth, the colleges at Harvard and Yale, the university of Jefferson in Virginia, and the grand conception of a great University at Washington, born of the wise fatherhood of Washington.

Mr. Burke, in his speech on American Conciliation, found the causes which made liberty in America "fierce", (1) in descent, (2) in the colonial forms of government, (3) in religion in the northern provinces, (4) in manners in the southern, (5) in education, and (6) in remoteness of situation; and John Adams, in the enumeration of the advantages of New England society, says, "The public institutions in New England for the education of youth, supporting colleges at the public expense and obliging towns to maintain grammar schools, are not equaled, and never were, in any part of the world."

In evidence that faith and works were one in the colonial sentiment, before the year 1765 seven colleges had been founded in the British colonies: William and Mary in Virginia, the University of Pennsylvania. New Jersey College, now Princeton, King's, now Columbia, in New York, Yale at New Haven, Rhode Island College, now Brown University, at Providence, and Harvard University at Cambridge.

The genius of American institutions may then be seen in the common school and the college, which stood for high intelligence and Christian manhood. Toward both, the town and the colony exercised a paternal interest and care, and the support of both was the first provision of the new society, in order that the public weal might suffer no detriment from the allowance of ignorance in matters secular or religious. From town through colonial history we find the constant recognition of the protection of society by the encouragement and aid of the common school. As the Old Thirteen were but the union of colonial principles, we find in

the Union the same devotion to the idea of universal education. The cardinal maxim of the founders was, "The first duty of a State is to educate its people."

National aid to education is then no novel theory born of idealists of the nineteenth century. The founders of our States and the Fathers of our Republic saw the need of the common school, appreciated its necessity for the happiness of the citizen and the welfare of the State, and applied the preventive for illiteracy in early legislation for the common school. Note, however, that this legislation threw the responsibility of the educational burdens on the local communities.

Their action was memorable, and the actors distinguished themselves as statesmen, among whom were Washington, Franklin, Jefferson, Sherman, Madison, Monroe, Hamilton, Morris, and others of lesser fame. The two ordinances of the government of the North-west Territory, enacted in 1785 and 1787, set apart section sixteen of every township for maintaining public schools, and as a justification for such a generous and sovereign gift, this memorable declaration was instituted for the benefit of posterity: "Religion, morality, and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall be forever encouraged." It has not been unusual for kings and conquerors to grant title-deeds of vast estates to enrich their favorites, but when in history has it been known that legislators have bestowed such princely fortunes, not on titled greatness, but on the handmaids of freedom,—religion, morality, and knowledge?

#### SUPPORT OF HIGHER EDUCATION.

But the Fathers of this great commonwealth of States, only one-third of which, as now, being then born, looked beyond the common school as one of the essential needs of free States, and with a wisdom which puts to shame much of the public discussion of our day relative to higher education, provided that two complete townships of lands should be given perpetually for the purposes of a university; and in full compliance with this provision, two townships have been given to every State organized since the commencement of the present century. Ohio, the first State admitted to the Union from the celebrated North-west Territory, has been fortunate enough to acquire three townships,—one while a territory, and two on her admission to the Union in 1802, while Florida and Wisconsin each have received four. The States which have received the sixteenth section only are Louisiana, Indiana, Mississippi, Illinois, Alabama, Maine, Missouri, Arkansas, Michigan, Iowa, and Texas, the last of which was admitted to the Union in 1848.

#### FURTHER GRANTS FOR EDUCATION.

In the same year that Wisconsin was admitted as a State, Oregon was organized as a Territory, and Congress made further provisions for the maintenance of common schools, setting apart the sixteenth and the thirty-sixth sections of each township for their support; so that all the States admitted since 1848 have received the benefit of the two sections donated for common school education. These States are California, Minnesota, Oregon, Kansas, Nebraska, Nevada, and Colorado.

Were it a part of our present purpose, we could show the added generosity of the Government in its later legislation, by which several States, notably those admitted to the Union since 1849, have received an aggregate of 75,000,000 acres of land, which have been in the main

honestly devoted to the purposes of popular education, and now constitute an accumulated permanent school fund, in eighteen States, of \$50,000,000. From the North-west Territory, which so early received the notable considerations of such wise legislation and munificent benefactions, have been formed five great States—Ohio, Indiana, Illinois, Michigan, Wisconsin, and a part of a sixth, Minnesota, which was admitted to the Union in 1857, the same year that the National Educational Association was formed at Philadelphia.

#### NEEDS OF NATIONAL AID TO EDUCATION TO-DAY.

These States of ours are a community with common interests and a common destiny. The evils which afflict one touch the life of all. The blessing which adds to the common weal in one section of our land, however remote from the center, blesses all. Illiteracy is a universal menace to free institutions. Intelligence is a perpetual safeguard.

Of the 50,155,783 people of the United States, there are 6,239,958 over ten years of age (12.44 per cent., or nearly one-eighth of our entire population) who cannot write. These illiterates are thus distributed:

Illiterate whites in the 22 Northern States .....	1,272,208
Illiterate whites in the 8 Territories .....	69,933
Illiterate blacks in the 22 Northern States and 8 Territories.....	156,644
Illiterate whites in the 16 Southern States and District of Columbia .....	1,676,939
Illiterate blacks in the 16 Southern States and District of Columbia.....	3,064,234
Total .....	6,239,958

An analysis of these statistics shows that in eighteen States, including two Territories, more than 13 per cent., and in eleven more than 25 per cent., cannot write. In fifteen States and Territories more than 11 per cent. of the white population over ten years of age cannot write, varying in these from 11 to 45 per cent.

While no portion of the country is free from this scourge of ignorance, the condition of the Southern, or former slave-holding States is especially lamentable and full of danger. More than one-fourth of the entire population of these States is illiterate.

Eight of these States,—Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Virginia, have over 40 per cent. of illiterates of all classes, white and black. The whole number of persons, white and colored, in the sixteen Southern States was 18,500,000. Of these, the number of illiterates was 4,715,395, or 27.1 per cent. This illiteracy is largely confined to the colored people, 47.7 per cent. of whom (3,220,878) cannot write, while only 6.96 per cent. of the whites (3,019,080) are in that condition. In the relations of this great body of illiteracy to the ballot, President Garfield in his inaugural spoke as follows:

But the danger which arises from ignorance in the voter cannot be denied. It covers a field far wider than that of negro suffrage and the present condition of the race. It is a danger that lurks and hides in the sources and fountains of power in every State. We have no standard by which to measure the disaster that may be brought upon us by ignorance and vice in the citizen when joined to corruption and fraud in the suffrage.

The voters of the Union, who make and unmake constitutions and upon whose will hangs the destinies of our governments, can transmit their supreme authority to no successors save the coming generation of voters, who are the sole heirs of sovereign power. If that generation comes to its inheritance blinded by ignorance and corrupted by vice, the fall of the Republic will be certain and remediless.

The census has already sounded the alarm in the appalling figures which mark how dangerously high the tide of illiteracy has risen among our voters and their children.

To the South this question is of supreme importance, but the responsibility for the existence of slavery did not rest upon the South alone. The nation itself is responsible for the extension of the suffrage, and is under special obligations to aid in removing the illiteracy which it has added to the voting population. For the North and South alike there is but one remedy. All the constitutional power of the nation and of the States and all the volunteer forces of the people should be summoned to meet this danger by the strong influence of universal education.

The two bills now before Congress relating to Federal aid for education—the Blair Bill, which has passed the Senate, and the Willis Bill in the House—do not differ materially in their general provisions, and either, if adopted by Congress, will render very essential aid to the needier parts of our country, which are so sadly suffering for want of the blessing of free schools, and that largely from the poverty, and not from the want of interest, of the people to be educated. Both bills distribute the money directly from the United States Treasury to the several States and Territories on the basis of illiteracy by the census of 1880, school and adult, from ten years old and upward. Both bills recognize the educational authorities of the States, aided, as the proper officers to superintend the disbursement of the funds in the several States, and both require annual reports to Congress, through the Commissioner of Education, concerning the application of these funds to the public instruction of the children of whites and blacks impartially, for at least three months in each year. Of the merits of these bills we do not propose to speak, except in comparison with a third bill, the work of the Inter-State Commission on Federal Aid, appointed at Louisville in September, 1883, which seems to us to embody valuable principles not yet recognized in this most important piece of national legislation. We will note a few of the leading features of the new bill:

(1) The amount to be distributed is sixty-five millions of dollars—a compromise between the amounts of the Blair and Willis Bills.

(2) The distribution reaches over a period of twelve years instead of ten, thus enlarging its capacity for helping the people.

(3) Its distribution is to be made, not on the basis of the total illiteracy of the country, but on the *school illiteracy* between ten and twenty years of age, inclusive.

(4) The distribution is made on the following plan: For *each illiterate person in the States* between the ages of ten and twenty, inclusive, and for *each person in the Territories* between and including the same ages, as shown by the census of 1880, there shall be apportioned for the first, second, and third years, each year four dollars; for the fourth, fifth, and sixth years, each year three dollars; for the seventh, eighth, and ninth years, each year two dollars; and for the tenth, eleventh, and twelfth years, each year one dollar; when all appropriations shall cease.

(5) One-third of the money apportioned to each State may be used for the erection of school-houses and the support of normal schools and normal institutes, and the other two-thirds to be used for common-school studies, including elementary industrial education.

(6) The common schools are required to be kept four months in each year, and the money is to be expended, under State laws, by the ordinary educational authorities.

(7) To superintend the carrying into effect the provisions of the bill, a Board of Trustees is created, consisting of the Secretary of the Interior *ex officio*, two Senators and two Representatives, not belonging to the same political party, the Commissioner of Education, and the Fourth Auditor of the Treasury. This board is to attend to the distribution of the funds, to secure reports, to look after the administration of the funds

of the several States, and to stand as a guardian for the Nation of the trust until its full disbursement has been made.

In the great debate in the United States Senate last winter on the Blair Bill, the main battle was fought about the question of the right of the general Government to contribute directly to the aid of the schools of the several States; but with our best constitutional lawyers and legislators to oppose and defend, the bill was passed by so large a majority in the Senate as to set at rest for the future all discussion on this point, and all that remains to be done to secure the passage of this most important measure is the enlightenment of the members of the lower House of Congress as to the needs of such an appropriation and the demands of the people for the same.

Adopting, then, the correctness of the principle involved in a direct appropriation from the national treasury to the aid of our common schools, we may assume that such aid should be sought only to meet a great national exigency, should be administered in such a way as to encourage the increase and permanency of local self-support, and should be continued only as long as the necessity lasts. It should act as a stimulant, not as an intoxicant. An appropriation which should lead to a reliance on the general Government for long-continued aid might become a curse rather than a blessing to the cause of common schools, and subsidize and pauperize the communities receiving it.

#### SOME SUGGESTIONS AS TO ITS PRACTICAL APPLICATION.

I. *The executive educational officer of each State should administer the funds to be devoted to the aid of the common schools of that State.* Each State has its regularly established channels through which its school funds pass on their way from the general reservoir of the State treasury to the county, town, and local treasurers and disbursers.

The funds which come from the general Government should be poured directly into the same channel and be directed by the same educational machinery that controls the State appropriations. There should be no possible opportunity for political or other interference with the school funds of the State, and no temptation should be offered for a corrupt use of a government grant. At the same time, the State officer should be recognized as the administrator of the public gifts, and, with the responsibility, would come a care in supervision which, though it would add to the duties of his office, would increase its dignity and importance; and if there is any one department in our State governments weakened and narrowed by legislative enactments, it is the office of State superintendent. All that can be done to increase the significance of the office is essential and imperative.

II. *Proper guarantee should be made that no State should relax its efforts to tax the people for the support of common schools, on the receipt of national aid.* By the provisions of each of the bills now before Congress, each State is required to raise as much by general and local taxation for common schools as it is entitled to receive from the general Government, in order that it may receive its quota. A State now raising half a million dollars for education and entitled to \$350,000 by a national aid bill, might reduce its state or local taxation \$150,000 and still receive government aid. With the rapidly increasing prosperity of all of our States we may naturally expect the school tax to be increased in a corresponding ratio, and such safeguards as legislation may throw about these grants should guard against any retrogressive steps on the part of any State or committee.



III. *Not only should the States make all necessary provision to prevent a decrease of the State funds for schools, but there should be an education of the people toward a constant increase of appropriations, in order that the schools may suffer no detriment in the acceptance of a government grant.*

IV. *In the distribution of the school funds, State or national, no distinction should be made as to race, sex, or color, nationality, or previous condition.* I am well aware that difficulties will arise in the practical working of this principle, however wise, patriotic, and philanthropic the State and local authorities may be; and here let me say that I have visited all of the Southern States, have seen many of their schools, and have become acquainted with many of their officers and teachers, and have found the great majority of them profoundly interested in the education of the colored population as well as the white. But there are grave difficulties growing out of (a) two races so widely separated, socially and intellectually, living on the same soil, whose relations so recently were that of master and slave; (b) the sparsely populated country districts; (c) the present necessity of separate schools for the two races; (d) the want of fit school accommodations for either race in numberless communities, and more especially for the colored race; and (e) the greater interest of the black population over the poor white for the advantages of education. The following colloquy, which took place in the educational hearing at Washington, is of interest on this point:

Representative WILLIS: I should like to ask a question which has been raised in our committee, and that is whether the colored population show a willingness to avail themselves of the benefits of education. What is your experience in your State, as compared with the whites; do they, or do they not?

Mr. SCARBOROUGH: I wish to be understood as not striving to misrepresent the whites, but to state a simple fact as it has come under my observation in over seven years' service as State Superintendent. Take the negro and put him along with that class of whites who are on a level with him in intelligence and in opportunities, and he is a great deal more interested in the question of the education of his children than the whites have been. I account for that in this way: It is for the negro a new thing. In slavery times, as you are aware, the negroes were prohibited from learning to read, although many white men taught their slaves to read. The height of their ambition was to learn to read "like young master and old master did"; and since they were freed they have remembered the desire that they had, and they are anxious to give their children the opportunities of education. I have seen negro children all over the State, here and there, going to school in such garbs as white children would not appear in, and it was not because the parents did not want to put them in a better condition, but because they were absolutely unable to do it. They would have a long shirt on, reaching, perhaps, half way down the legs, and nothing else, with a piece of ash-cake and broiled bacon—not bacon, but pickled pork—for their dinner. I account for it on this ground: The white people who are without the privileges of education and whose children are not educated, and who are keeping their children at home without education, have been so long without the benefits and privileges of education that they have reached a state of stupor which it is hard to get them out of. If the negro is allowed to remain in the condition in which he is much longer, he will be brought to the same condition. If, before this interest in the education of his children can die out, his efforts are stimulated, he will keep on; but if he is allowed to remain too long, he, too, will grow slack on the subject and forget his interest in it, and make of his child a slave instead of making him, as best he can, a good citizen of a government that he loves above all things in this world. The United States Government is that which is loved by the negro above all earthly considerations and all things.

The CHAIRMAN: I should like to ask if you do not find a rapidly increasing interest among the masses of the white population in the common schools?

Mr. SCARBOROUGH: I do, sir.

The CHAIRMAN: I have been very much struck with that. To my mind, the great danger is not lack of education to the negro, but to the white man. I think myself of the white people somewhat in this country.

Mr. SCARBOROUGH: I represent the whites, too. I prefer the white man to the colored man, and I am here representing the whites of North Carolina, who are in a bad condition, and I am here to make a plea for them. The truth is, I do not believe the United States Government will ever discharge its duty to the negroes or to the whites

of the South until it comes to the rescue, and helps us in this critical moment of our existence to lift up and elevate the citizenship of this country so as to make the State governments safe and the National government safe with intelligent voters. There are 145,000 illiterate voters in North Carolina, who do not know the letters of the alphabet and cannot read or write. That is more votes than Mr. Tilden received in 1876.

By an equality of school rights we would be understood to mean equal school privileges for whites or blacks under corresponding circumstances, equally well qualified teachers, equally paid whether white or black, equally good school accommodations, equal and careful school supervision, with a judicial blindness on the part of all school officers to color, caste, or other condition, in the distribution of school support. Should blinded justice chance to open her eyes to the light, the heart of love might be moved, and forgivingly so, to help the weaker in preference to the stronger, and to lift the helpless where the strong could stand on his own strength.

V. *The distribution should be made to the States, not on the basis of their total illiteracy, but on the school illiteracy between ten and twenty years of age, inclusive, and to the Territories and the District of Columbia on the basis of population.* Hence the money is directed to the removal of illiteracy within the school age.

The distribution is made by the Inter-State Commission Bill on the following plan: For each illiterate person in the States, between the ages of ten and twenty inclusive, and for each person in the Territories, between and including the same ages, as shown by the census of 1880, there shall be apportioned for the first, second, and third years, each year four dollars; for the fourth, fifth, and sixth years, each year three dollars; for the seventh, eighth, and ninth years, each year two dollars; and for the tenth, eleventh, and twelfth years, each year one dollar, when all appropriations cease.

It seems to us a wrong basis for distribution, that of illiteracy of ten years of age and over, embracing all of the illiterates over twenty-one years of age, while the substitute, in view of the fact that no State by law admits to its public schools men or women over twenty-one years of age, distributes the fund on the basis of the illiterates between and including the ages of ten and twenty, in the States and in the District of Columbia; and in the Territories, where they have no fund from public lands, where the country is sparsely settled, and where the people are mainly poor, the fund is distributed to all children between and including six and twenty.

VI. *The extension of the apportionment to county distribution is recommended* for two reasons, both believed to be worthy of recognition: (1) As a guarantee that it will be equally and fairly distributed; it will remove a serious objection to such aid in the minds of those who fear that the funds apportioned, for any reason, may be used for the special benefit of favored localities. (2) It will be a welcome assurance to the people of the several counties that in the distribution they will receive their just allotment of aid, the exact amount of which will be known, thus affording a stable guide for local action from year to year. The States will have it in their power to prevent local abuses in the use of Federal funds.

VII. *The funds coming to any State or district from the general Government should be permitted to be devoted to the three purposes named:* (1) *The payment of teachers' salaries;* (2) *the support of normal schools;* (3) *the erection of school-houses in destitute districts.*

VIII. *In case there is no public school organized under the State system in operation within any district, or the authorities of the State refuse to establish one, the people thereof, under such regulations as the Commissioner shall prescribe, should be allowed to organize a private school free to all within school age resident in the district (except in case of separate schools for different races), and by keeping the same in operation the required time, and paying at least two-thirds of the expenses thereof, should be entitled to the benefit of the sum thus appropriated.*

IX. *Evening schools should be established for the illiterate adult population.* This department of school work, though of vital importance as a means of reaching the masses, is without doubt neither fully appreciated by school authorities nor fairly understood by the general public. Hundreds of cities and towns in the country, burdened with an appalling and increasing illiteracy, provide no means whatever for evening classes, while a great proportion of the schools maintained are either indifferently managed by committees or miserably mastered. That this is a grave error, and demands our serious attention, none conversant with the subject can doubt. By the Report of the Commissioner of Education for 1881, it is seen that but thirty-two cities of the United States provided evening instruction, though I am happy to note that since the writing of that report this number has materially increased, as also have the means for their suitable and successful maintenance.

In Massachusetts alone, during the past year, thirty-seven cities and towns at an expense of \$56,744.54 maintained 110 evening schools, the average attendance thereat being 3,613, being some 60 per cent. of the total enrollment. Reports from other States show a growing (yet by far too slow) tendency to encourage this class of work. That there are many causes which have materially contributed to the discouragement of committees and teachers in the management of these schools is not doubted, yet I am confident that they are not without remedy.

Experiments in New York, Brooklyn, Cincinnati, Boston, Worcester, Lowell, and other cities, have demonstrated beyond all doubt that the crowding, confusion, and chaos common at the opening of elementary evening schools, as well as their great irregularity of attendance, can, under a healthy *régime*, be succeeded by the same order, interest, and regularity which characterize the opening and conduct of our well-regulated day schools. It must not be forgotten that evening schools, as a whole, exist under permissive authority, while day schools are maintained by the rigid construction of mandatory statutes. But two States, Pennsylvania and Massachusetts, have to any degree advanced this department to a like standard with the public schools. To contrast the condition of this branch of the service, even under the most favorable auspices, with that of the day school, is both unfair to the school and an unpardonable demand upon those who have been zealously battling with difficulties and discouragements in the securing of more permanent provisions and a perfect system for their proper maintenance. What, then, may be asked, must be done? There is but one answer: Remedial legislation to meet the demands of the time is imperative.

The enactments of Massachusetts or Pennsylvania, in the absence of any better legislation, should be stereotyped by every State in the Union. To these should be added laws compelling the attendance of all illiterate minors, with proper exemption in special cases of hardship. Truant laws should be made applicable, which, supplemented by a hearty public support, would insure success. The Massachusetts State Board of Education, in their last report, commenting on the improved

condition of the evening schools of the State since the enactment of the compulsory law, say :

The classes have been removed from ward-rooms and cellars to the desks occupied by day pupils. Better text-books and more liberal supplies, with teachers of recognized ability, have been added to the service. Organization, classification, and system, have been substituted for the chaos, which, under the old *régime*, characterized many of the elementary schools, especially of Boston. In several localities, however, these schools have been reported as failures. Careful inquiry and examination disclose the fact that in every case the management, and not the members of the school, is at fault. There has been no marked success where there have been incompetent teachers, condemned supplies, torn and defaced text-books. With proper provisions for accommodations and supplies, competent teachers, and good management, there is no doubt that evening schools will take rank with day schools, and can be made a credit to every community. In the face of the annual influx by immigration, further and more pertinent provisions by law are necessary to convert the great body of foreign-born illiterate persons into intelligent, industrious citizens.

Such sentiments cannot fail of approval by all who have worked in this most fruitful field. The eleemosynary support of the system should at once be succeeded by the most liberal appropriation of public money. There is no wiser, better, safer depository for Federal aid than in the maintenance of a well-regulated system of elementary evening schools. The Government would do well to imitate the great example at Creuzot, France, or the more recent action of the Willimantic Linen Company in Connecticut, which corporation, in the following order, issued August 1, 1882, has made a precedent meriting the highest commendation :

No person now in the employ of the Willimantic Linen Company will be continued in their service after July 4, 1883, unless such person can read and write; and on and after this date no person will be employed by the company who is unable to read and write.

The agent of the company, replying to a letter of inquiry as to the effect of this measure on their work-people, said :

In order to give the work-people of the company who were included in the above notice an opportunity to protect themselves, evening schools were established during the following winter and spring. About one hundred and fifty availed themselves of the privilege, and the schools were very successful, so that at the expiration of the notice less than thirty were discharged. Exceptions were made in some cases, especially of those above 45 years of age. A large proportion of those attending these schools were of foreign birth, principally French Canadians. I consider that the schools were a perfect success, and was very much surprised at the rapid advancement most of them made in their studies, and the interest they took in the school.

Of evening high schools there appears but one sentiment : wherever properly maintained, they have fully justified the most liberal expenditure. In New York, Boston, Cincinnati, Brooklyn, and other cities, the reports show an increased public interest, which, to a great degree, is the true criterion of the good or ill management of this class of work. The curriculum of the New York Evening High School, while co-extensive with that of the high schools of the State, has successfully maintained advanced courses of collegiate work.

*X. Each State or county should not be entitled to receive from the government grant each year a sum exceeding one-half that expended for school purposes the previous year, provided satisfactory returns should have been made to the trustees of the grant setting forth the condition and work of the schools of the county or State.*

The State Superintendent should report to the trustees the attendance, the studies pursued, and text-books used in every public school in his State making application for a share of such fund, and the Commissioner of Education should be entitled of right to visit and inspect such school at any time in person, or by any agent whom he may authorize to act for him. *Provided*, That neither the said Commissioner nor

his agent, nor any one acting in the interest of the United States, should have any power or authority to interfere in any way with the management of said school, the employment or discharge of teachers, the course of study, or text books employed.

XI. *The school year should be fixed at a minimum of six months, as one of the conditions of receiving the benefits of national aid.* It would seem unjust to grant equal aid to States of like resources, where schools are taught on the one hand for seven or eight months, and on the other for two or three. It would be, at the same time, impolitic, if not offensive, to insist upon any school term to provide for which would seriously embarrass the State. A period has therefore been named which can be easily reached in any State, and which is already far exceeded in the great majority of those most in need of assistance, and which, it is believed, will be acceptable in every State.

XII. *Industrial or manual education should be provided for as far as possible, especially in those branches of manual training which would be best suited to the employments of the neighborhood in which the school was located.* The wisdom of including, to a proper extent, the useful arts and industries among subjects of instruction in the common schools, in view of the growth of industries and manufactures in most parts of the Union, and the desirability of drawing the attention of a large number of our youth to the fields thus open to them, is obvious.

XIII. *In case the State within which any district is located prescribes separate schools for white and colored pupils, then the sum which the number of white illiterates in said district would entitle it to receive should be devoted to the aid of a school for white children therein, and the sum which its number of colored illiterates would entitle it to receive in like manner to the support of a school for colored children, and neither of these sums should, under any circumstances, be used to aid a school for the benefit of the other race.*

XIV. *The trustees of the fund should be empowered to appoint, in any county or district in which they see fit, competent and reputable men or women to act as inspectors, and make such report as they may desire without compensation.*

Persons such as are described in the last article can easily be found in every community, who will gladly devote one or more days to reporting the necessary facts in order to promote the cause of education in their communities. This would be even more easily done at the South than at the North. There is hardly a town in that section where an educated lady might not be found who would be willing to inspect and report, even upon a colored school located therein, and do it fairly and honestly, too.

The great value of properly collected educational statistics for the information of the whole people, as well as the obvious propriety of gathering information as to the results of such aid as may be bestowed by the national Government, makes the collection of useful statistics relating to public schools, herein provided for, most desirable, if not essential. The value of such statistics depends, however, upon proper uniformity in the character and meaning of questions and answers. The adoption of the provisions here recommended will put it in the power of the Commissioner of Education, with the co-operation which the State school authorities will gladly render on the terms proposed, to collect a body of statistics which shall include information required by the Board of Trustees, and in such form as to adapt it to the uses of his office and the needs of the general public, without necessary interference with the varying statistical methods of the States—a variance

which now largely detracts from the value of statistics when arranged in comparative tables. Statistical reports of the common schools in the United States would thus be secured, whose accuracy would make them of inestimable worth in the light which they would give as to the value of educational methods and the progress of popular education.

XV. *To superintend the carrying into effect the provisions of a national appropriation bill, a Board of Trustees should be created, consisting of the Secretary of the Interior, ex officio, two Senators and two Representatives not belonging to the same political party, the Commissioner of Education, and the Fourth Auditor of the Treasury. This board should attend to the distribution of the funds, secure reports, look after the honest administration of the funds in the several States, and stand as a guardian of the trust for the Nation until its full disbursement has been made.*

Now all must admit that the whole plan of Federal aid to education is in opposition to the doctrines of Calhoun and Stephens. There is no possible justification of Federal interference with State administration of schools except on the ultra ground of a great national exigency, which knows no primal law but that of self-preservation. The Government proposes to meet local needs in the hour of peril, and asks that the hand which administers may connect with its aid the eye that watches over its wise and careful distribution. In no case does it propose to interfere with the distribution, but, as in the case of the Peabody Fund, to place wise and trusty men over the great gift to see that it reaches and accomplishes its desired work. At the same time that the trusteeship is a protectorate over the fund going out of the national treasury, it is an equal protection to those who are to receive it; and both, as has been seen in the history of congressional grants hitherto for all purposes, need just such watchful guardianship.

While we do not doubt the integrity and good faith of the men at the head of educational affairs, North, South, East, or West, we do insist that the general Government should demand some sort of supervision of a fund going out of its treasury for a period of years, lest congressional investigation should by and by come in to bring our schools and school systems into disgrace. For the reason that our State school officers are good and honest men, they should be willing that the light of an eternal day should shine through their actions and their administration of a just gift from a paternal hand, which seeks only the best good of all of its children, and especially of the weak and the unfortunate. Unless some such guarantee as the one proposed is adopted, we are quite well founded in our opinion that no bill can pass the present Congress. But if a bill should pass for Federal aid to education without sufficient safeguards for its thorough and careful administration throughout the country, we are prepared to predict as unfortunate results as have attended any congressional aid of the century, where 'the old flag and an appropriation' was the watchword.

## THE RAILROAD AS AN ELEMENT IN EDUCATION.

BY PROF. ALEXANDER HOGG,

Fort Worth, Texas.

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Steam is well born; is a lineal descendant of the four elements of the ancients—earth, air, fire, and water; has survived, lived through more than two thousand years, gaining strength from its own usefulness and age; is to-day in the full vigor of manhood. As a motive power steam was known 130 years B. C. Hero of Egypt exhibited his eolipile, an apparatus with a metallic boiler, provided at the top with two horizontal jet-pipes bent into the form of an S.<sup>1</sup> The steam, escaping from these jets and reacting upon the air, gave a rotary motion to the pipes. Barker's centrifugal mill is an example of this kind of action.

Blasco de Garay, of Barcelona, as far back as 1543, propelled with steam a vessel of two hundred tons.

But passing over historical details, leaving out the controversies of aspiring inventors and discoverers, I come to a year in our civilization memorable for rich results.

In 1776 the "transmutations" of alchemy, the *ideal* of Paracelsus, gave birth to the *real* of Priestly and Lavoisier, and chemistry as a practical science is announced to the world. This same year Adam Smith published his *Wealth of Nations*. This same year the Declaration of Independence was proclaimed by the Continental Congress. This same year Watt produced—perfected his "improved," his "successful" steam engine.

The man of science can, with pardonable pride, exclaim, "Arithmetic fails to enumerate the 'agents' and 'reagents' of chemistry!" The political philosopher can point to the real wealth of the nations as the best result of his science; the statesman can, with true patriotism, refer to our peaceful, our happy republic, as the legitimate result of the declaration.

Individuals may boast of the triumphs of these, but the millions whose burdens have been lightened and lifted, who are fed and clothed by the diversified labors of steam, may be excused too—will be pardoned—for their appreciation of the result which gave to the world the steam-engine of James Watt.

Patriotic as I am, and claiming as I do for our Fulton the first successful application of steam to navigation, in the Clermont (1807), I as cheerfully accord to the mother country the honor due George Stephenson (1829) for his successful "run" in the Rocket, over the Rainhill trial course.

It is a remarkable fact that within the last one hundred years science has made its most rapid strides. Steam and electricity, motor and messenger, have vied with, not rivaled, each other in *transporting* and *trans-*

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<sup>1</sup> *Spiritualia seu Pneumatica.*

*mitting, until "there is no speech nor language where their voice is not heard. Their line is gone out through all the earth, and their words to the end of the world."*

Classical scholars have insisted that our word "educate" is from *educere*—to draw out; and hence they have taught that education is "a pumping" process, that it is all in and within the mind of the child, the learner, and must be drawn out; and thus to their theory is due largely the one-sided instruction, or the total disregard of every other method. The truth is, our word "educate" is from a different word; it is from *educare*, which means to "bring up," "to train," "to develop," "to increase and give power to." There can be no mistake from this view, that there is a pouring-into as well as a pumping-out in the process of education.

I have no war against the classics. So far from it, I assert to-day that there can be no "liberal education" without the classics. Among these, however, I claim the first place in order and importance shall be assigned to our mother tongue. The Greek knew no other than his own language, nor did the Roman go abroad to study until he had mastered the Latin. Why then should we ignore, why should we be so slow to acknowledge, the claims of modern science?

In the demands made by the progressive development of railroad construction, and the improvement in that vast field alone, every science and every department of science is laid under contribution, until we have here the fullest and happiest illustration of the great law of "supply and demand."

A motive power greater than that of man or horse, an improved steam-engine, is called for, and James Watt presents his. And now a locomotive is needed that shall transfer this mighty energy, adapt it to the road, and George Stephenson controls with his own hand the throttle of his own engine. And now a trestle, and now a bridge, and now a suspension-bridge, and that, too, across Niagara, and the occasion—science, conscious of this new requisition—gives to the world George A. Roebling.



Harmonizing circumstances—Time, the great arbiter, comes in, and so orders it that Robert, the son of George Stephenson, should pass over Niagara River in a railway train, and on the suspension bridge which he had but lately declared to be an impracticable undertaking.

The purpose of this great engineer's visit to this country was to make an inspection of the location for the celebrated tubular bridge at Montreal. Stephenson had criticised and condemned the suspension principle, and had approved the tubular girder for railway traffic.

At that time doctors of science—engineers—differed as to their theories, but, as now, they also agreed upon the facts as exhibited in the results.

In 1874 I visited Niagara Falls, spent two days, was delighted, amazed, and awed in turn, at this wonderful manifestation, this remarkable phenomenon of nature.



From the falls I went to the suspension bridge. Upon this structure stood two through express trains awaiting the signals to move on their ways, east and west. At the appointed moment they did move. Without tremor or oscillation that bridge sustained its accustomed load, performed its duty, as it had done thousands of times before, as it had done fifty times that very day.

When I saw this bridge spanning this angry river, supporting these heavily laden trains, I felt this inspiration; I said, "This bridge for the creature is equal to yon Cataract for the Creator."

But again, another demand—a higher principle still—a flat had gone forth, that not only shall "*Every valley be exalted, but every mountain and hill shall be made low; and the crooked shall be made straight, and the rough places plain.*"

Streams, rivulets, rivers, had been bridged, the valley had been exalted; the crooked route must now be made straight, the mountain must be made low. No longer can time be consumed in searching out the passable passes, in following the tortuous gorge. The yawning chasm, the deep cañon, the treacherous glacier, the awful avalanche, snow and ice, mountain pass and mountain peak—all, all must be shunned, must be left to enjoy undisturbed their lofty abode amid its chilly, frozen environments.

Whether Pyrenees or Alps, Alleghany or Hoosac, all ranges standing in the way of the locomotive must be made low, must be tunneled. Science, quietly observing what is going on, anticipating these new and still greater demands, accordingly prepares for yet greater results, and at this juncture and for this stupendous work furnishes both the engineering skill to conduct and the new motors, Burleigh drills and air compressors, to perform the boring, and dynamite to do the blasting, and we have Mont Cenis Tunnel, a trifle less than *eight miles* in length, thirteen and a half years building, at a cost of \$15,000,000; St. Gothard, *nine and a quarter miles*, seven and a half years building, at a cost of \$9,700,000, consuming half the time, at two-thirds the cost of the Cenis Tunnel; the Hoosac Tunnel, some five miles in length, eleven years in building, costing \$13,000,000.

One among the first railroad tunnels in the United States was the Alleghany Portage, double track, 900 feet long, costing some \$21,840.

I must be pardoned for mentioning, in this connection, that here particularly the skill of the engineer is tested in the use of the most accurate instruments, and of the most celebrated makers. In boring the Mosconetcon Tunnel on the Lehigh Valley Railroad—a work less in extent than some, but said to be of as great magnitude, on account of the presence of water and other difficulties, as any of the American tunnels—the east and west headings met in December, 1874; whereupon it was found that the error in *level and alignment* was less than half an inch.

To be an engineer in the full and complete sense of the term embraces all sciences, pure and applied. Nor are the languages to be left out. Through the Latin we learn of Cæsar's bridge, through the Greek of Xerxes' bridge of boats (*pontoons*). That is not a complete curriculum that would leave French and German out of the engineer's course. Our Latin teachers are very proud when their brightest scholars can translate the description of Cæsar's bridge. It is considered hard Latin; it is given as a task—not for the information about the bridge, but because of the difficulty of the translation.

Now, Mr. President, turn your countenance upward; exercise the

prerogative you enjoy above the rest of the animals ( \* \* \* *que natura prona*); behold the arches that support this Grand Structure! Tell me if there is not more study, more beauty in one of these than in a whole book of Cæsar?

In 1883, and in this country, there has been completed and opened the greatest structure, the grandest monument to skill and science—to father and son, to George A. and Washington Roebling, to the former for the conception, to the latter for the construction of the Brooklyn Bridge—the longest span in the world. In the building of this highway, virtually making New York and Brooklyn one city, the entire domain of science has been laid under contribution. Every formula of mathematics, every discovery of chemistry, every law of physics,—all have furnished their quota. Every department of human industry, every tool invented by the ingenuity of man has borne its part in the final result. Without the most recent discoveries of science, the converting of iron into steel by the pneumatic process, the bridge in its present form could not have been built.

I cannot describe, in detail, all the creative and constructive efforts of the human mind in this great work. It is not necessary; it is finished—“*Finis coronat opus*.” All this, however, is upon but one side, the department of construction, the building of railroads.

There is still another side, the operating department, in which to accuracy of calculation must be added discretion, sound judgment, and all the higher qualities of head, and heart too. Here we learn—we take an account of exceedingly small things; here we hear the name of the nonentity, the imaginary *mill*, and use it in actual daily transactions:

“So many tons a mile at so many mills per ton.”

“It will cost so many mills to move such freight; therefore, in order to pay dividends and cover operating expenses, we must charge so much per hundred.”

The Tables of “operating expenses” have these items: the amount of coal used this year on division —, was 1.8 pounds more, or this year 2.3 pounds less than last, on same division, per mile.

What school would have in it a pupil that would distribute the tax assessment for eleven hundred miles of railway passing through twenty-nine counties, and the miles and *hundredths* of a mile in each county to be taken into account, each county assessing a different valuation, and balance up the whole to within *five mills*, one half of one cent?

These are some of the problems, and these are some of the questions that are solved by the railroad accountants.

The curse of our schools, and colleges, and universities too, is the want of accuracy. And I am not sure but the careless use of slates and blackboards has much to do with it. It is so easy to say, “Oh! that is wrong—rub it out.”<sup>1</sup>

In railroading you cannot “rub it out.” The dispatcher who sits at his table with fifty to a hundred and fifty trains on the rail, has more responsibility every way than the general who directs an army.

At Balaklava, it was said:

“Some one had blunder’d.

Then they rode back, but not—  
Not the six hundred.

All that was left of them,  
Left of six hundred!”

<sup>1</sup> You do not find slates and blackboards in the rooms of accountants.

Some one has "blundered" in Egypt. Had Palmerston built a railroad from Cairo to Khartoum, there would not be a rebel in the Soudan to annoy Gladstone.

Your World's Exposition (the greatest practical school of instruction possible) reminds me of the Centennial (1876) at Philadelphia. The latter was full of examples which were fruitful illustrations of what accuracy and precision in railroad management accomplish in safety to property and person.

The Pennsylvania road alone gave receipts for 16,039 cars of building material and for 4,116 cars of exhibits placed within the Centennial grounds without a single claim being made for damages. The total number of pieces of baggage received and delivered at the several stations amounted to 730,486 pieces; of these, twenty-six pieces were lost, the claims for which amounted to \$1,906.99.

Total number of passengers from May 10 to November 10, 4,955,712, carried without injury to a single one.

Add to this that during the year 1876 this road moved 17,064,953 tons of freight and 18,363,366 passengers without loss of life or harm to any one.

With these facts before me I am ready to believe the following: "A French statistician observes that if a person were to live continually in a railway carriage and spend all his time in railway traveling, the chances of his dying from a railway accident would not occur till he was nine hundred years old."

But the railroad is solving other problems—social problems, commercial problems, farming problems.

The poet has said,

"Seas shall join the regions they divide."

The railroad answers, And continents shall unite the oceans they separate. The rich valleys of the interior, the fertile plains of the "Far West," are made neighbors, to find markets upon the very shores of the Atlantic, all by and through the agency of the railroad. We hear a great deal about the Great West! Pray, what has made the West so great?

Not greatness of territory solely, not great distances, but the potentiality, the living, working capacity of the locomotive, the greatest pioneer, the greatest missionary ever sent out by Church or State.

What makes Chicago the successful rival of New York? The latter is the senior of the former, not only by *scores*, but by *two hundred* years.

The ten thousand miles of railway tributary to Chicago, the seven hundred trains (three hundred and fifty arriving and three hundred and fifty departing daily) with their heavily-laden cars, of both passengers and freight—have something to do with the prosperity, the metropolitan pretensions of the "Lake City."

What will make your city the rival of both New York and Chicago? Not because she is the outlet of the Mississippi basin, but because she is the eastern terminus of the roads of the Pacific Slope, the South-west, and the North-west.

The superintendent of our last—the tenth—census, says: "The closeness with which the center of population, through such rapid westward movement as has been recorded, has clung to the parallel of 39° of latitude cannot fail to be noticed."

He does not, however, say a word as to the cause of this singular movement westward four hundred and fifty-seven miles in ninety years.

Near and upon 38°, 39°, and 40° of latitude may be found three of the great trunk railways.

But their location is still another problem. The peculiar climate, productiveness of the soil, and the early settlement of this region have all something to do with it. Here is problem growing out of problem, fruitful each to the student of social philosophy.

But again: I argue more directly, because more demonstratively tangible, that the school interest, the schools themselves, have flourished and spread their influence in the direct ratio of the number of miles of railroad in the State. Massachusetts, at home and abroad, stands at the head of our school system; nor is it disputed that in her borders we find models of true culture and refinement.

Massachusetts has a mile of railroad to every four square miles of territory.

This is a case from the extreme East. I take an example from what used to be termed the West, now about the middle of our country: Ohio has a mile of railroad for every six square miles of territory. Ohio has pretty good school facilities, and of late has furnished her full quota of Presidents.

But select at will any State, and upon the map mark the seats of institutions of learning—schools, academies, colleges, and universities, and you will find them all arranged along the lines of the great railroads.

England and Wales, Belgium, Switzerland, and Scotland possess the greatest railway facilities. These also enjoy the greatest freedom and the best systems of schools of all the European States.

But to come nearer still: Texas, from being the largest State in the Union territorially, has become also greater in resources than any of her sister States of the South, simply on account of the indissoluble bond between her school-lands and her railroads.

Of seventy-four cities and towns assuming control of their schools, supplementing the amount received from the State (five dollars for each pupil of scholastic age annually) by a special tax, sixty-six of these are directly upon lines of, while the remaining eight are of easy access to railroads.

We hear a great deal about what the "Fathers of Texas" have done for the education of all the children of the State; the thousands of acres of land reserved for the counties, the millions of acres for the general school fund.

These historians should go a little further and tell us what these "millions of acres" were worth before the railroad companies surveyed and brought these lands to the attention of the world.

It is true that the railroads received sixteen sections of land for every mile of road built, conditioned, however, upon the companies surveying their own, together with an equal number of sections (alternates) for the schools.

The entire expense of surveying and returning a double set of field notes to the General Land Office, at Austin, was borne by the respective railroads.

These lands were, for the most part, hundreds of miles beyond civilization; indeed, the roads have been extended more rapidly than a paying traffic would warrant in order to develop their lands, to bring them into market.

The Texas and Pacific wore out its main line of 444 miles in building an extension of 616 miles west. This was a practical example of the problem, "How far would a boy travel, starting from a basket two yards

from the first egg, and carrying singly to the basket one hundred eggs two yards apart in a straight line?"<sup>1</sup>

But whatever develops, enhances the railroad "sections," enhances the school "alternates," until lands heretofore not commanding twenty-five cents an acre are now readily sold for two dollars; or, the railroads have increased the school funds eightfold, have multiplied their values, until Texas boasts of a free-school fund of *ninety-five million dollars*—a fund that will yield, at five per cent. per annum, \$4,750,000.

In valuation, the report of the Controller shows the railroads to be the third in order. Of course land and other realties hold the first place, and live stock the second.

The six thousand miles of railroad in Texas, at one-half the average cost throughout the United States, would amount to \$210,000,000.

By reference to the Report of the Controller, it appears that the taxable property of the State was:

In 1871 .....	\$222, 504, 073
In 1877 .....	319, 373, 221
In 1878 .....	303, 202, 426
In 1879 .....	304, 193, 163
In 1880 .....	301, 470, 736
In 1881 .....	375, 000, 000
In 1882 .....	419, 927, 476
In 1883 .....	527, 537, 390
In 1884 .....	630, 060, 917

In 1870 there was less than 300 miles of railroad in the State. From 1870 to 1877 there were added 1,300 miles, 400 miles were built in 1877, 200 in 1878, and 700 each in 1879 and 1880, while in 1881 there were built over 1,500 miles; since 1881 there have been added by the completion of roads nearly 1,000 miles more.

I know of no better criterion by which to measure the real wealth of the State, its prosperity and progress, than by the railroad earnings. The gross earnings of the Texas roads in 1883 is put down at \$21,450,445. But this is a small item, a very small factor, compared with the real amount and value of the products themselves, when it is remembered that the freight was moved at an average cost of 1.8 cents per ton per mile, that passengers were carried for 3.5 cents per mile before the late law (3 cents) went into effect.

However, passenger traffic is everywhere small as compared with freight, contributing in Texas less than a third of the gross earnings.

By a comparison of the average cost of moving a ton a mile in the several groups of States, it will be found that Texas roads are not exorbitant in their charges.

It costs in New England 1.7 cents per ton per mile; in the Middle States 1 cent per ton; in the Southern States 1.8 cents; in the Western States 1.2 cents; in the Pacific States 2.2 cents per ton per mile.

Nor is a comparison of these rates with the leading countries of Europe damaging to America. The actual cost to the companies (not what they charge for moving a ton a mile) in France is 1.7 cents, in Belgium 1.5 cents per ton per mile.

Much is heard about the "monopolies," the "soulless corporations"! I can not see where so much monopoly, so much extortion, so much discrimination comes in. That can not be very oppressive to the laboring man that transports his year's provisions from Chicago to any eastern point at the price of one day's labor. That can not be a discrimination

<sup>1</sup> Some idea can be formed of the amount of wear and tear on the road when it is understood that the boy traveled *eleven miles eight hundred and forty yards*.

against the consumer, at least, which transports from Chicago to New York seventeen barrels of flour at the rate of one mile for *one cent*. I know of no lesson so fruitful in its teachings as the reduction in railway charges made by the railroad managements themselves from 1873 to 1879. Competition, the great law governing all trades, forced this reduction, by which carefully prepared statistics show that these corporations lost, or there was saved to the shippers—the consumers really—in the space of six years \$922,000,000 in freight alone.

I do not wish to be understood as denying the rights of Legislatures or Congress as to the control of the traffic rates, the regulation, as it is termed, of railroads; I simply propose to state the facts—the results in two cases.

The New York Central was chartered—consolidated in the face of determined opposition. Passenger rates were fixed by law at *two cents* per mile; after the lapse now of twenty years the rate is still two cents per mile. The freight rates were left without regulation; they have been reduced from three cents per ton per mile to .83 of a cent per ton per mile; or the result of competition has lowered the rate to less than one-third of the former rate.

The Texas & Pacific has reduced its freight from 3.34 cents per ton per mile in 1877 to 1.76 cents in 1883, a reduction of nearly one-half. Here is a fruitful study for the mathematician—the legislative accountant. When the Legislature of Texas reduced the passenger fare from five to three cents per mile, I was met by the Hon.——, now a member of Congress from that State, and addressed thus: "Professor, I understand you to say that while the passenger gets the benefit of 40 per cent. reduction, the railroads have really lost 66 $\frac{2}{3}$  per cent.; I do not see this."

Said I, "Do you see the first?" "Yes," said he. I asked, "What part of three must you add to make the result five?" Said he, "Two-thirds." "That is," said I, "the roads must now carry five passengers at three cents to realize the same that they did for carrying three passengers at five cents. Or," said I, "to be more practical, hold up your five fingers, turn two down; two-fifths off; now return from three to five, adding two, turn the same two up, two-thirds of three this time." "I see it," said he; "you shall have the chair of mathematics in our State University."

In this same legislative discussion another fallacy, a very grave mistake, was made by these legislative accountants. It was contended that since the New York Central carried passengers for *two cents* a mile, the Texas roads could certainly do it for *three*; that a reduction of the rate would more than double the amount of travel; that people would travel simply to travel.

Another comparison: The New York Central has not quite 1,000 miles of main track (953). In 1883 this road carried 10,746,925 passengers. Since a proportion is a comparison, "If 1,000 miles carry 11,276,930, how many should 6,000 miles carry?" Answer, 67,661,580, or according to our last census, more than forty-two times the entire population of Texas. That is, every man, woman, and child would have to make forty-two trips each, to put the roads of Texas upon the same basis as the New York Central.

The facts show that the results of legislative restriction have maintained maximum rates, while without this restriction the tendency to lower rates have been the uniform rule.

Killing the goose that lays the golden egg is not the fable to which I would point our legislative regulators, but I would remind them of the

fate of Cadmus endeavoring to rescue his sister Europa, carried off by Jupiter, that while he destroyed the dreadful serpent, going still further and following the advice of Minerva, he sowed the teeth of the dragon, which immediately springing up as armed men destroyed each other, Cadmus himself not being exempt from the terrible catastrophe.

The "discriminations," as they are termed, between local and through rates are the same that are hourly met with between the retail and wholesale dealers in our towns, as well as cities.

The railroad managements do "discriminate," and always in favor of the press and pulpit. A prominent minister of one of our leading denominations told me he had ridden free, in one year, 24,640 miles upon the various roads of Texas, over 5,000 miles being upon the lines of a single company. Hundreds of other ministers can testify to the same liberality of these same corporations toward the spread of the Gospel. The Texas roads keep a temperance lecturer continually traveling over the State, free as to transportation, to wage a ceaseless war against intemperance.

One of our greatest general managers says, "At all times put me down, first, in favor of public free schools; second, and under all circumstances, against whisky." If temperance legislation would go as far as railroad managers, we would soon be rid of drunkenness.

Gradually, slowly, if you choose, they are coming to it. The general orders are beginning to read, "No man who uses intoxicating liquors will be retained in the employ of this company."

This year orders have been issued prohibiting the use of intoxicating liquors *off* as well as *on* duty, on the whole Missouri Pacific system. It has been the standing order of the Baltimore & Ohio and other roads for years.

The next step will be to prohibit the use of tobacco—a narcotic only, it is true, but to the habitual user it is next in its deleterious influence to whisky.

The railroads will regulate themselves—are doing it every day. There are many things about them I would like to see changed; there are many things that they would change themselves, and they themselves will change them.

There is also a growing apprehension, a needless alarm, upon the part of the people, as to the increasing power of railroads. Fears are expressed that they will control the Government; not for good, but for evil.

The recent introduction of steam as a road motive power (in this country not till 1830), the rapid progress of railroad construction and the length of the lines operated (122,000 miles), the immense values that are represented, *six thousand five hundred millions of dollars* (one-eighth of the aggregate value of all kinds of property in the Union)—all these, with the changed conditions wrought by them, have had much to do in creating this alarm. But this has reference to our own country only. The lines of railroads in the five divisions of the earth, according to Baron Kolb, cost *sixteen billions* of dollars, and would reach eight times around the globe. And all this has been brought about in little over a half century!<sup>1</sup>

If Britannia ruled the seas through her ships, why not Columbia rule the continents through her locomotives?

<sup>1</sup> The first railway worked by steam was opened between Darlington and Stockton, September 25, 1825.

We do not hear that the mother country ever used her navy to oppress her own people; why fear that the daughter will use her railroads to mar her own beauty, or to defeat her own greatness?

I have said, "The railroad is solving commercial and social problems—is the greatest pioneer, the greatest missionary ever sent out by Church or State."

I have fully sustained the first proposition. I said, in 1880, to the National Teachers' Association, a body of the foremost thinkers in this, or any country:

I believe the whistle of the Texas & Pacific locomotives will carry our civilization, our enterprise, our religion, and our language, into the rocky Sierra Nevadas, until not only Mexico, but from the lakes to the gulf, and from ocean to ocean will be ours, and that too, without a battle-flag.

During the past three years the American railroad has been pushing on, invading quietly, peacefully, the capital of the Montezumas.

The commission proposed by a member of Congress from Texas a year ago only "To cultivate amicable and commercial relations with the countries in Central and South America," is actively about its mission of Peace and Good-will.

The time is not far distant, "it is only a question of time," when we shall realize Columbus's grand conception, "a passage to the East Indies by sailing west"—indeed, much more than Columbus ever dreamed of; for the American railroad builders, extending their efforts, pushing their lines south and north—into Central, into South America, into Alaska, crossing Behring Straits (only twenty-six miles wide) in a



steamer—will thus connect by a continuous and unbroken highway all the continents, will unite by this great commercial artery the interests of Chili and Brazil with Japan and China, of New York, San Francisco, and Yukon with Moscow and St. Petersburg.

Byron wrote a little more than a half century ago,

"But every mountain now hath found a tongue,  
And Jura answers through her misty shroud,  
Back to the joyous Alps, who call to her aloud."

To-day, were he living, he would realize his prophecy fulfilled; he would hear, and in his Mother tongue, not only amid Alpine heights but upon every plain in Europe and Asia, "A-L-L R-I-G-H-T! G-O A-H-E-A-D!"

A clever modern philologist shows that the English language is spoken to-day by one hundred million of people; that soon, within a hundred years, it will be the language of one billion souls.

He adds, that then the great languages of the world will be the English, Chinese, and Russian, with the English far in the lead.

He does not tell us to what influence this wonderful spread of our language, this universality of our mother tongue is due. He does not



tell why Europe was—is to-day a Babel. He does not tell us that steam and electricity, iron and steel, have enabled this people to subdue—to possess the Earth this side of the Atlantic. He does not tell us that the echoes and re-echoes of the steam whistle were not heard resounding through the corridors of the Alps till late in this century.

Mr. Webster was a great admirer of the mother country—especially of her territorial acquisitions, her military glory,—and in one of his grandest and loftiest flights of imagination, describing the progress and prowess, the greatness and extent, of the British Nation, said:

It is a power which has dotted the face of the whole globe all over with her possessions and military posts, whose morning drum-beat, following the sun and keeping company with the hours, circles the earth daily with one continuous and unbroken strain of the martial airs of England.

It delights me, it thrills me to think upon my country, my people, and my language. Could the immortals, could Jefferson, the "author of the Declaration," could Washington, the "Father of his country," look out from their celestial abode, they would behold our free Republic (stretching through more than one hundred and eighty degrees of longitude), all dotted over with school-houses and colleges and churches, whose rising bells and morning prayer-calls and evening hymns, "following the sun in his course and keeping company with the hours, fill the air daily" with the merry laugh and joyous shout and happy song of a continuous and unbroken continent of ENGLISH-SPEAKING PEOPLE!

The solution: The white sails of commerce brought this blue-eyed, fair-skinned, light-haired race to our shores, the locomotive carried into the interior the messengers of peace, and in their track followed smiling Plenty, with her attendant handmaids Religious Liberty, Political Freedom, and Universal Education.

I address to-day scientific men of the leading nations of the earth. You can bear witness to your efforts, your resolutions, your arguments, your logic, your reasons to bring about standard time. You can testify, too, with some mortification, that all your labors have been futile.

Yet you have learned; I tell you that on the 18th day of November, 1883, the clocks of 20,000 railroad offices, and the watches of 300,000 employés were reset,—the minute and second hands all pointing to the same divisions on the dial; that the people who did the same could have been reckoned by millions; and that all this was accomplished without delay to commerce, or injury to person.

No general from Napoleon down could have made such a change, even in a single army corps, without the loss of property and life too.<sup>1</sup>

Again, who have been foremost in building churches, schools, and colleges, in endowing universities, and in contributing to the advancement of liberal, higher education? Where can it be so truthfully said, "Charity never faileth," as among railroad men? Who ever knew a real case of charity turned from office, home, or tent of a railroad man?

Charity! "*'Tis mightiest in the mightiest.*"

America's great Triumvirate in action, in the successful completion, control, and management of the three great trunk railways of our country, abounded in good works, in large beneficences, and "*Their deeds do follow them.*"

<sup>1</sup> Mr. Wm. F. Allen, editor of the *Travellers' Railway Guide*, is the author of the change to standard time.

The next move will be to the single dial for the day, to 24 o'clock. "*Train No. 1 will meet No. 2, at station No. 3, at 17.17 (o'clock).*"

In addition to many smaller, but no less valuable charities, Col. Thomas A. Scott, just before his death, gave the following amounts to the institutions named:

To Jefferson Medical College, of Philadelphia.....	\$50,000
To the Orthopedic Hospital, Philadelphia.....	30,000
To Children's Department of Episcopal Hospital, Philadelphia.....	20,000
To University of Pennsylvania, Philadelphia.....	50,000
To Washington and Lee University, Virginia.....	50,000
Total .....	200,000

In regard to the numerous gifts of father and son—the Vanderbilts, I do not know how better to present the same than by giving the letter of the Chancellor of Vanderbilt University, Bishop H. N. McTyeire.

NASHVILLE, TENN., June 29, 1885.

*My Dear Professor*—I thank you for your letter \* \* \* \* Mr. Cornelius [Commodore] Vanderbilt gave this university *one million of dollars*. Of that sum we have now as invested endowment, bearing seven per cent. per annum, \$600,000.

His son, Mr. Wm. H. Vanderbilt, since his father's death has given to Vanderbilt University \$250,000, and \$100,000 of this sum has been added to our endowment. Generous benefactors to the South, and to general education!

The location of the Vanderbilt University has made Nashville what they call the "Athens of the South"; others have come here since.

I believe our catalogues this year will show students from twenty States and Territories, all accessible to railroads.

In honor of the donors we give marked attention to civil engineering, including the theoretical and practical knowledge of building railroads; we believe in railroads with good cause.

For mounting and equipping the observatory for the Leander McCormick telescope, Mr. Wm. H. Vanderbilt gave \$25,000 to the Virginia University. Last year he gave \$500,000 to the College of Physicians and Surgeons of the City of New York. These two, father and son, gave for the purposes enumerated *one million five hundred and twenty-five thousand dollars*.

But additionally—and in purpose and result, too, a greater gift still, Mr. Wm. H. Vanderbilt has given \$150,000 to establish at Washington a museum of Patriotism, where the offerings and the trophies presented General Grant by the nations of the earth are to be perpetually preserved, for the inspection and admiration of all American youths through all future generations.

Or, in the aggregate, Mr. Wm. H. Vanderbilt has contributed to schools of science, schools of medicine, and a School of Patriotism, *nine hundred and twenty-five thousand dollars*.

He is still in the prime of life, full of vigor, abounding in good deeds, and it may reasonably be expected that he will yet outstrip his father's great work in founding and equipping the Vanderbilt University.

Col. John W. Garrett leaves the following, greater than the gifts of either of his associates in extent and in security of investment.

These annuities represent a basis of over a million dollars (\$1,100,000 at 6 and 5 per cent.). The clauses of the will pertaining to these gifts and their purposes seem to be worthy of reprinting, even in so short an address as this:

And upon the further trust that my said trustees shall from the stocks and bonds belonging to my estate select such good interest-bearing securities as shall amount to the sum of one hundred thousand dollars, or in their option invest the sum of one hundred thousand dollars, of the moneys belonging to my estate in such a manner as to produce the yearly sum of six thousand dollars, which said sum I desire shall be paid yearly to aid in improving the condition of the poor in the city of Baltimore, the first payment to be made at the expiration of one year from my death, and to continue thereafter in perpetuity; and as I have a very favorable opinion of the use

fulness and effectiveness of the present organization or body corporate known as the Baltimore Association for the Improvement of the Condition of the Poor, I recommend my said trustees, so long as in their judgment this charitable institution is efficiently managed, to give said sum of six thousand dollars to the said association annually for the purposes aforesaid; and if at any future period, in the judgment of my said trustees, said sum of six thousand dollars per year can be applied or distributed so as to confer greater benefit upon the poor of Baltimore, in that event I direct my said trustees so in their discretion to apply said sum.

And upon the further trust of the net income of any estate to devote the sum of fifty thousand dollars annually to such objects of benevolence, to educational purposes, to aid virtuous and struggling persons, and to such works of public utility as are calculated to promote the happiness, usefulness, and progress of society; said amount of fifty thousand dollars per annum to be apportioned to the furtherance of such objects and to the accomplishment of such ends in the judgment and at the discretion of my trustees. It is my will, and I so direct, that the contributions to the purposes named in this clause shall continue during the lifetime of my children, Robert Garrett, Thomas Harrison Garrett, and Mary Elizabeth Garrett, and of the survivors and survivor of them, and that the same shall be continued thereafter by their heirs if the condition of the estate will then justify the said appropriation. I desire that the contributions and assistance to be given under this clause of my will shall, as far as practicable, be devoted to the promotion of the objects herein named in the city of Baltimore and in the State of Maryland; but in case of special suffering or distress in other communities, my trustees shall have the power to use their discretion and judgment in relieving the same.

From a personal friend to the two benefactors I learn that Mr. Garrett really directed the gifts of Mr. Johns Hopkins. Mr. Garrett is reported as having said, "Johns, give while you live, so that you may direct and see the fruits of your labors."

Johns did give while living, and the Johns Hopkins University is the result of the accumulated efforts of Mr. Hopkins, much of this being the "earnings" of his stock in the Baltimore & Ohio Railroad.

The latter road during the lifetime of Mr. Garrett was proverbial for the care of its employes; the Baltimore & Ohio Relief Association, furnishing all the advantages of a mutual life insurance company, a savings bank, and a building association, was peculiarly the result of Mr. Garrett's forethought, and the pride of his administration.

The company has announced the organization of a school of technology for the training of young men, the future employes of the company. This school, located at Mount Clare (Baltimore), will be formally opened September next. The object and the purpose of this institution will be to give the Baltimore & Ohio a force of trained men, those having the advantage of a suitable amount of literary instruction, as well as that practical teaching which they will most need.

I must add here for the sentiment, for the lofty and manly and elevating spirit of the donor, the following: said Mr. George I. Seney, "If any one asks you why I have given so much to the Wesleyan Female College, tell them it is to honor my mother, to whom under God I owe more than to all the world besides."

Mr. Seney gave to the Wesleyan Female College and to Emory College, of Georgia, \$450,000.

Mrs. Leland Stanford, since the spirit of her dear boy departed ("*abijt, non perijt*"), has organized in the city of San Francisco four kindergarten schools, locating them in those parts of the city most destitute, and has dedicated them to the motherless and homeless little ones of her great and lowly, her splendid and yet shadowy city. Already has this benefactress, if not repaid, been compensated in her affliction for her loss. A mother writes her, "My children shall be taught to love Leland's memory, follow his example, and imitate his lovely character."

The ex-Governor, it is said, contemplates—has determined—that Palo

Alto, the "beautiful," "sweet Palo Alto" of the boy, shall be the site of Leland's University.

Those who know the father, his liberal culture, his broad views, and his entire acquaintance with all the educational systems and institutions of learning at home and abroad, being a personal friend to many of the savants of Europe, with an abundance of means at his command, know that this will be a real university, surpassing the English universities and leading those on the Continent, since it will deal with the practical living issues of all sciences, social, political, and physical.

There will be, too, a liberality toward the distinguished scholars called to these departments; their services in their specialties will be *specially* rewarded; the man who pays the trainers of his horses more at present, in wages and perquisites, than his State university pays her professors, will evidently pay to the conductors of the various departments of the university, founded and named to honor his only child, salaries commensurate with the founder's appreciation of mind over matter.

While in California (1882) on a visit I wrote, "It is true Columbus crossed the Atlantic. But Leland Stanford connected the oceans."

To-day Leland Stanford, the patron of letters, the friend of science, the supporter of religion, a devoted, humble Christian himself, may be justly ranked "*primus inter pares*," the head of the living, the present American railroad triumvirate.

Mr. President: I have seen much of this continent, have seen more of Texas. That which in our school geographies was called the "American Desert"—later, the "Staked Plains"—is no desert at all. Since the building of the Texas and Pacific, this vast area has become (was all the time) fertile. All the cereals grow luxuriantly. Pure water, and in abundance, is found throughout these plains, costs but the digging of a shallow well. Here, sir, is so happily, so truthfully, verified the great promise, that not only "*The wilderness and the solitary place shall be glad for them*" (the railroads), but, "*The desert shall rejoice and blossom as the rose*," that I venture to suggest—I assert, Africa is not Africa because it is the home of the colored man, but the colored man is the colored man because his home is in Africa! It needs but the touch of Ithuriel's spear—the life-giving breath, the awakening influence of the locomotive, and this Dark Continent, this land of Ham, will take its rightful place in the brotherhood of Shem and Japheth, all then being of one speech and one language, and that the Anglo-Saxon.

But, sir, I must close, and yet I cannot do so without adding one other reflection:

A few days ago, standing upon the track of the Texas & Pacific and turning my eyes east and west, surveying the line which traverses for 1,487 miles the most fertile portions of the territory of Texas and connects the waters of each ocean, I was forced to the conviction that, for many miles on either side, there will be presented a phenomenon not unlike the Gulf Stream, except that the warm waters of the latter will be replaced by the warm hearts of an intelligent, enterprising, and thrifty population. Some will select the fertile prairies, others will dwell amid the sierras in search of the rich placers, while others still will be content to tend their flocks and count their herds. Of these and those who shall come after them there will be an unbroken (life-blood) current from the Pacific to the Atlantic and from the Atlantic to the Pacific; for this will truly be the highway of nations.

Sir, it is said that the ancients never worshiped the setting sun. This is more than true of our modern devotees. Still, it would be remissness indeed upon my part, to close this address without asking the question,

To whose statesmanship, to whose forethought, to whose prophetic ken was due this gigantic enterprise, this girdling the continent and uniting ocean with ocean?

Moving west, still west, and yet still west, pausing in front and at the very base of rugged and awe-crowned Sierra Blanca, said I: A hundred thousand years hast thou stood sentinel over this vast valley and plain; long hast thou guarded this pass! Mayest thou yet stand a thousand-thousand years, witnessing daily the transformations, the "sweet influences," of the peaceful locomotive, and adding perpetually thy testimony to the sagacity of the originator of the project "to build a railroad on or near the thirty-second parallel of latitude."

Monuments and mausoleums, bronze and brass, may fitly commemorate the deeds of dead heroes, so styled by the world, amid the glare and glitter, the flush and flurry of the battle field; but the long lines of this road, stretching across this united continent, bearing the trains heavily freighted with the rich returns of honest toil, will ever be the most appropriate monument to the wisdom and skill of their builders and present managers; while perennially the flower-decked prairie will add its fragrance to, and forever embalm the memory of Thomas A. Scott, the great projector of the Texas and Pacific Railway Company.

# AN HISTORICAL SKETCH OF INDIAN CIVILIZATION AND EDUCATION.

BY ALICE C. FLETCHER,

*Peabody Museum of American Archaeology and Ethnology, Cambridge, Mass.*

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## EARLY DISTRIBUTION AND CONDITION OF INDIANS.

The aborigines of this country, when met by Europeans more than 350 years ago, were grouped into comparatively small, independent tribes, separated from one another by unbroken forests or stretches of prairie. Each tribe was organized within itself upon an almost uniform plan, which was effective for the preservation of their religious and tribal customs. In a few instances confederations existed between tribes more or less related, but these unions were of so voluntary a character as to prevent any centralization of power tending to the formation of a nation. Warfare was personal and desultory rather than representative or organized, and consequently failed to develop new social or political ideas, and left the condition of the people unchanged.

Cabeza de Vaca, in his journey from Florida to Southern California, found the tribes he encountered varying in their conditions. Those living in the fertile regions bordering the Gulf dwelt in stockaded towns, their dwellings made of wood, thatched and covered with a mixture of clay. These villages were surrounded by "Verie good meadows and many fields sown with maize." Corn, beans, pumpkins, and melons were raised for food, and the supply of game was ample, so that the sustenance of life was secure. These favored tribes cultivated cotton, had a knowledge of spinning and weaving, and were clad in garments of their own manufacture. They also made and used ornamented vessels of pottery. In the arid regions further west, the people were found picking up a scanty existence from native fruits and nuts, their habitations were correspondingly miserable, and their progress in civilization very slight.

From various early writers and traders, English, French, and Swedish, we learn that the great Algonquin family occupied the coast from the Savannah River northward, embracing Virginia, Eastern Pennsylvania, New Jersey, Eastern New York, New England, and Canada as far north as Labrador. The Delawares were the leading tribe of this group, and seem to have been at the head of a confederation. The Algonquins had also spread westward, by warfare, and to-day the Crees of the North-west Territory of British America, and the Blackfeet of Montana, are the most westerly outposts of this once powerful family, while the Cheyennes, Miamis, Sacs and Foxes, and others, have been driven to the Indian Territory. Wedged in between the tribes of the Algonquins lay the Iroquois living about the St. Lawrence River and tributary lakes and the lakes of New York, and extending as far south as the mountains of North Carolina and west into Tennessee, where the

Cherokees were first met by the white men. Farther west dwelt the great Siouan family, beyond them the Athabaskan group, and still farther the Pacific Coast Indians.

All the natives east of the Mississippi (and it is now known to be true of several tribes west of that river) dwelt in fortified villages, cultivated the soil, raising large crops of maize, beans, pumpkins, and melons. Meat and clothing were furnished by the game, as also tents and implements for farming and sewing. All the tribes were acquainted with the art of making pottery and weaving vegetable fibers. All used similar weapons, and a marked resemblance existed between their social organization, their customs of war, and their religious beliefs. Even their ceremonials, although varying in minor points and details, were much alike, and indicated an environment tending to form a homogeneous people.

The absence on this continent of any animals capable of domestication kept the supply of food precarious, and therefore held the people in a condition where their energies were in constant demand to prevent famine, so that no force could be turned aside from pressing necessity to be used for the accumulation of property and the development of better modes of living and of industry. The cultivation of the soil, while marking the step from savagery to barbarism, hardly affords the same means of progress as the domestication of animals, with the consequent increase of wealth and comfort from flocks and herds. This lack of resource upon this continent would tend to protract the era of barbarism and delay the invention of a written language, which lifts a people over the confines of barbarism into civilization. In more favored regions on this continent various mnemonic devices were in use among the Indians; but whether these would have developed into a full written language must ever be a matter of speculation, as the aborigines suddenly found themselves confronted with a well-equipped civilization foreign to their modes of thought and social and religious observances.

#### POPULATION AND EARLY CONTACT WITH WHITE PEOPLE.

When the first permanent relations between the Indians and the Europeans were established in the sixteenth century, it is doubtful if the entire native population within the present territory of the United States exceeded five hundred thousand souls. Wars with the white race and instigated wars between tribes, added to the usual native warfare, tended to lessen the number of Indians; but the principal cause in the reduction of the population was the introduction of new and fatal diseases, small-pox and measles being particularly fatal.

The Spanish upon the south and the French upon the north were the first to make permanent colonies. These colonies, however, were not established upon the plan of making homes in the land, so much as securing wealth from the resources of the country, as is shown by the bootless search for gold by the Spanish in the south, and the untiring prosecution of trade in furs and peltries at the north. The English generally came to stay; and while they by no means neglected trade with the Indians, the desire for land exceeded the greed of the merchant.

It may be truthfully stated in a broad sense that from the first contact with the white race the Indian has been at great disadvantage and a continual sufferer. At the outset he gave to the white man trust and welcome; but being met in return by injustice and dislike, bred of race antipathies, this trust turned to hatred, not unmixed with an

awe bred of the many-sided powers of the intruder. Of the unequal contest, the past four hundred years bear painful record. The contest has never been simple. The Indian was inveigled into taking part in all the political animosities which found expression upon this continent between the Spanish, French, English, Dutch, and Swedish nations. The Indians were tossed upon the bayonets of these contending powers; they were used as a scourge by differing home parties during the Revolution and later wars; their greed has been appealed to by traders of different nationalities, and at all times their lands have been coveted. For selfish ends the Indians have been in turn coaxed, betrayed, denounced, and always despised; they have been courted as allies yet spurned as equals, and are the prey rather than the scholars of civilization.

Time forbids entering into the details of history to substantiate these statements. Every record of the growth and development of our country furnishes testimony, and numerous confirmatory instances of this treatment will arise in the memory of every candid listener.

What has the Indian gained from this long conflict? It is probable that swine were obtained from the Spanish during the expedition of De Soto, and that a century later cattle were obtained from a disheartened colony of English at Cape Fear. It is recorded that early in the eighteenth century herds of wild cattle became profitable game to the hunter in North Carolina; horses came from the Spaniards in Mexico; corn the Indians already possessed, and from their store they over and over again succored the starving colonists; implements of iron caused the native tools to be thrown aside; tin and earthenware utensils superseded the wooden or pottery dishes, and thus the native industries of the people became useless. Cheaper clothing than that wrested from the game was given to the tribes, and calico and cloth have slowly and surely replaced the skin of the deer and buffalo. So the native avocations lessened, and with the disappearance of the wild animals the old life faded, leaving the Indian in idleness and pauperism. Nor was he persistently encouraged and stimulated to new methods of labor. He was accounted to be of a dying race, or at least of one that should so be, since his land was wanted, and he was troublesome and cumbered the way of advance to the white man.

#### MISSIONARY WORK.

In the midst of this darkness the light of humanity shone forth here and there in the centuries. With the Spanish expedition of the sixteenth century came priests, who were bent upon baptizing the Indians into the Roman Catholic Church. Their zeal was honest, but it was mainly confined to the life after death, little heed being given to present conditions. In a few instances efforts were made to instruct the Indians, but these efforts were principally directed to the same *post mortem* end. About 1568 Father Rogers entered upon the work of teaching the Indians of the Carolinas better methods of farming and living. He secured implements, selected lands, built twenty houses, and induced several Indians to take up farming. Father Rogers was in advance of his time. The country was unoccupied, game abounded, and the Indians tired of the experiment when they saw the tribe move out on the hunt. The Father, too, lost courage in his admirable plan, and he sailed away to Havana, where a school had been recently founded for Indians. The experiment of Father Rogers was not lost, and it has since been taken up and has accomplished much for many Indian tribes.



Numerous missions were established by the Roman Catholic priesthood among the Indians of the South and South-west. Father Benavides reported twenty-seven missions established among the Pueblos up to the year 1626. In 1680 a general uprising took place among the Pueblo Indians, the Navajo tribe joining; all the priests were killed or driven away, and churches and convents destroyed. Many of these were never rebuilt. In the early part of the eighteenth century the first mission in California was founded at San Diego. It is among these so-called Mission Indians in California that the most lasting effect of the efforts of the Spanish missions are to be found.

The story of the French Jesuits is so well known through the graphic pen of Mr. Francis Parkman that its mention is only needful at this time. Of the work accomplished by the Jesuits much has passed away with the heroic men who braved the wilderness so heroically for their faith. The historian of the Roman Catholic Missions, John G. Shea, thus sets forth the missionaries' plan of work:

The missionaries began their instruction in religion at once; they did not seek to teach the Indians to read and write as an indispensable prelude to Christianity. That they left for times when greater peace would render it feasible, when long self-control had made the children less averse to the task. The utter failure of their Huron Seminary at Quebec, as well as of all the attempts made by others at the instance of the French court, showed that to wait till the Indians were a reading people would be to postpone their conversion forever.

In this divorce of Christianity from civilization and its indispensable adjunct, education, lies the secret of all missionary failure, no matter by what church it has been undertaken.

All the early charters granted by the English Government to the colonies, beginning with that of the Virginia Company of London, given in 1606, make mention of ameliorating the condition of the Indians.

In 1621 the Council and Assembly of Virginia stated as one of their duties the "Enlargement of God's Kingdom among the heathen people."

The General Court of Massachusetts in 1644 "Ordered that the county courts in this jurisdiction shall take care that the Indians of the several shires be civilized, and the courts shall have power to take order from time to time to have the Indians instructed in the knowledge and worship of God." Indian children were already being educated in schools with white children.

In 1646 John Eliot was busy visiting and instructing the Indians of Massachusetts. In December of that year the Indians living near Roxbury offered all their children to be instructed by the English, and lamented their inability to pay for the instruction. Eliot declared, "The Indians must be civilized as well as, if not in order to their being christianized." Land was set apart and towns built for the Indians. Industries were taught, and the Indians sold such commodities as brooms, staves, baskets, berries, and fish. Mr. Eliot planned a government for these "praying-towns," as they were called, modeling it upon the Jewish record. In 1674 there were fourteen of these towns, the Indians subsisting largely by farming, owning cattle, horses, and swine. Many Indians worked on the farms of their English neighbors. Thos. Mayhew and his son labored in a similar manner among the Indians of Martha's Vineyard and Nantucket. The work of John Eliot in translating the Bible into the Indian tongue is well known. He also prepared school-books, religious and secular, to be used in the Indian schools.

The breaking out of King Philip's War in 1675 unsettled the Indians, and put a stop to active missionary work in Massachusetts for several years.

In 1743 Rev. Eleazar Wheelock, of Lebanon, Conn., took up the missionary heritage of Eliot, and received into his family Indian youth for instruction. In 1754 he started a charity school at his own expense, called Moor's Indian Charity School. The number of pupils increased until in 1767 there were sixty-two scholars. Public interest in England was excited in behalf of the school by one of the Indian scholars visiting that country, and, in spite of the pending troubles with the colonies, Dartmouth College was established in connection with Moor's Charity School in 1770. The latter with its funds finally became merged in the college, the charter requiring the institution to educate as many Indians as the funds would allow. There has hardly been a term since when one or more Indians have not been students at Dartmouth College, New Hampshire.

Rev. Samuel Kirkwood was engaged with Dr. Wheelock in the Moor school, but left then and started for the Iroquois, to establish among them a similar work, and in 1766 he settled with the Oneidas. Marrying soon after, his wife joined in his beneficent labors. Their influence was notable, the tribe became thrifty and industrious, and on the breaking out of the Revolution the Rev. Mr. Kirkwood was able to hold the Oneidas in peace. The progress of the tribe since is in a large measure due to this remarkable man and his wife. In 1822 and 1833 a large portion of the Oneidas removed to the region of Green Bay, Wis., where they still reside. They are practically self-supporting, are urging the patenting of their land in severalty and to be admitted into the privileges of citizenship. They are all nominally Christians, a large portion church members, Methodist and Episcopalian. Besides their churches they have five schools in operation at the present time. Those Oneidas who reside in New York have received their lands individually. The State maintains two schools among them. These Indians are mostly Methodists, and are spoken of as an "industrious and worthy people."

It is interesting to note in passing, that Hamilton College, of New York State, grew out of an Indian school somewhat in the same way as Dartmouth College.

In 1734 the remarkable work of the Moravians began among the Creeks of Georgia, in 1740 among the Mohegans of New York, and in 1748 at Bethlehem, Penn., among the Delawares. The story of the persecution of the Christian Delawares is too well known to be more than referred to. Few chapters in history tell a sadder tale than that of these patient Christians, torn from their homes by Indian enemies or white people craving the fertile valleys, and forced to start afresh in the wilderness further west.

As early as 1782 these enforced migrations began, first to southern Ohio; in 1787 they were pushed north to Lake Erie, and in 1791 they scattered to Canada and Michigan. The missionaries shared in these hardships and wandered forth with their stricken flock to find a place of rest. A portion of the Delawares returned to the Miami Valley, and in 1795 twice replanted their cornfields after the young crops had been destroyed by General Wayne. The history of the next seventy years is one of removals, uprooting of homes and farms, and these have left a trail of sorrow through Ohio, Indiana, Kansas, down to the Indian Territory, where about 1870 the bulk of the people cast in their lot with the Cherokees. A few, the only ones still bearing the distinctive name of Delawares, linger among the remnants of other tribes at the Kiowa, Comanche, and Wichita Agencies, Indian Territory. One is not surprised to hear that they are now making little or no effort toward cultivating lands and living in houses.

In 1795 the Quakers took up the work of caring for the education of the Indian. Their missionaries have been busy in many tribes, north, south, east, and west, and the efforts begun ninety years ago have not slackened, but rather increased up to the present day. Industrial education has been their aim, and they have been ever ready to work for civilization, for peace, and for purity of the public service, whenever called upon. When the distribution of agencies to the care of religious societies took place, upon the inauguration of General Grant's peace policy, eight agencies were put in charge of the Friends. Their missions are now maintained at four agencies, besides schools sustained, in full or in part, by funds from the various societies of that order.

In 1819 the Baptist Society began work, and established schools. One of the most noted was the Choctaw Academy in Kentucky. Trades were taught in addition to the ordinary school curriculum. The pupils were drawn from different tribes, and the benefit of the school was widely felt. When the Choctaw and kindred tribes were moved west of the Mississippi, this successful school in the course of time followed the people to their new home.

In 1823 the Methodist Church began missions, and other denominations followed soon after.

#### SCHOOL STATISTICS.

In 1819 Congress appropriated \$10,000 as a civilization fund. This amount was continued for several years, and the money was mainly used in assisting missionary schools.

In 1833 the number of Indian children in school is given as 1,835. Of these 191 were at Choctaw Academy. Fifty-three mission schools were assisted by the Government, as follows: American Board of Foreign Missions, 31; Baptist General Convention, 10; Roman Catholic, 6; Methodist Episcopal Church, 3; Methodist Society, 2; Protestant Episcopal, 1.

Not far from the time of General Grant's peace policy education began to be actively pressed by the Indian Bureau. The government schools, which had been rather fitful and meager, were refitted and new schools built. The standard of teaching was raised, and the improvement has gone steadily forward. Training schools in the trades have been established within the past eight years, some of these taking high rank as educational institutions, as that at Carlisle Barracks, Carlisle, Penn., under the charge of Capt. R. H. Pratt.

The statistics of Indian education at the present day are about as follows:

School population (exclusive of the five civilized tribes) .....	40,000
Number of boarding schools .....	89
Number of day schools .....	126
Accommodation boarding schools .....	6,506
Accommodation day schools .....	5,672
Average attendance .....	7,650
Cost to the Government .....	\$650,565
Cost to religious societies .....	\$179,085
Cost to State of New York .....	\$8,848
<i>Five civilized tribes, Indian Territory:</i>	
Number of boarding schools .....	17
Number of day schools .....	201
School accommodation .....	10,704
School attendance .....	7,862
Cost to Five Nations .....	\$175,071
Cost to religious societies .....	\$21,541

All the mission schools are included in the above statistics.

## RELATIONS OF THE UNITED STATES GOVERNMENT TO THE INDIANS.

During the period of Confederation Congress had the entire management of Indian affairs, appointing agents who reported directly to the legislative body. Upon the adoption of the Constitution and consequent creation of the War Department in 1789, the Indians were committed to the charge of the Secretary of War. Owing to the rapid settlement of the country, the extended and complicated frontier interests rendered the administration of Indian matters more and more difficult and onerous, and finally led, in 1832, to the formation of a special office under a Commissioner of Indian Affairs, subordinate to the Secretary of War. Upon the creation of the Department of the Interior by the Act of March 3, 1849, various considerations led to the transferring of the Indians from the War Department to the Department of the Interior, the Hon. Robert J. Walker, Secretary of the Treasury, in his Report recommending the change, saying: "• • • With the interesting progress of so many of the tribes in Christianity, knowledge, and civilization, these duties do not necessarily appertain to war, but to peace and to our domestic relations with those tribes placed by the Constitution under the charge of this Government."

As marking the growth of the friendly sentiment of the Senate, the following passage from the debate may be quoted: "War being the exception, peace the ordinary condition, the policy should be for the latter, not the former condition."

With the exception of one break, from March, 1869, to July, 1870, when officers of the Army, specially detailed, acted as Indian agents, the Indian tribes have been under the care of civilians. The force to-day numbers 61 agents, having charge of 168 reservations, varying in size from 33,830 square miles to 4 square miles, including pueblos, and the entire Indian population is estimated at 265,565.

Treaties made between the chiefs representing their various tribes and the United States Government regulate in general the policy of the latter toward the former. The first treaty was made with the Delawares in 1778, prior to the adoption of the present Constitution. Between 1778 and 1789, when the Constitution went into effect, fourteen other treaties were made with different tribes. The last treaty was proclaimed on August 27, 1870. The total number of treaties from 1778 to 1871 being 649. By these treaties nearly all the territory of the present United States has been acquired, excepting portions of that covered by the thirteen original States.

In these treaties, besides ceding their lands, the Indians agree to live peaceably with the white settlers, to remain upon their reservations, from which all white intruders were to be rigidly excluded. The Government agreed on its part to compensate the Indians by money annuities in cash payment, or their equivalent in food, clothing, agricultural implements, and instruction in farming trades, and the establishing and maintaining of schools for a greater or less term of years. An Act of March 3, 1871, provides, "that hereafter no Indian nation or tribe within the territory of the United States shall be acknowledged or recognized as an independent nation, or tribe, or power, with whom the United States may contract by treaty." Since that time all agreements between the Government and the Indians have been subject to the approval of both branches of Congress. The Act of March 3, 1871, marks a step in the advance of public sentiment toward the Indian, insomuch as he is no longer recognized as a foreigner.

While the major part of the Indians are under treaty agreements, there are some tribes which have never had any such relations with the Government. In some of these instances the peculiar character of the soil, the disappearance of game, and other circumstances, have made it needful that assistance in food and clothing should be provided for these Indians.

The policy of the Indian Bureau is to prepare the Indians to become self-supporting, and varying success has followed the efforts made. Several tribes are to-day relying entirely on their own efforts; some of these receive interest upon funds held by the United States, derived from the sale of lands. This money affords help in the management of their internal affairs, as, for instance, the five civilized tribes in the Indian Territory support their government and schools almost wholly from the interest on funds so derived. As a means to carry out the policy of the Bureau, a plan was instituted in 1874, requiring Indians to labor for their annuities, particularly when these took the form of rations, etc. The plan in many cases has been beneficial in its results, particularly by making compulsory education possible.

In the efforts to carry out its policy, the Bureau of Indian Affairs suffers much from the routine which during the past one hundred years has accumulated about the methods of transacting business. Precedent is almost, if not quite, as powerful as law, and the way a thing has once been done is regarded as the way to continue doing it, whether the method is of the best or of the worst sort. Much valuable time and individual energy is lost by this custom, and effective service crippled because of elaborate entanglements.

The executive branch of the Government, as represented in the Indian Bureau, is nearly, if not quite, powerless to enforce that which it sees to be best for the education and civilization of the Indian. Each year the Bureau makes its estimate of moneys needed, not only to carry on the work of the office and to pay employes in the field, but for the building and equipping of schools and securing good instructors; for opening farms; for purchasing implements, and, where it is needful, for feeding and clothing those Indians who are not yet able to take care of themselves; and for the means necessary to institute new methods of pushing the people forward, and enlarging the opportunities of those Indians who are already advanced. This estimate, on being presented to Congress, is revised by committees of Congressmen, to whom a full knowledge of Indian needs and conditions is practically impossible, the subject being too full of detail to be mastered by men having many other interests to look after. These committees, by controlling the money appropriations, control the Indian, and the efforts for civilization and education. From some unknown reason it has been the custom for these committees to cut down the estimate sent in by the Bureau, whose officers know all the facts and where the needs of the service lie. Every dollar that is cut off by these committees is just so much taken from the welfare of the Indian, by crippling the influences that help him forward, and thus strengthening those influences which hinder his progress. Reports and various appeals from the Executive Department relative to Indian matters have been presented to Congress year after year, and these show clearly that the men having the immediate direction of Indian affairs have been urging such legislation as would make plans for the education and civilization of the Indian effective, but year after year these reports and appeals have received little heed. The responsibility of the present condition of the Indian tribes rests, therefore, upon Congress.

Each year hastens the Indian crisis. The pressure of white immigration grows yearly more powerful, and it is but the question of a short time before the Indian reservations will be broken up. No person or governmental body can prevent this happening. The only safety for the Indian's home is to give each one his land in severalty, the United States acting as a guardian for a given number of years. By this term of protection, the Indian is granted time in which to prepare himself to meet his inevitable responsibility. Some tribes are already thus cared for, and are progressing under the stimulus of owning their homesteads. But no patent can make the home of the Indian secure, without the education which shall give training to his mind and hand. With a school population (exclusive of the five tribes) of 40,000 children, and a school accommodation for only 12,178, it is clear where lies one of the urgent duties of Congress toward the Indian. The school funds must be enlarged, more schools built, and a greater average of attendance secured.

It is becoming clear to the minds of a large portion of our people that the genius of our government cannot "tolerate at large a class of people less than citizens." The Indian problem awaits its solution in this direction. Until the manhood of the Indian can find legitimate expression, the work of the agent, the educator, and the philanthropist toward developing in the Indian the desire for independence and civilization will be more or less abortive. Too much emphasis is laid upon the savagery and wildness of the Indian. We are apt to forget his native power, and the long years during which the effort has been persistent on our part to make him a dependent and a pauper. The extinction of the game has changed his environment and sapped his religious customs; the pressure of civilization has rendered his social organization ineffective and useless. The Indian stands to-day stripped of all his past greatness, fronting a future, dreaded and distrusted, because not understood; yet possessed of heroic qualities which have made it impossible to enslave him, and loving liberty and justice better than his life.

## A BRIEF HISTORY OF EDUCATIONAL JOURNALISM IN NEW ENGLAND.

BY THOMAS W. BICKNELL, LL. D.,

*Boston, Mass.*

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The opening years of the present century witnessed the "Great Revival of American Education," as it has been most fitly styled. Prior to 1800, the American common school was in the childhood period. Immaturity in growth and development characterized all its features, and imperfection might be written on its work. The common school of the eighteenth century was rather distinguished for *what it did not*, than for what it did accomplish for the American boy and girl. The school-house, with its slab benches and ugly interior and exterior, held the child within its rude enclosure for three months in the year. The master was of the stalwart sort.

"A man severe he was and stern to view;  
I knew him well, and every truant knew."

The text books of eighty years ago were few, and, judged by modern standards, almost worthless. Of apparatus, maps, and charts, there were scarcely none. A very limited introduction to the secrets locked within the cabalistic alliteratives, the "Three R's," was all that the grandfathers and grandmothers of the present generation obtained in their scanty school-life.

Prior to the year 1825, the literature of education in this country was confined to the newspaper press and the scanty magazine literature of that early day. The articles or essays on education which found publicity in the weekly or monthly papers had little practical value to parent or teacher, usually dealt with topics from the upper and superficial side, and were often either theoretical or chimerical in theory and in philosophy. America had statesmen who understood the theories and practice of government, writers who knew belles-lettres, judges versed in the deepest and highest arts of jurisprudence; but the men and the women who could discuss philosophy as applied to mental growth, or who knew the science and the art of education, were among the *rare aves* of that otherwise interesting period.

A reading of the works of the best American writers on education, prior to the great educational awakening of Horace Mann and his co-laborers, gives abundant evidence of a deep-felt interest in education as a force in upbuilding society; but the art of the orator and the rhetorician hides the skill of the teacher and the careful observation of the student of an inductive faith or philosophy. Men and women wrote from the standpoint of a strong religious faith, without the fair or full appreciation of what the human mind needed, or how it best could be developed.

Even the higher education of the day was of the traditional sort, empirical, full of windy sophistries and airy nothings. There were

divines in the pulpit who could preach twenty-four sermons, with a raft of conclusions and improvements, from a single text; statesmen of the larger sort there were, but they seemed to come at statesmanship by a process independent of the schools and colleges. They drew from their inner consciousness and from the school of a remarkable diplomatic age the lessons of state-craft, which Franklin, Madison, Jefferson, Adams, and the men of that day so wonderfully illustrated. It seems to us now the marvel of marvels, that the foundation principles of government could have been so clearly defined, and vigorously enunciated and defended, as in the birthdays of the great Republic; and the masterly discussions of the constitutional period show great statesmen and scholars, whose records grow brighter with the advancing years. The great men of that day were great in spite of the crudeness and inefficiency of the educational methods, and illustrate to us the principle, that the school of necessity gives the highest diplomas and confers the highest rewards.

At the close of the revolutionary struggle and the period of national construction, men began to talk about the school as a means of making and preserving a republic; and the most remarkable words of Franklin in Pennsylvania, and of Jefferson and Washington in Virginia, relate to the quickening of an interest in the common school as the college of the people, and the guarantee of good citizenship. As the century closed, business revived; agriculture, manufactures, and commerce, inter-State and international, began to show some signs of a future prosperity. A poverty-stricken people soon became possessed of a fair competency, and men's thoughts turned from the arts of war and a defensive life to the arts of peace and the conquest over the hard conditions of a new life and a new civilization. Thus came to pass what is aptly called the Revival Period of a great educational life.

Singularly enough, but naturally enough, the first suggestions concerning the improvements of our public or common schools had reference to the increased qualifications of teachers, most of whom sadly needed the higher intellectual, as well as moral, culture necessary in the instructors of youth. The earliest suggestions of institutions where teachers of the common schools could be qualified were made by Elisha Ticknor in 1789, the year of the adoption of our Federal Constitution, in the *Massachusetts Magazine*, and the first proposition for a distinct academy or school for this purpose was made in 1817 by Denison Olmstead, afterwards a professor in Yale College, New Haven, Conn.

The first twenty-five years of this century were the preparative period for an educational awakening; and as springtime finds all of our valleys, east and west, north and south, ready for the quickening sun to germinate the seed which shall rejoice the reapers in the harvests, so all along the more advanced sections of intelligent thought in the Old Thirteen there was a general stir, an undefined impulse for something better in school-life. See how clearly this appears in the records of some of the important educational events from 1800 and on, resulting from the discussions of the public press, national legislators, city, State, and town officials.

In 1802, lady members of the Society of Friends, a religious body always foremost in works of education and charity as well as of religion, had established a free school for girls in the city of New York. In 1805, the Legislature of New York incorporated the Public School Society, "for the establishment of a free school in New York for the education of poor children who do not belong to, or are not provided for, by any religious society." De Witt Clinton's name leads the list of



corporators and he was the first president of the society. In 1812, the Empire State created the office of Superintendent of Common Schools, the first state office of its kind in America, and the special reports of Superintendents Flagg, Dix, and Spencer, had a powerful influence in inducing other States to establish common schools as a part of the public policy. The creation of the school fund in Connecticut, and the proposition to endow common schools out of the avails of the public lands, were a stimulus to other States to like liberal grants to public schools.

The establishment of primary schools as a part of the public school system in Boston, in 1808, through the efforts of Elisha Ticknor and many others, and subsequently of the high school for boys who did not intend to go through college, and of a high school for girls in 1825, afterward merged in an extended grammar-school course, are among the great events of that early day. The project of a committee of the State of Maryland, of which Virgil Maxcy was chairman, for distributing a portion of the avails of the sales of the public lands among the several States for school purposes, with the action of the Legislatures of several States, attracted universal attention to the condition and improvement of our public schools. Governors incorporated in their annual messages pressing recommendations relating to better schools, as Governors Clinton of New York, Lincoln of Massachusetts, Butler of Vermont, and Lincoln of Maine, and, as a result, the school laws of Kentucky, Maine, Alabama, Maryland, Missouri, Ohio, Connecticut, New Hampshire, Massachusetts, Vermont, Rhode Island, New York, Virginia, Delaware, and South Carolina, were either established or revised between 1821 and 1828. Free high schools were established in Worcester and Lowell, Mass., Portland and Bath, Me, Providence, R. I., Hartford, Conn., and in Cincinnati, Ohio, during the same year. Monitorial and manual labor schools were the new experiments of the day. The production of school-books which should supersede the American Preceptor, Daboll's Arithmetic, and the Ciphering Book, was in order, and Colburn's Arithmetic, with all its numerous progeny, was the result.

The establishment of seminaries for the education of girls was urged and entered upon, and the labors of Emma Willard at Troy, N. Y., of Miss Catherine Beecher at Litchfield, Conn., of Miss Grant at Ipswich, Mass., and of Rev. Mr. Herrick at New Haven, Conn., should never be forgotten. The establishment of the Rensselaer Institute at Troy, and of the University of Virginia, were events of great significance in their several sections. The proposition in 1825 to establish independent schools of practical science, or to extend the plans of collegiate education so as to admit of more attention to the sciences, especially as applied to the useful arts, was a long step forward; the formation of mechanics' institutes in 1821 and of popular lyceums in 1826, with debates, lectures, cabinets, classes for instruction, libraries, etc., and conventions held in Massachusetts, New York, Connecticut, and Pennsylvania, in the twenties, were results of a profound conviction that the people must have a better style of education, as well as the occasion of a more thorough work in creating a better public sentiment for universal education.

From the hasty glimpses given one can see that great agencies were at work in establishing the American common school on a firm and intelligent basis. A deep want was everywhere felt for a better condition of education for the children of all the people, and as a result men began to bestir themselves in matters relating to school organization, administration, and endowment. A broad philanthropy rather than a deep

philosophy ruled the hour, and men consulted their instincts rather than the formulas of logic in their educational policy. As we have seen, no one locality monopolized the new educational life. It was throbbing with equal energy in the hearts of such men as Jefferson in Virginia, Wayland in Rhode Island, Grimke in South Carolina, Clinton of New York, Gallaudet of Connecticut, Frelinghuysen of New Jersey, Emerson, Oliver, and Abbott of Massachusetts, Peers of Kentucky, Guilford of Ohio, Shaw of Virginia, and hosts of others whose names are to-day embalmed in State and local history.

All great movements in society proceed after one general law,—agitation, organization, publication, and persuasion. We have seen the educational movement proceed along the line of the first two steps. Great themes have been talked over, legislation has been effected, the machinery of school work has been put in decent order and set in motion. The first educational association was formed at Middletown, Conn., in 1799, under the name of the Middlesex County Association for the Improvement of Common Schools. There is now needed the inspiration and the great balance wheel of educational literature to keep in regular and harmonious order and procedure the complex thing we call the common-school system.

#### THE FIRST EDUCATIONAL JOURNAL IN THE WORLD.

Massachusetts has been the birth-place of many excellent men, ideas, and institutions, and not the least of her occasions of boasting is the publication of the first professional paper, or magazine, on education in this country. Its name was the *American Journal of Education*, and the first number of Volume I appeared January 1, 1826. It was published in Boston by Wait, Greene & Co., Court Street, and printed by Thomas B. Wait & Son, proprietors. Of Mr. Wait, we know that he was a practical printer and publisher, and becoming deeply interested in the subject of education, during his residence in Portland, Me., in the movement for the establishment of a system of graded schools, he proposed the publication of the JOURNAL OF EDUCATION, in the fall of 1825, to several literary and educational gentlemen of Boston and vicinity, who readily accepted his proposals and aided the undertaking. The names of the modest editors nowhere appear in the first volumes, but they were known to be William Russell, William C. Woodbridge, and William A. Alcott, and, on the authority of Dr. Henry Barnard, these three men have the honor of editing "the first periodical devoted to the advancement of education in the English language." Those familiar with the common school history of Massachusetts know these men, and their cotemporaries and associates in teaching and writing on education. There were in their councils George B. Emerson, A. Bronson Alcott, Warren Colburn, James G. Carter, Horace Mann, Henry K. Oliver, Josiah Holbrook, Rev. Samuel J. May, Gideon F. Thayer, Ebenezer Bailey, Rev. John Pierpont, William B. Calhoun, Nehemiah Cleveland, Joseph Story, B. D. Emerson, Jacob Abbott, Asa Rand, Caleb Cushing, Dr. John C. Warren, Samuel P. Newman, George Ticknor, William C. Fowler, of Massachusetts, Samuel R. Hall of Vermont, Francis Wayland and John Kingsbury of Rhode Island, and many others whose names are as familiar as those of our households. These are a few of the names of that company of pioneers and reformers, the products and the forces of a movement which generated its own agents and agencies, and who have filled the world with their influences on that and succeeding generations.

## THE AMERICAN JOURNAL OF EDUCATION

was published monthly, containing 64 small octavo pages in each number, or 768 pages a year, at the price of \$4 a year. It was at first proposed to have 48 pages in each number, but the editors say that they found it impossible to do justice to their subjects without introducing a greater number and variety of topics than could be brought within that limit. The reasons for the undertaking are clearly set forth in the prospectus in the first number:

The spirit of inquiry, which has of late years extended to everything connected with human improvement, has been directed with peculiar earnestness to the subject of education. In our own country, the basis of whose institutions is felt to be intelligence and virtue, this topic has been regarded as one of no ordinary interest, and has excited a zeal and an activity worthy of its importance.

A periodical work, devoted exclusively to education, would seem likely to be of peculiar service at the present day, when an interest in this subject is so deeply and extensively felt. At no period have opportunity and disposition for the extensive interchange and diffusion of thought been so favorably combined. Science and literature have their respective publications, issuing at regular intervals from the press and contributing incalculably to the dissemination of knowledge and taste. But education,—a subject of the highest practical moment to every school, every family and every community,—remains unprovided with one of those useful vehicles of information.

The leading objects of the *Journal* are declared to be—

I. A record of facts regarding the past and present state of education in the United States and foreign countries.

II. The diffusion of "*enlarged and liberal views of education.*" "Education should, we think, be regarded as the means of fitting man for the discharge of *all* his duties," including physical education, or the training of healthy bodies, moral education, domestic and personal education, or that which consists in the voluntary formation of individual character.

III. Female education, "a matter of unspeakable importance."

IV. Early and elementary education—"more important than that of any other period or department."

V. Higher and scientific education.

The title, say the proprietors, was originally intended to be local, probably the "New England Journal of Education," but its change to "American" was that it might "subserve the cause, not in one State or country, but throughout the continent."

The subjects treated in the first American school journal show the thought trend of that day. The initial article in this journal, which was continued through the first five numbers, relates to what are styled infant or dame's schools, giving their history, plans, and progress, in Bristol, Brighton, Liverpool, and London, England. The monitorial and inductive systems, as inculcated by Lancaster and Pestalozzi and then much studied in America, are fully discussed, with a complete history of the monitorial experiments in Boston. Several pages of each number are devoted to careful reviews of methods, theories, and books, while under the head of Intelligence we have accounts of educational movements in England, France, India, Germany, South America, Greece, as well as in all parts of our own country. Mechanics' institutes and lyceums, then being generally established in England and America, are given great prominence, while a proposed institution in Massachusetts for that class of persons "who do not desire, or are not able, to obtain a college education," is outlined under the title of "An Agricultural Seminary," the basis of our present agricultural colleges. Among other leading subjects, we find high schools for females, Church Sunday-

schools, monitorial instruction, the education of females, the public schools of New York and Massachusetts, academical education in England, and a proposed "Society of Education," in the plans of which was outlined the foundation of all our present educational associations. Among the objects to be secured by this society or college for teachers were the following:

- (1) The promotion of infant or domestic education.
- (2) The increase of facilities for the instruction of teachers, including professional schools.
- (3) The establishment of a teachers' library of useful works on education.
- (4) The improvement of school text books.
- (5) The study of new systems of education as developed abroad.
- (6) The organization of a society with branches in all leading cities, after the plan of the French Society of Education, or the British and Foreign School Society.

Indian civilization through education occupies the thought of these pioneers. The defects of liberal education are pointed out; classical education has its advocates and opponents. One writer deplores the mechanical modes of instruction of the time, by which, he declares, "children are treated as mere *imitative animals* and not as *intelligent beings*;" and he also affirms that "the man or system that communicates one distinct idea to the mind of a child confers a greater blessing on the human race than to teach him a thousand words without ideas."

In the prospectus of the January number of 1828, the editors announce a wider range of topics to be discussed, including practical science and useful information. They suggest that the magazine may become a family book, that "the lyceum, that useful and prosperous institution so rapidly extending throughout New England," will receive special attention, and for the first time it is hinted at that the circulation of the *Journal* has not been equal to expectations, and that "a more extensive and liberal support is demanded." Here we begin to feel a vital kinship with these editorial brethren, and our sympathies are stirred as the appeal is made, as it has often been since, for a more cordial, appreciative, and generous patronage of school publications.

The *Journal of Education* in 1829 became a bi-monthly, with longer articles, and a fuller discussion of the topics treated. The leading topics relate to infant schools, maternal instruction, the American lyceum, self-culture, Christian schools, Bacon's philosophy, Pestalozzi's methods, errors in common education, military academies, influence of novels, Combe's "Constitution of Man," phrenology, etc., etc., with able reviews, and educational intelligence the wide world over.

In 1830 was formed at Boston the American Institute of Instruction, an outgrowth of the public sentiment and unity of purpose produced by the four years' work of the *American Journal of Education*. The same leaders are found in the Association as in the establishment of the *Journal*, and their strong co-operative influence leads to a revival of interest in the periodical, the only mouthpiece of American teachers. In January, 1831, the name of the magazine is changed to *American Annals of Education and Instruction and Journal of Literary Institutions*, and it resumed its monthly visits to its readers. In this and the succeeding years of the *Annals*, until its suspension in 1838-'39, the discussions of the magazine are more practical, have a wider range, and the intelligence relating to the great movements of education is full and interesting. Teachers' conventions were held in all parts of the land, in which were discussed better teaching, better teachers, better

school-houses, improved text-books, a more intelligent public sentiment, teachers' seminaries or normal schools, and kindred themes. Education societies are reported from Maine to Florida, and from Ohio to Mississippi, and local county and State institutes and associations grow out of the general forward movement. A Board of Education had been established in Massachusetts, lyceums and teachers' associations and libraries were on the increase, and the cause of education had made its greatest conquest of that day in drawing from a prospectively brilliant political career Horace Mann, to become the great expounder of educational truth and doctrines to the world, as was Daniel Webster the eloquent defender of our Constitutional faith; and how fitting it is that in front of the State House at Boston stand the bronze statues of these two men, as the Joachim and Boaz of our political temple!

A crisis arrives in the history of educational journalism in January, 1835, just a half century ago. It was none other than the question of the suspension of the *Annals*, to the editorship of which Mr. William C. Woodbridge, its very able managing editor at this period, had devoted time, strength, and money. "Education" is again one of the "eternal subjects," and "The necessity of a periodical on education," is the opening sentence of "The Prospects of the *Annals*" for that year. The editor declares that after three years of unrewarded toil and expenditure of all his surplus means to sustain the only periodical on education in our great and growing country, the editor still found it involved, beyond his power to extricate it; yet without abandoning its future publication, he makes an appeal for the sale of two hundred sets of the magazine. Here we have to record one of the most remarkable deliverances that ever came to save the life of a worthy educational journal. A plan was devised for meeting the exigency, and the subscribers who came to the rescue are no less than Daniel Webster, William E. Channing, John Quincy Adams, Josiah Quincy, Leonard Woods, Edward Everett, Joseph Story, Moses Stuart, John J. Palfrey, George Ticknor, Baron Stow, Rufus Anderson, Hubbard Winslow, William Hayne, William Wirt, Caleb Cushing, A. Alexander, W. T. Dwight, and fifty others whose names are of national renown. What other paper ever had the honor of such a list of subscribers!!

On the 20th of April, 1837, the Legislature of Massachusetts created the Board of Education; Edward Everett was its first President, and the Honorable Horace Mann, then late President of the Massachusetts Senate, was unanimously elected Secretary of the Board, at an annual salary of \$1,000, "provided he should devote himself exclusively to the duties of the office."

This was on the 29th of June, 1837. Mr. Woodbridge, the editor of the *Annals*, was then in Europe, detained by ill health, and Dr. W. A. Alcott conducted the magazine. In an editorial introducing Mr. Alcott he indulged the hope that our American periodical on education *will be sustained*, and that the spirit of inquiry which is aroused will demand and maintain many others, and thus render the existence of any one of far less importance. In December, 1837, Mr. Woodbridge withdrew from the editorship of the *Annals*, a work to which he had devoted the best years of his life, and in the prosecution of which he had sacrificed his health and diminished his fortune, and it may be said that the cause of education had no clearer mind to expand its principles, and no more earnest friend to promote its interests. Educational journalists in America have good reason to be proud of the three self-denying, talented, and devoted men, who made professional educational literature a success in the days when personal faith and courage were the main sup-

ports of a noble cause. These men were Woodbridge, Russell, and Alcott.

The withdrawal of Mr. Woodbridge was followed by the retirement of Dr. W. A. Alcott, and the *Annals* was intrusted to the editorship of M. G. Hubbard, Esq., who turned it from its original purpose in the advocacy of the interests of common schools to a magazine in which high schools, academies, and colleges should have a special record.

This step, which was fatal to the life of the old magazine, led Mr. Mann to contemplate the establishment of a journal in which he could give expression to his views, and the more readily reach the teachers and people of Massachusetts. Prompt action followed contemplation, and in November, 1838, the *Common School Journal* was issued, with Horace Mann as editor. His great object in the *Journal*, he said in his prospectus, was to improve the common schools and other means of education; to diffuse, rather than to discover knowledge; to make that which is now known to any, as far as possible, known to all. Concerning the new departure of the *Annals*, he said, "we propose to sail through widely distant and different latitudes on an all-embracing ocean of education. If, however, we should ever chance to come within hailing distance of the *Annals*, we assure it that we shall run up a friendly flag, give it a cordial greeting, and hope to hear of the good success of its voyage."

The *Common School Journal* was published semi-monthly, after the first two numbers, and was furnished to subscribers at the low price of \$1 a year. It was edited by Mr. Mann for ten years, and embodies his most mature thought on education in all its varied phases, as they were presented to his fertile mind and vivid imagination. The results of his thorough and constant study of educational problems were here first given to the people of Massachusetts and to the world, and it is doubtful if any other educational journal contains so rich and valuable contributions to a permanent literature of education. Mr. Mann regarded the *Common School Journal* as the right arm of his power and influence, and the great reforms which he inaugurated in teaching and the revolution in public sentiment effected during his remarkable administration, may be traced to the *Journal* as the most important agency. But little note has ever been made of the fact that Horace Mann was for ten years of his secretaryship sole editor of a great school journal, which, though almost forgotten by men, is an enduring monument to his power as a journalist and his fame as an educator.

It was not an easy task for Horace Mann to secure a large subscription list, or a very generous support; and, strange as it may seem, we find his appeals vigorous and urgent for more readers and subscribers. What a comfort to us, his successors, that our great leader once begged his fellows to support his paper, and one of his most vigorous editorials related to the threatened death in 1840 of the *School Journal* of Connecticut, edited by the Hon. Henry Barnard. Listen to a few of his sharp words, which applied almost as well to his own beloved Commonwealth as to the educators of the sister State of Connecticut:

We are grieved to hear, from the May number of the *Connecticut Common School Journal*, that the publication of that wise and strong auxiliary in the cause of education is to cease. It dies from want of patronage. Its zealous, talented, and philanthropic editor, Henry Barnard, Esq., Secretary of the Connecticut Commission of Common Schools, has sustained it by his mind and his purse, until the burden has become too heavy to be longer borne. Thus the only periodical in that State fails, through public apathy. One would suppose, beforehand, that a fact of such significance, in regard to the present condition and future well being of the body politic, would reanimate its frame and fill its members with new life, except they are, not

morely dead, but decomposed. The present excited state of the public mind breeds a political newspaper almost every hour. These are paid for, read, conversed about, and dreamed about. The public mails are distended with party documents; drunken hiccoughs are set to music; while one of the best of papers, conducted by one of the best of men, and devoted to the best of causes, dies in a New England State of public neglect. The Connecticut Legislature is now in session, and we earnestly hope that it will provide means for the continuance of this excellent paper.

In 1848 Mr. Mann allowed his name to be used as a candidate for a Representative to the National Congress, on account of his well-known views respecting slavery and the condition of the American Indian. He was elected, and his labors were now transferred from the educational to the political arena at Washington. Mr. Mann's valedictory (Dec. 18, 1848) gives us a distinct view of the condition of educational journalism of that day:

It came to the public as their fate, rather than as a consequence of their free will. It was born, not because it was *wanted*, but because it was needed. Though the *Journal* is but 10 years old, yet compared with any other journal devoted to the cause of education in this country its age is patriarchal. One, the *Albany District School Journal*, which was established about two years after this, having been nourished by the bounty of the State, still survives. But numerous others, subsequently commenced, have been sad remembrances of the brevity of life. Some have died as soon as born because they had no life, no vital organs within them; but others, and the far greater number, have perished from the bleak atmosphere,—the coldness of the world into which they were born. May the survivors long live to earn the highest of all rewards,—the reward of well doing, and may their last days be their best days.

Our motto used to be, "The cause of education, the first of all causes." Recent events, however, of a national character, have forced upon the public attention the great truth, that before a man can be educated he must be a free man. It is in obedience to this truth that the editor of the *Journal* now leaves the immediate field of education to assist in securing, as far as one vote among two hundred and thirty votes in one department of the national councils can do it, the *freedom of man* in regions yet unoccupied by civilized races; so that the vast territories which are now roamed over by savage hordes may rise from barbarian life into civilization, instead of sinking, in this nineteenth century of the Christian era, from the depths of barbarism into the abysses of slavery.

It is no alienation, therefore, from the cause of education, but only to secure a sphere where education may "run and be glorified," that occasions this apparent departure from his long-loved field of labor. Than these causes what can be nobler? For these causes, who would not be willing to fall, though he should fall like Arnold of Winkelried—his body a "sheaf of spears"?

With a comprehensiveness of meaning that embraces both worlds, we wish our readers and friends, Farewell.

The *Common School Journal* was continued by William B. Fowle, of Boston, a prominent educator of that day, until the establishment of the *Massachusetts Teacher*, which was founded by the State Teachers' Association in 1847, and became its organ, its editors, twelve in number, one for each month of its publication, being elected at the annual meeting of the Association. The first number of the *Massachusetts Teacher* was issued January 1, 1848, with Thomas Sherwin, S. W. Bates, Charles Northend, and John D. Philbrick, as publishing committee, with Messrs. Bates, Carlton, Emerson, Northend, Parish, Pennell, Philbrick, Sherwin, Sweetser, Thayer, Tweed, and Wells, as editors. It was published at first semi-monthly, sixteen pages duodecimo, at a subscription price of one dollar a year in advance. The ownership was vested in the Massachusetts Teachers' Association.

As an aid in the financial support of the *Teacher* the State of Massachusetts became a subscriber to the amount of \$500, in lieu of which the association circulated five hundred copies of the *Teacher* gratuitously, among the school officers of the State. This policy of a State subsidy was continued until January, 1875, when the *Massachusetts Teacher* was merged in the *New England Journal of Education*. The *Teacher* was published in the interests of the common schools of the

State, and the general ability of its editorial corps made it one of the most valuable and influential papers of the country. It is the good fortune of any educational library which possesses a full file of the thirty-six years of the *Massachusetts Teacher*, the foundation of which was laid in the *Journal of Education* in 1826, and further built up by the *Annals* and the *Common School Journal*. An index of the articles published in this succession of periodicals, from 1826 to 1875, would outline the history of the most remarkable period of the educational work of the country, and the contents would furnish valuable material for the historian.

#### EDUCATIONAL JOURNALISM IN CONNECTICUT.

Connecticut was the second of the New England States to enjoy the benefits and to bear the burdens of an educational journal. The *Connecticut Common School Journal* was a monthly periodical devoted to education, and was established by Hon. Henry Barnard, then Secretary of the Board of Commissioners for Common Schools. Mr. Barnard owned, edited, and published it, and it was continued by him until the abolition of the office in 1842. The first *Journal* was mainly intended to circulate school laws and other information to school officers and teachers, Mr. Barnard assuming the expenses of the publication.

The *Connecticut Common School Journal* was re-established by Mr. Barnard in 1850, on his appointment to the office of State Superintendent of Schools, and conducted by him on the same terms as at first, until 1854, when it passed into the hands of the Connecticut State Teachers' Association, by whom it was published until it was merged in the *New England Journal of Education*, established in 1875. Its first board of editors appointed by the State Association in 1853, consisted of Hon. Henry Barnard, Hartford; Prof. John Brocklesby, Trinity College, Hartford; T. W. T. Curtiss, Principal of High School, Hartford; David N. Camp, Normal School, New Britain; Rev. E. B. Huntington, High School, Waterbury; Prof. John Johnston, Wesley College, Middletown; E. A. Lawrence, High School, Stamford; F. B. Perkins (now librarian at San Francisco, Cal.), Hartford; Prof. Thomas A. Thacher, Yale College, New Haven; and John D. Philbrick, Normal School, New Britain, Conn.

This board was changed somewhat from year to year. The resident editors commencing with the new series, 1854, were John D. Philbrick, Charles Northend, and David N. Camp, successively. The price continued the same, one dollar per annum. The *Journal* was fairly sustained by the teachers of Connecticut, but was probably never a source of profit. Some of the teachers had to make up deficiencies in some years. It was considered an important aid, not only to teachers and local school officers, but to the State departments of education. During the latter years of its publication it was sent to the school visitors of each town in the State, through the aid of a small State appropriation.

The *Connecticut School Manual* was established in January, 1847, by Rev. Merrill Richardson, editor. Its price was fifty cents per annum, and it was issued monthly by Case, Lockwood & Co., for Messrs. Richardson, etc. It was continued two years, while the *Connecticut Common School Journal* was suspended, and was given up because it did not pay expenses and the friends of education had decided to use other instrumentalities.

Mr. Richardson was the first president, and David N. Camp the first secretary, of the Connecticut State Teachers' Association, formed in



1847, and the *Connecticut School Manual* was issued to call attention to this organization, and to try to arouse some interest in education. Mr. Richardson and Mr. Camp were then employed to hold teachers' institutes through the State under the direction of the superintendents of common schools.

#### BARNARD'S JOURNAL OF EDUCATION.

The plan of a series of publications embracing a periodical to be issued monthly or quarterly, devoted exclusively to the history, discussion, and statistics of systems, institutions, and methods of education, in different countries, with special reference to the condition and wants of American schools, was formed by Hon. Henry Barnard in 1842, on the discontinuance of the *Connecticut Common School Journal*, which was commenced in 1838. A large amount of material was collected, and several pamphlets were published by Mr. Barnard prior to 1855, when, after failing to enlist the American Institute of Instruction, the Smithsonian Institute, or the American Association for the Advancement of Science, in the establishment of a central agency, he undertook on his own responsibility the publication of a journal and library of education. Arrangements were accordingly made to publish the "American Journal of Education" in April, 1855. After much of the copy of the first number was in type, a conference was held with Rev. Absalom Peters, D. D., who contemplated publishing a periodical entitled the "American College Review and Educational Magazine [or Journal]." A partnership was formed, and Dr. Peters and Dr. Barnard became co-editors of the *American Journal of Education and College Review*.

After the publication of the first number, in August, 1855, and the second in January, 1856, it was found that the two editors could not agree as to the character of the magazine, and the co-editorship and partnership were dissolved, leaving each party free with "the privilege of publishing an educational magazine for which he was entitled to use the first and second numbers of the *American Journal of Education and College Review* as numbers one and two of his work." Dr. Barnard then proceeded with the work, carefully planned and prepared for, and in March, 1856, commenced the series of educational magazines styled the *American Journal of Education*, which has now reached the thirty-fourth volume, each volume averaging over 600 octavo pages of important matter, relating to all departments of educational work.

Dr. Barnard's service in this direction has given him a world-wide reputation as an editor as well as an educator. The *Journal* is an encyclopedia of knowledge on all topics relating to education, and its completeness and thoroughness have won for it and its author the highest testimonials from the educators of all lands. No work in any language is so full of instruction as to systems, institutions, public and private, technical and special schools, history, biography, philosophy, etc., etc. In fact, no library can be said to be complete that does not contain *Barnard's American Journal of Education*, and although published in Connecticut by an enterprising Hartford house, and edited by a Connecticut educator, it belongs to the nation and to the world.

#### SCHOOL JOURNALS IN MAINE.

The earliest efforts in Maine to establish a school literature were in 1849. In that year a paper for scholars entitled the *Scholar's Leaf*, and

another for teachers called the *Common School Advocate* appeared. The *Leaf* flourished for some time; the *Advocate* had a briefer life.

Mr. Dunnell, in 1858, while State Superintendent, started a paper called the *Maine Teacher*. It was printed monthly. Each number contained thirty-two pages. Mr. Dunnell continued its publication till he completed his term of office, nearly two years. This journal appears in the Report of Mr. Weston, Superintendent, for 1860. Under his direction it lived till 1864. In that year it was suspended.

The next year it was renewed by Mr. Gage, of the Western Normal School, under the name of the *Maine Journal*, and among its contributors were Rev. Jacob Abbott, then living at Farmington, Hon. E. P. Weston, State Superintendent of Schools, A. P. Stone, LL. D., of Portland (now Superintendent of Schools, Springfield, Mass.), and many of the leading teachers of the State. A Mr. Swift was the publisher.

In 1868, the *Journal* was issued from Portland, Brown Thurston being the publisher, and Mr. Gage continued as editor until the close of the year, when he removed to Minnesota to become principal of the normal school at Mankato.

In January, 1869, the name was changed to the *Maine Journal of Education*. Mr. Thurston was proprietor and publisher, and A. P. Stone principal editor, assisted by twelve monthly editors, comprising the normal school principals, leading teachers, and some of the county school supervisors of the State.

In August, 1873, Mr. Stone removed from the State, and Albro E. Chase, of the Portland High School, became editor. This arrangement continued until the absorption of the *Journal* by the *New England Journal of Education*, in 1875.

#### SCHOOL JOURNALISM IN VERMONT.

The *School Journal and Vermont Agriculturist* was published monthly for three years, beginning in May, 1847, by Messrs. Bishop & Tracy, of Windsor, Vt.

It was a pamphlet of sixteen pages, measuring 5½ by 12 inches per page, exclusive of margin; the first eight pages were devoted to the schools and the other eight to agriculture. The price for a single copy was fifty cents a year, for sixteen copies, \$4 a year. It was a sensible and spirited journal, but was not profitable to the publishers. Afterward Z. K. Pangborn, since an editor and politician in New Jersey, then a Vermont schoolmaster, published the *Teacher's Voice* for something like a year and a half.

The *Vermont School Journal* was established in April, 1859, and was edited by a committee of the Vermont Teachers' Association. Gov. William Slade was one of its warm supporters, but he soon died. A. E. Leavenworth and G. S. Spaulding were acting editors on their own pecuniary responsibility. One attempt before this to sustain such a journal had failed. (See Vol. I, p. 221.)

For two years it was so conducted; then Hiram Orcutt and Mr. Leavenworth became the editors and proprietors. At the beginning of Vol. IV Hiram Orcutt took entire charge and responsibility of and for the *Journal's* success, and continued its publication for three years, when he left the State to take charge of Tilden Seminary, West Lebanon, N. H. At this time two thousand copies of the *Vermont Journal* were published each month. Paper cost twenty-five cents per pound and all other expenses equally increased, yet the *Vermont Journal* was furnished at fifty cents in advance, and under Dr. Orcutt was a paying

business. Only one number was published after his withdrawal, and that was not put in circulation.

#### THE RHODE ISLAND SCHOOLMASTER.

This educational monthly, so well known in all parts of the country during its publication, was born of the Rhode Island Institute of Instruction and the Commissioner of Public Schools, Rev. Robert Allyn, now Principal of the Southern Illinois Normal University. At the January session of the Institute, 1855, a committee was chosen, consisting of Dana P. Colburn and others, to consider the advisability of establishing a State journal of education. The committee advised it, and the Institute adopted the advice, and as a result No. 1, Vol. I, of the *Schoolmaster*, was published in March, 1855, and was continued through varying fortunes till Jan. 1, 1875, when it was merged in the *New England Journal of Education*. Its editors were for several years the school commissioners of the State, who brought their official influence to the patronage of the magazine. Toward its support the State appropriated \$300, for which 300 copies were gratuitously distributed among the school officers of the State, as in Massachusetts. The ownership of the *Schoolmaster* was vested in the Rhode Island Institute of Instruction, and its editors and management were chosen annually by that educational body. Its circulation was sufficient to make it a self-supporting paper, and its popularity gave it a powerful influence at home and abroad.

#### THE NEW HAMPSHIRE SCHOOL JOURNAL.

New Hampshire was the next in order to establish a school journal, and Rev. W. L. Gage had the honor of leading in the movement, as an independent school-journal editor and publisher, in January, 1857. The *New Hampshire Journal of Education*, like its cotemporaries, was a large duodecimo, published monthly, and devoted to the discussion of State educational affairs. It was not edited, however, to the full satisfaction of the teachers of the State, and, pecuniary support being wanting, Mr. Gage transferred the subscription lists and good-will of his paper to the New Hampshire Teachers' Association, and in 1858 Henry E. Sawyer, now engaged as superintendent of Mr. Moody's school at Northfield, Mass., became the editor, with an associate board of twelve monthly assistants.

In 1861 Jonathan Tenney succeeded Mr. Sawyer in the management of the *Journal*, which yielded to the inevitable at the end of its sixth volume. The circulation of the *Journal* varied from 300 to 500 subscriptions, "died for want of sustenance," and was never restored to life by later adventurers.

#### THE NEW ENGLAND JOURNAL OF EDUCATION.

In 1874 a new departure was taken in educational journalism in New England in the establishment of the *Journal of Education*.

The publication of the *New England Journal of Education* was first suggested in practical form at the meeting of the American Institute of Instruction at North Adams, Mass., in July, 1874, and a committee was appointed, consisting of two persons from each of the New England States, to consider the expediency of the establishment of a weekly paper which should represent New England educational opinions. This

committee, consisting of Messrs. Rounds and Johnson of Maine, Simonds and Orcutt of New Hampshire, French and Conant of Vermont, Hammond and Hagar of Massachusetts, Mowry and Bicknell of Rhode Island, and Northrop and Carleton of Connecticut, held their first meeting at Boston, October, 1874, and, after a full discussion and a careful consideration of the whole matter, resolved unanimously that it was both expedient and desirable to establish a New England school journal, in which the departments of primary and secondary instruction, of normal schools, and of school supervision should be represented. It was also recommended by this committee that the American Institute of Instruction, the teachers' associations of the several New England States, and the managers of the several school journals of New England be invited to co-operate in securing the union of these educational agencies for the establishment of such a journal as would meet the wants and demands of educators in and out of New England.

As a response to this invitation, more than thirty gentlemen, representing all of the interests above mentioned, met at City Hall, Boston, November 27, 1874. Dr. Hagar, of Salem, chairman of the committee on the adoption of a plan for the publication of a weekly educational paper, reported, and called upon the representatives of the State associations and papers to give the views of their constituents. All declared in favor of the movement, and, with an enthusiasm seldom witnessed, in educational circles, in the discussion that followed, it was voted unanimously to enter upon and support the new enterprise. We shall never forget the men and the measures of that memorable transaction, when Mr. Charles C. Chatfield, of New Haven, Conn., editor and publisher of the *College Courant*, was elected publisher, and the present editor-in-chief was elected editor of what was to be the *New England Journal of Education*. It was recommended that a weekly paper of sixteen pages, of the size of the *Courant*, be published; and to its establishment, under the joint business management of Messrs. Bicknell and Chatfield, its future was committed, with pledges of the good will and support of the associations, whose action had been marked with so much unity, harmony, and enthusiasm. As soon as the vote was declared establishing the *Journal*, the venerable George B. Emerson, then over eighty years of age, rose, and asked to be the first subscriber to the new paper, taking five copies, a subscription which he continued till his death. Another enthusiastic friend, one of the Boston grammar-school masters, pledged one hundred subscribers, and more than fulfilled his pledge in his zeal for the success of the enterprise.

And so we were encouraged to enter upon a service, upon whose first years, at least, the word *experiment* was written. At the outset, the *Massachusetts Teacher*, the *Rhode Island Schoolmaster*, the *Connecticut School Journal*, and the *College Courant* were the foundation stones on which the *Journal* was built. Not many months later, the *Maine Journal of Education* was added to the supporting columns, and, since the commencement of our work, six other educational papers have merged their interests and subscription-lists with the *Journal*. No. 1, Vol. I, is before us. Colonel T. W. Higginson leads the contributors with an article on "How to Study History." President Buckham of the University of Vermont discusses "The Co operation of Parents and Teachers." W. W. Bailey wrote one of his charming pen-pictures on "The December Woods." Pres't J. C. Greenough gave a practical article on "Thoroughness." "How to Teach Composition" was shown by Prof. J. E. Vose. Dr. Orcutt showed "The Relation of the Public School to the State." Professor Greene wrote a most valuable article on "Teaching

in Answer to a Conscious Want." The Rogers High School at Newport was described and illustrated by cuts. Then came the editorial pages, with our salutatory and other words relative to the new paper, with hosts of "Good Words" to cheer us. Mrs. Slade's department was full of good things, and a scientific department was ably edited by Professor Hoyt of Providence. Then came State departments, etc., etc., etc.

The first *New England Journal of Education* was printed and mailed at New Haven, Conn., from the office of the old *College Courant*, when the foreman and compositors removed to Boston, and type, furniture, presses, etc., were set up at 16 Hawley Street, where we had chosen our future home. Mr. Chatfield's business experience, and great hopefulness and courage, stood as a tower of strength in our first days, and his faith never failed him even in the hours of his weakness, and in his final surrender to the All-conqueror, in July, 1876. Then we were called upon to assume the capacity of publisher as well as editor, both of which we have continued to hold, with able assistants, in the several departments of the work.

On the death of Mr. Chatfield, in 1876, we sought for an efficient assistant in our business department, and found him in Mr. W. E. Sheldon. He has done the *Journal* and the cause of education noble and faithful service, and his assistance in the editorship of the *Primary Teacher* and the *American Teacher* have given much of the success which those popular papers have secured.

After the *Journal* had been established three years, a demand arose for a paper devoted to primary work, and the *Primary Teacher* was established. This magazine was continued until it was merged in the *American Teacher*, which was the union of the *Public School*, established in 1881, and the *Teacher* in 1878. In 1880, *Education*, our bi-monthly magazine, was founded, and has reached a good circulation in England and on the Continent, as well as in America. It is, in fact, the only magazine of its kind in the world, and meets a want quite general among our more advanced teachers and thinkers.

Our increasing labors have compelled us to call to our aid the services of able editorial assistants. Dr. Mayo is well known throughout the country. More recently we have called Dr. Mowry to the chair of managing editor, and we have much to expect from his talents and experience.

#### SUMMARY.

I. *Establishment*.—(a) Private enterprise. (b) State associations of teachers. (c) Both.

II. *Support*.—(a) Donations. (b) Subscriptions. (c) State aid.

III. *Editorships*.—(a) State committee. (b) Association editors. (c) Private enterprise and editorship.

IV. *Scope*.—(a) Common schools. (b) Colleges. (c) Higher education, philosophy, history, etc. (d) All grades, kindergarten to college.

V. *Existence*.—From two to twenty-six years.

VI. *Survival*.—Journals in Maine, Massachusetts, Rhode Island, Connecticut, which united in 1874 in the publications of the New England Publishing Company of Boston.

## COMPETITIVE STUDIES AND RESULTANT PRIZES.

BY PROF. L. G. BARBOUR, M. A., D. D.,

*Central University of Kentucky.*

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Let us begin by considering some of the motives that have led men to an ardent pursuit of knowledge hitherto.

(1) The promotion of the honor of the Almighty. This surely is the noblest of all motives. We see its influence exemplified in such men as Clement of Alexandria, Basil of Cæsarea, Tertullian of North Africa, Jerome of Palestine, Augustine of Hippo, and other Fathers of the Church; as Anselm of Aosta, Thomas Aquinas, the Doctor Angelicus, Bonaventura, the Doctor Seraphicus, and Roger Bacon, the Doctor Mirabilis; as Luther and Melancthon, John Calvin and Theodore Beza, John Knox and Alexander Henderson, John Milton and Jeremy Taylor, besides Selden and Lightfoot, Bishops Butler and Prideaux, Horsley and Washburton, of the Church of England, Moses Stuart, Samuel Miller, Joseph Addison Alexander, and many others of whom the world was not worthy.

These, indeed, except that illustrious Rabbinical scholar, John Selden, were theologians as well as Orientalists; but may we not add to the list Michael Faraday, Stephen Alexander of Princeton, and, if we may judge from the general scholium of the Principia, Sir Isaac Newton?

This motive has prompted much of the most ardent labor of the past, and it will doubtless continue to do so in the future. If Man is the priest and interpreter of nature, and if by nature we ultimately mean the Author of nature, Man will always catch and echo the whispers of the Oracle, whether they come from sun or star, comet or dim and distant nebula above us, from fauna and flora about us, or from the geological treasures buried beneath our feet. And it cannot but add to the interest of phenomena to think of the chief Efficient Cause to which their occurrence is due, Who is a Person like ourselves, and of the final causes that called His efficiency into play. This must always be so, as long as we ourselves are efficient causes, and aim at final causes; *i. e.*, as long as Man is Man.

(2) The welfare of mankind. This, too, is a noble motive. Old Cotton Mather's little volume, "Essays to do Good," stirred the mind of the young Benjamin Franklin, as Franklin himself states, and he adds that it largely influenced his subsequent life. Here might be mentioned with honor the names of the Marquis of Worcester, Watt, Fulton, Stephenson, Professor Henry, Morse, Arkwright, Whitney, of the cotton gin, Edison, and numberless others, without whom we could hardly have been in New Orleans to-day, or should have found here only an insignificant mart, and a few flatboats tied up at the levee.

The great physicians come in here; Jenner with his vaccination has nearly driven small-pox out of the civilized world; McDowell of my

own State, Kentucky, who by his capital operation for ovarian tumor has added 40,000 years to the life of woman.

This is a high ambition to set before the students in our colleges and universities. Dr. McDowell was urged on to his great invention by hearing his preceptor, Dr. Bell of Edinburgh, lament that there was no relief for ovarian tumor, no prospect to the afflicted one but that of a year or two of suffering, ending hopelessly in death. Such examples as Jenner and McDowell are calculated to impress young men in a powerful, and at the same time most salutary, manner.

(3) A desire for pecuniary emolument has always had, and must always have, a place, when we treat of the real as distinguished from the ideal world. There is, of course, a sordid seeking after gold, a love of filthy lucre that may stimulate to some attainment of scholarship, and particularly of professional skill. Yet it produces a low type of character, and the world pays heavily for scholarship and skill so tainted with baseness.

On the other hand, without some means of decent support there can hardly be a manly self-respect. We do not reproach the English Government for granting Dr. Samuel Johnson a pension in his later life. It may have been well as it was, but it might have been far from well if that pension had been conferred on him when he first set foot in London. Better, perhaps, for him to wrestle with poverty, and scrofula, and hunger, and loneliness, and withal to be a man; infinitely rugged, infinitely bigoted, infinitely dogmatic and overbearing, yet with a great tender heart within him. Perhaps his pension did him no harm; but, as a rule, pensions are not adapted to the production of manhood; and it is better that learning and literary ability should be a means of support without such subsidies. Lord Byron sneered at the idea of a literary man's receiving money for his work; but he afterward received considerable sums for his own poems.

If men devote themselves to literature or science, we see nothing degrading in their being paid for their labor. We do not think less of Faraday when we learn that he sometimes received as much as \$5,000 per year for laboratory work. Nor do we see any good reason why the hope of an honorable competence may not wisely be set before the undergraduates in all our institutions. And it may serve as an incentive to be told that the Irvings, the Prescotts, the Motleys, and the Longfellowes have been munificently rewarded by the muse, and that Judah P. Benjamin, formerly of this city, went to London after the late war and rose to the most lucrative practice at the English bar by publishing a book on law. For the days of Grub Street have passed away, and authors now do not live in garrets festooned with cobwebs. Milton does not sell the copyright of *Paradise Lost* for \$25, with the hope of a little more if it goes to a second edition; nor does Bunyan get for the *Paradise Regained*, his *Pilgrim's Progress*, *nothing*,—except, indeed, glory and honor and immortality.

(4) Fame has always appealed very strongly to intellectual men. Often perhaps too strongly, yet, in due subordination to higher motives the love of reputation is a useful factor in our constitution. If the soldier

"Seeks the bubble reputation  
Even in the cannon's mouth,"

scholars may pursue it over the peaceful fields of knowledge. We enter a protest against Shakespeare's disparaging phrase, "the *bubble* reputation." A wiser man than he, guided too by inspiration, teaches

us that "a good name is better than precious ointment." If the love of glory should conflict with the love of property, the question becomes quantitative; how much property do we mean? Enough money to furnish us food and clothing is more needful than fame; but if the choice lie between a wide and honorable reputation and an overgrown opulence, most scholarly men would prefer the former. We confess to no little admiration of John Bernouilli when he says, in propounding to the mathematicians of Europe his famous problem of the "Curve of swiftest descent":

Rapiat qui potest præmium, quod solutori paravimus, non quidem auri, non argenti summam, quo abjecta tantum et mercenaria conducuntur ingenia, a quibus ut nihil laudabile, sic nihil, quod scientiis fructuosum, expectamus; sed cum virtus sibi ipso sit merces pulcherrima, atque gloria immensum habeat calcar, offerimus præmium quale convenit ingenui sanguinis viro, consortum ex honore, laude, et plausu; quibus magni nostri Apollinis perspicacitem, publice et privatim, scriptis et dictis coronabimus, condecorabimus, et celebrabimus.<sup>1</sup>

[Let him who can, seize the reward which we have prepared for the solver; not indeed a sum of gold or silver, by which only abject and mercenary souls are enticed, from whom we expect nothing praiseworthy, nothing fruitful in the sciences; but since virtue is her own most beautiful recompense, and glory has an immense spur, we offer a reward such as befits a man of noble blood, (a reward) woven of honor, praise, and applause, wherewith we will crown, adorn, and celebrate, publicly and privately, by pen and mouth, the perspicacity of our great Apollo.]

This utterance of John Bernouilli is one of the things we admire without absolutely indorsing. Greed of gain shows very ill when associated with high mental endowments, and when, as in the case of Lord Bacon, it leads to the prostitution of super-eminent abilities, it becomes simply abominable. On the other hand, an unbounded love of applause has very often been a snare and a curse. Nevertheless in its place the desire for fame has always been, and will always be, a powerful stimulus to learning. Under this head may be included the approbation of the home circle. More than one distinguished man has nerved himself to supreme effort by the thought of the smile of gratification and of love awaiting him at the ingle side.

(5) A very high place among these motives must be assigned to our inborn love of knowledge, which may be called the hunger of the soul. It is a fine thought of Jonathan Edwards that the most suitable and right thing for the mind to do is *to know*. The bodily hunger of childhood is perhaps more intense than that of middle or old age; but the hunger of the mind grows with our mental growth and strengthens with our strength, until in many instances it becomes an absorbing passion.

Amusing stories have been told of the absent-mindedness of Sir Isaac Newton. In general, that evenly balanced man was free from the eccentricities of lesser wits. But one of his biographers suggests that if he ever exhibited a notable mental preoccupation, it was during the elaboration of his *Principia*. Then it was, if ever, that he would stop in the midst of his morning toilet and sit half dressed on the side of his bed, wrapped in thought, or that he would not be able to say positively whether he had, or had not, eaten his dinner.

Under the spell of this desire for knowledge men will say with Agassiz, "I have no time to make money." The great laws which the Almighty has stamped upon His creation will charm us by their discovery; they will seem better than gold twice refined; sweeter also is it than honey and the honey-comb to think again the thoughts of God. If our own spirits have been kindled with this fire, let us apply the torch to



the minds of the young from generation to generation, so that the vestal flame may never be extinguished.

(6) Lastly may be mentioned the principle of emulation, which is appealed to by the systems of prizes in our various classes of schools. Some moralists object to all emulation as being intrinsically evil. It seems to us, however, to be one of those constitutional principles of our nature which our Maker has implanted in us for good. This appears to have been the opinion of Sir William Hamilton.

If emulation is wrong *per se*, then every game of chess, of bat and ball, of croquet, of marbles, every contest in running or leaping, becomes a sin. Surely the mirth of the play-ground is innocent; and it were an ill sort of morals that would frown upon the good-natured shout of victory in harmless and healthful pastimes. Who shall condemn a Thucydides for weeping when he heard the writings of Herodotus read in one of the national assemblies of Greece, and then striving to equal his prototype? Or who shall blame a Macaulay for longing to be able to write history as Thucydides wrote it?

While the world stands, emulation will more or less influence the human heart. We cannot rid mankind of it, nor would it be well for mankind if we did. The only practical question for us, then, is how to regulate and direct this constitutional principle.

We have now called attention to six leading motives: (1) A desire to honor our Maker. (2) A desire to benefit our fellow-men. (3) Pecuniary emolument. (4) Love of fame. (5) Love of knowledge. (6) Emulation.

The question arises, Shall our institutions of learning emphasize the last one of the six by offering prizes of greater or less value, such as scholarships, or fellowships, or gold coins, or medals? Shall the unavoidable rivalries of school life be intensified by an additional appeal to the love of applause or the love of property? Let us ask, (1) Is this spirit of emulation naturally feeble, or has it in any way *become* weaker than the other principles in our constitution? So far from this being the case, it is among our young people one of the *strongest*, if it be not the very strongest one of them all. The first of all, a desire to glorify our Creator, is the chief motive in heaven. It, above all others, stimulates the activities of archangels. But on earth it is shorn of its power; only here and there do we see it in its majesty, the rightful lord of the heart. How feeble too, for the most part, is the desire to do good to men! And in the young the love of property has not yet become a passion, a frenzied cry for

"Gold, gold, gold, gold,  
Spurned by the young but hugged by the old,  
Ev'n to the verge of the churchyard mold."

But college rivalries, without the superadded stimulus of prizes, are often very heated, not to say bitter. The principle is not only too strong to need artificial stimulation, but it is peculiarly liable to excess, like some valuable chemicals, useful as medicines, but which the druggist hardly dares to pulverize in his mortar for fear of an explosion.

It may be asked (2) whether the giving of prizes generates a noble character. Does it make exalted men? In our plays and pastimes it is well enough to strive to surpass. But is this well in the serious business of life? Mark it, not to equal, but to excel, to win not merely *for* ourselves, but *from* others? "Can we," to repeat honest John Bernoulli again, "Can we expect anything laudable, anything fruitful, in learning from this source?" The competitions of business and professional life

will come soon enough ; need we plunge our students into them before they leave their *alma mater* ?

Two of the greatest men of modern times were Isaac Newton and Godfrey William Leibnitz, men who ought surely to have been above the petty jealousies of authorship ; men who ought not to have fallen into a wretched quarrel about the invention of the calculus. It is painful to read their letters to Chamberlayne, and to the Abbé Conti. Let us learn from them, however, that personal rivalry is a dangerous thing, even for the best of men and at an advanced period of life, Newton's latest animadversions having been written in 1716, when he was over seventy-three years of age. How much more dangerous, then, to the average youth of our colleges !

(3) Another trouble is, that these prizes do not cultivate steadiness of purpose. They are too occasional. They are not like the constant pressure of a sense of duty. Indeed, they turn away the mind from duty. The efforts produced by them are more like the fierce leap of the mountain cataract than the continuous majestic flow of a river. They cultivate the spirit of short-lived dash. They foster *cram*. The prize once received, the public presentation over, and what has the lucky recipient to fall back upon ? He has not strengthened the ever enduring principles that lead men into profound research. The love of knowledge has not become a ruling passion in his bosom. He is victor ; that is all, so far as competition is concerned. But we must not forget those who are not victors, and who are in danger of conceiving a disgust at learning in general. It would have been quite different if they had been fascinated with the true, the beautiful, and the good.

(4) Once more, the number of contestants in such cases is necessarily small. Two months of the scholastic year have not elapsed before nine-tenths of the class have lost all hope ; and before the final struggle comes the remaining one-tenth is cut down to a few individuals. In one aspect this is a blessing, for the nine-tenths or ninety-five hundredths are preserved from evil. But this is no recommendation of the system. If it hurts even a few and does no good to the overwhelming majority, it fails all around.

If prizes shall continue to be given, as seems inevitable, may not the competitive element be eliminated ? Suppose that all who reach a certain mark receive a medal or a certificate, and that thus the success of one shall not be the failure of another. Suppose again that affairs are so arranged that steady and prolonged effort shall be rewarded ; and again, that the nobility of the motives prompting to labor shall be duly taken into account. Shall we not then be imitating the course of the All-wise Arbiter of our destinies, who hath so adjusted the economy of his vast realm that for one to win a prize is not for another to lose it, but on the contrary to be more likely to win ? nay, more, so that the splendor of our own prize depends materially on how we have stretched out a helping hand to others ? and so that not so much any spasm of isolated effort, as a *ὁπομονή*, a patient continuance, a faithful endurance, a vigil protracted to the second or the third watch of the night, shall be crowned on eternity's great Commencement Day ?

## SOME REFLECTIONS ON RACE IN EDUCATION, WITH SPECIAL REFERENCE TO THE NEGRO PROBLEM.

BY PROF. WM. TAYLOR THOM,

Georgetown, D. C.

It is proper to state, in advance, that the term "negro" will be used throughout this paper for the sake of convenience, because, first, it is the *correct* term, "African" being too broad and tending to divert the mind away from this country; and because, in the second place, the term "colored man" is both somewhat ridiculous in itself, and has the very serious objection that it is *thoroughly misleading*, inasmuch as it suggests a false ideal.

The "colored man," as he is known to the northern part of the United States, is probably a fit subject for the educational experiments to which he has been subjected; but he is no more the negro of the southern and south-western States than the English aristocracy is the English people. Hence have arisen many misconceptions and many grievous mistakes; and accuracy of conception, truth, is what we most need and should most strive to attain in this, as in other matters. In a government, like ours, "of the people, by the people, and for the people," homogeneity in population and in ideals is of far greater consequence than in a monarchy or in an aristocracy. In those governments social caste, social customs, social restraints can and do, like outlying defenses, withstand assaults on the body politic, which in our government must be met and dealt with by the public conscience immediately. For a free, intelligent, homogeneous people, that should be a source of safety rather than of danger. But our population is diverse, so much so as to cause violent friction in our midst to be a thing dangerously probable. It has already caused one convulsion which will not be forgotten; for there is no parallel in recent history to the fratricidal war which ended almost exactly twenty years ago. Difference of race caused that strife. That difference still exists, and what it may produce in the future if left to itself, no man knows. Hence the greater need for homogeneity of ideals to obviate the dangers arising from diversity of population.

Of the great race ideals, that of the *Family* is, with the exception of the Mormon monstrosity, well settled in this country, although in some of our States the divorce laws seem contrived purposely to strike at this, the very foundation of our national existence.

But the thoughtful mind cannot, without disquietude, contemplate the contingencies which may arise should Mormonism once get a foothold among the negroes of America, by whom the ideal of the family is so frequently and so grossly disregarded. For if Mormonism is making such rapid progress among the whites, who have been predisposed against it by their laws, by their religious training, by their inherited race customs and instinct for a thousand years and more, what conse-

quences may not follow upon the dissemination of Mormon ideas among a people prone to embrace them from recent ancestral disposition, from still more recent slave habits and customs, and but ill protected against them by their necessarily crude conception of law and of religion.

The ideal of *Religion* as a system of morality is quite uniform in this country, in spite of the variations of dogmatic Christianity, the exceptions being this same Mormonism, and the crudeness of the negro conception of religion as a matter of emotion and as a matter of morality.

One *Language*, the strongest of all national bonds, the greatest of national ideals, as containing and modifying all others, our own masterful English, is supreme in our land; but it is not universal. Localities in the North and West are to be excepted, and also, and more important, those sections of the southern States where the divergence of the negro dialects from the standard of the vernacular is so great as partially to destroy by dialectic variety the uplifting idealism contained in the English tongue, so far, at least, as the negroes themselves are concerned.

Family, Religion, Speech, these are the three great limitations within which the genius of a people moves to work out its social and governmental organization and its destiny on earth. Their harmonious influence in this country is in danger of disturbance, chiefly from the partly involuntary opposition of the negro race in the ways already indicated. That opposition must be overcome—education is the best instrument to do it. The genius of our race, its mission, is Freedom. Toward the realization of that high calling it is pressing steadfastly on, as it has been unconsciously doing for ages past. This struggle for freedom has become anarchial, if not anarchy itself, again and again in our history, as some new phase of the national existence was developed, or as the extension of the principle of freedom was forcibly demanded by or for some additional class of population—which is the case here under consideration. The danger of anarchy lies crouching now at our doors, and will lift its bloody head again, should the negro race in America fail to learn the full lesson of freedom. True freedom is individual liberty, the largest, restrained by individual responsibility, the most exact—self-government, in one word.

Our people received the negro into this country, taught him in the stern school of slavery to give up barbarism for civilization, and then gave him personal liberty. Has he ever learned of himself, or been taught by us, the personal responsibility necessary to maintain social and governmental freedom? It is more than doubtful. And that is the duty which the white race of the United States owes to-day to itself and to the negro race. He must be helped and made to learn the lesson of personal responsibility. The development of *character* is the first and highest aim of any general system of education for him.

“To know something, to do something, to be something,—that is to be educated,” has been well said. *To do* and *to be* are more important for the bulk of mankind, and vastly more important for the negro and his interests, than *to know* knowledge, as such is for the few, not for the many, white or black.

What, then, is the proper type of public education in the southern States for the negro, as a class? It should be evidently on a *low plane*, and be confined to *elementary subjects and methods*. So much book instruction as is sufficient to give him a fair start as a citizen, that measures the present requirement of the State as to mere intellectual furnishing for the negro as a race. The American people cannot afford to let him remain ignorant of less than that. But why not go further?

Because, on the other hand, the public, as such, cannot afford to bring upon itself the risks consequent upon thrusting too much intellectual leaven, suddenly, into this already fermenting mass. From the evils of dense ignorance we are all suffering now, and have been these twenty years past. But the cramming of mere ideas into empty heads is not the true remedy. Some of the most disastrous experiences of mankind, in government and society, have resulted from the undue prominence of an idea or the spread of ideas among a people not possessing the substratum of inherited or acquired moral character necessary to modify and counteract the fatal logic of pure idealism. The later history of Athens, the histories of the Greek States generally, are illustrations of ideas impressed upon peoples and governments, and carried logically out to their consequences without regard to the character requirements of a people's growth. Precocious growth and premature decay were the result. The French Revolution passed from justifiable revolt, such as the American Revolution was, such as La Fayette hoped for, to merciless massacre because the compound theory, *Liberté, Fraternité, Égalité*, had fired the brains of the masses of Parisian populace, incapable of self-control by training or by inherited character.

The history of Russia since the freeing of the serfs is, on the side of the people, the history of ideas unduly exercising minds whose owners are not grown up, morally, to the full conception of liberty, and whose notion of it is therefore wrong and full of danger to the State and to liberty itself. Russian methods of education seem to be responsible, since the utter neglect of proper elementary instruction sends the youth of the country to the upper schools with minds incapable of resisting the dangerous doctrines which they find there.

The history of negro suffrage in our southern States, up to this time, is the story of a superb idea converted by over-hasty application into a blunder, working out its inevitable course of harm. With no previous education for this, the highest prerogative of free citizenship, with scarcely any instruction in its use since his liberation from slavery except that which appealed to his fears or his prejudices, the negro cannot know and understand the political, governmental, and social harm he does himself as well as others. Let us hope that he will speedily learn. That there has not been more outbreak is honorable alike to the amiability of the negroes and to the self-control of the whites. As time rolls on we see with clearer eyes how great was the loss this whole people sustained when Abraham Lincoln fell before a crack-brained assassin's pistol.

Half-educated, irresponsible thinking is the root of the nihilism and the savage socialism which are threatening the social fabric in Europe, and are beginning to make themselves felt in this country. The danger to American institutions from this wrong-headed thinking, when the negroes shall have ten times their present population, is not to be estimated, unless in the mean time they be educated, and unless some other than merely intellectual elements be made influential in their training. Naturally the first element which occurs is religious and moral training, but with that the community, as such, has in our society nothing to do. That teaching, as teaching, is forbidden in direct form; we must seek other means to our end. They are at hand in the kind of training which teaches how to be industrious, how to work intelligently; the boy who has learned *to do* something is apt to respect himself as being something.

The type of instruction at the cost of the community, then, in addition to rudimentary "book-learning," should be, as far as possible, *industrial*, both in the technical and in the moral sense of the word.

There seems no good reason why the State systems of public instruction should not include industrial institutions of low grade as well as agricultural and mechanical colleges; nor why these low grade institutions should not be available for each race; nor why some of the public money wasted annually in pushing studies beyond the reasonable limits of instruction at State expense should not be used in fitting the youth of the country for the actual demands of daily life by practical industrial training. If the intelligent among the young negroes could, along with their rudimentary book instruction, acquire the practical information necessary for them to become eventually good carpenters, and cooks, and house-maids, and mechanics, and dairy-maids, and bricklayers, and hostlers, and dining-room servants; could learn something real and tangible about the crops and the soils which they are to cultivate, and the horses, and sheep, and cattle which they are to tend, undoubtedly the public common school would become at once a prolific source of blessing to the country as well as to the negroes themselves, who are essentially an agricultural people. But such a scheme of education, perhaps it is objected, seems to relegate the negro, broadly speaking, to the *peasant* condition. Unquestionably it does, and rightly and wisely does; or rather it *recognizes this his actual condition as his proper condition*. His proper condition, if he is incapable of rising above it; and his proper condition, too, if his future be great. For it is impossible to imagine that the negro race, as a race and not as individuals, is to escape or ought to escape the burden which has been borne by every people in the history of the world who have achieved a commanding position. That he will be helped and favored beyond any other race in his struggle to make the most of himself, by being under the influence and protection of a people far in advance of his own, is evident. That he should be exempt from working out his own race-salvation himself, is neither to be expected nor to be desired. Our forefathers did this very thing for hundreds of years and lifted themselves gradually, by dint of the strength and virtues slowly acquired during that long time; our blood kin are doing this very same thing to-day in this very country, in England, Scotland, Ireland, Holland, and Germany.

King Alfred set his subjects the example of labor with hand and brain; William Shakespeare worked for his living; Ben Jonson was a bricklayer; John Bunyan was a roving, half-starved tinker; stalwart John Smith toiled and bled for the Virgin Land; George Washington worked for years surveying trackless forests; Abraham Lincoln manled rails. It is in the sweat of such men's brows that our race has earned the bread upon which it has grown so great. For the negro race to escape this probation would mean to condemn them to rapid lapse back to barbarism, perhaps to extermination at the hands of the whites. Unless they know how to work and do work, their destruction seems a natural consequence. The history of the American Indians makes further insistence on this point unnecessary.

Freedom has usually been earned slowly, at the cost of such toil and blood as, in comparison, would laugh to scorn the worst features of American slavery. In this case, freedom came as a sudden gift, and in a way tending to disturb, if not destroy, character. Therefore let the negro race prove itself worthy of freedom by earning it over again, yet without ever again losing it. No amount of philanthropic good-will can do for them what they alone can do for themselves; but good-will and wise guidance can and should give them the help and encouragement not inconsistent with the principle of self-help. Some of the negro's

worst enemies have been among his most unselfish but misguided friends. In the education of a people the blunder as to *method* is usually fatal for the generation which makes it, though reaction is possible, and blunders many and weighty have been made about this people. I pause to note a brilliant exception. Not among the blunderers stands General S. C. Armstrong, of the Hampton Normal Institute in Virginia, who, so far as my information goes, is doing a more excellent work for and with the negroes than any man in the South. He teaches them to study, and he teaches them to work, and to respect themselves because they have duties and recognize them and perform them. It is a pleasure to refer to him and to his sensible and successful methods.

In this light alone does the solution of the negro problem look hopeful; that is to say, by means of a system of education confined, for the masses, to rudimentary instruction in text-books, supplemented by such instruction and training in industrial handicrafts, in real *work*, as will be practical and effective for the individual and for the community. This, of course, need not exclude provision for those proving themselves, capable of higher things. But private enterprise and philanthropy will provide for that, should the State not do so. That has been the history of education in this country, so far, and will continue to be<sup>1</sup>.

It is by this means alone, further, that there can be formed, soon enough, a "better class," an "upper society," among the negroes themselves, who will become the natural leaders of their race, as has been the case with other races in the past. To the formation of this "better class" foreseeing men are looking with hope as the means of averting trouble and disaster between the two races.

As long as the negroes follow the lead of designing, selfish white men, so long must the antagonism of conflict continue, and so long must the negroes be thrown back upon their own race instincts and upon what is worst in the civilization of the whites. That is most unfortunate for them. Such a better class implies property, intelligence, and the sense of responsibility accompanying them. Under its lead the negro race will become more and more American and less and less African, since the very fact of the existence of these native leaders will show that they have themselves attained the white man's standpoint in attaining and successfully maintaining their own position. Led by this class, helped by the whites, the negro race may hope for the attainment of ideals homogeneous, perhaps identical, with those of the Anglo-American rulers of this country; not well otherwise; nor otherwise does harmonious co-existence of the two races seem probable. The formation of that class means the partial solution of the negro problem.

The history of the United States is that of a tremendous experiment in government, and on an enormous scale. The negro element is in itself a vast experiment in civilization, and its presence renders the general experiment much more complicated and difficult. It is the single element in our population containing dangerous tendencies which are *distinctly race tendencies*. The Indians are too few to affect us materially. The American-born child of European immigrants is, generally speaking, an American, the difference of race not being marked enough to prevent such rapid absorption. Not so with the negroes of

<sup>1</sup> The Report of the Commissioner of Education for 1882-'83 shows fifty-six normal schools, forty-three institutions for secondary instruction, eighteen universities and colleges, and twenty-four schools of theology, for the exclusive benefit of the negro race, which have been established and are supported by private persons or associations. That enumeration does not include the million-dollar Slater Fund, nor other large contributions made since the report was compiled.

the southern States. Race, previous condition of servitude, ingrained habits, all tend in the other direction. And besides, amalgamation under existing conditions would be most disastrous to both races. The peaceful solution of the problem depends upon the partial destruction of the inherited African spirit, by its absorption into the American spirit—upon the firm establishment of American race ideals as the common standard for all Americans, white and black, in the practical needs of life and of citizenship. That process is now going on; to hasten it is most desirable. For the completion of that process, lapse of time is necessary, and earnest, persistent, sober adaptation of means to the end in view, as contingencies may arise.

The limitations of the discussion of Race in Education in this paper, it will be seen, are twofold: as to the States representing the white race, the assumption that it should give the negroes rudimentary instruction and industrial training; as to the negro, the assumption that, as a race, he should not be carried forward in mere intellectual instruction too fast. These limitations are arbitrary; they are in fact a compromise between the whole public and a part of it. They do not possess that logic of system so dear to the theorist. But it is believed that the ideas herein set forth are thoroughly in accord with the method of our Anglo-American race, which has ever shown its wisdom in dealing with great questions by recognizing plainly that life is not logic, either for the state or for the individual. The history of England and of the United States is one long succession of compromises between social theories and principles, either made to avoid impending logical results or brought about by means of these logical results. This paper moves, then, in the national course of procedure which is tentative, which would allow the race element time and opportunity to do its own work. That only is true liberty which is developed freely by a race itself. It cannot be made to order at once by a proclamation, by a school system, or by anything else; but it can be cultivated, helped forward, educated. The actual liberty of the negro is not true liberty, not American liberty. The proper education which will cultivate in him this true freedom, and at the same time train him to meet all its requirements, to use it and not to abuse it—that is a great part of the greatest problem before the American people to-day. To quote the language of a great thinker:

You are undertaking the greatest political experiment that has ever been performed by any people whatever. You are at this present centenary a nation of forty millions of people. At your next centenary rational and probable expectation may look to see you two hundred millions, and you have before you the problem whether two hundred millions of English speaking, strong-willed people will be able to hold together under republican institutions and under the real despotism of universal suffrage; whether States' rights will hold their own against the necessary centralization of a great nation, if it is to act as a whole, or whether centralization will gain the day without breaking down republican institutions. The territory you cover is as large as Europe, as diverse in climate as England and Spain, as France and Russia, and you have to see whether with the diversity of interests, mercantile and other, which arise under these circumstances, national ties will be stronger than the tendency to separation; and as you grow and the pressure of population makes itself manifest, the spectre of pauperism will stalk among you, and you will be very unlike Europe if communism and socialism do not claim to be heard.

Great will be your honor, great will be your position, if you solve [the problem] righteously and honestly; great your shame and misery if you fail. But let me express my most strong conviction that the key to success, the essential condition to success, is one and one only: that it rests entirely upon intellectual clearness and upon the moral worth of the individual citizen. Education cannot give intellectual clearness. It cannot give moral worth, but it may cherish them and bring them to the front.



Let every lover of our country take earnestly to heart Professor Huxley's words of wisdom.

Education, intellectual and moral, is the greatest need of a free, self-governing people. But it must be education adapted to the conditions of the people's life. When these conditions change the type of popular education can be changed or enlarged. One-sided or over-hasty intellectual growth is dangerous. Semblance becomes mistaken for substance. The negroes are essentially an agricultural race. Their education should proceed in accordance with that fact. Thereby will they be enabled to rise most surely to whatever attainment their race may be capable of under its very advantageous surroundings. Their education at present ought to be chiefly agricultural and industrial; such education must be to them power and not a delusion. Unfortunately, as a class, they already regard the mere smatterings of primary tuition, the simple going to school, as education. Let us beware of setting up for them a "fetich" to worship in mere school instruction, especially now just as our institutions in the higher education seem, under the wise lead of Washington and Lee University in Virginia, and of Harvard University in Massachusetts, on the point of breaking away from the too exclusive worship of the "college fetich," by substituting for it the cultivation of our mother tongue and of the sciences which prop civilization.

In conclusion, the point of view of this paper is American; it is neither Southern nor Northern, for educational questions know no such territorial limitations; and it is believed that the views herein set forth are in consonance with the present imperative needs of American popular institutions. Plain language has been used to make plain statements, not to imply censure nor to make harsh criticisms. The aim of the paper is educational, not controversial; to elicit truth, not to make a point; to avoid a race conflict, not to stir up strife. If anything contained in it should be found helpful in furthering the great interests which have called us together from so many parts of our common country, the purpose of its writing will be fulfilled.

# MEMORANDUM RESPECTING SIMULTANEOUS AND UNIFORM EXAMINATIONS UNDER REGULATIONS OF THE EDUCATION DEPARTMENT FOR THE PROVINCE OF ONTARIO, CANADA.

BY ALEXANDER MARLING, LL. B.,

*Secretary to the Education Department, Ontario, Canada.*

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In the Province of Ontario there are uniform and simultaneous examinations in the literary and scientific course required as a condition of obtaining certificates of qualification to teach in the public (or elementary) schools.

The candidates who pass these are eligible for admission to training schools, and after a period of such attendance they are examined chiefly in the branches that are more distinctly professional, their ability to teach the several subjects of a public school course being also practically tested.

The certificates granted are of Class III (lowest), Class II, and Class I.

The preliminary or non-professional examination is held annually in July. The question papers are prepared by a central committee of examiners appointed by the provincial Government on the recommendation of the Minister of Education, the present committee consisting of Prof. G. P. Young, of University College, Toronto, as Chairman, the inspectors of normal and high schools, and certain inspectors of public schools.

Suitable regulations are made for the conduct of the examinations, the presiding examiner for Class II and Class III examinations in each locality being a public school inspector or a substitute approved by the Minister. The papers are confidentially printed in the Education Department and transmitted to the several inspectors, who conduct the examinations at about one hundred centers. The place of examination is usually a high (secondary) school, the candidates being generally prepared at those institutions. The duty of the local examiner is simply to receive and distribute the papers, to preside, to enforce the observance of the regulations, and to transmit the answers to the Education Department in Toronto. The answers are then referred to the committee, assisted by about forty sub-examiners, also appointed on the recommendation of the Minister.

If a candidate is reported by the committee to have passed this examination, he is awarded a preliminary certificate of Class II or Class III, which does not, however, allow him to undertake teaching until he has been trained and examined at the county model school, and received his full (or professional) certificate.

Those awarded Class II at the non-professional examination are exempted from further examination in these subjects as a preliminary condition of admission to the provincial normal school, to be trained for the Class II professional (or full) certificate; but they are required, as well as the Class III candidates, to undergo training and examination before the local examiners at the county model school, for the Class III

(full) certificate, and like them must also teach a full year before being eligible to go into training for the second class provincial certificate.

The scope of the preliminary examination above described is as follows:

### *Requirements for the third-class non-professional examination.*

*Reading, oral.*—To read with proper expression, emphasis, inflection, and force.

*Reading, principles of.*—A general knowledge of the principles of elocution, with special reference to pronunciation. Candidates will do well to consult Ayres' Orthoepist.

*Writing and bookkeeping.*—In writing, to be able to write neatly and legibly—a round hand preferred; in bookkeeping, single and double entry, commercial forms, general business transactions.

*Spelling.*—To be able to write correctly a passage dictated from any English author, and to spell all non-technical English words.

*Grammar.*—To be thoroughly acquainted with the definitions and grammatical forms and rules of syntax, and to be able to analyze and parse, with application of said rules, any sentence in prose or verse.

*Composition and practical English.*—The framing of sentences. Familiar and business letters. Rendering of poetry into prose. Themes, synonyms, and correction of errors. Consult Ayres' Verbalist.

*History.*—To have a good knowledge of the leading events of Canadian and English history.

*Geography.*—To have a fair knowledge of political, physical, and mathematical geography. Map geography generally; Canada and the British Empire more particularly.

*English literature.*—The critical reading of such works as may be prescribed from time to time by the Education Department. (For 1885: *Scott*—The Lady of the Lake, with special reference to Canto V; *Irring*—Rip Van Winkle.)

*Arithmetic and mensuration.*—To be thoroughly familiar with arithmetic in theory and practice. Areas of rectilinear figures, and volumes of right parallelepipeds and prisms. The circle, sphere, cylinder, and cone. Mental arithmetic (consult Mental Arithmetic by McLellan, Part II.)

*Algebra.*—Elementary rules; factoring; greatest common measure; least common multiple; fractions; simple equations of one, two, and three unknown quantities; simple problems.

*Euclid.*—Book I, with easy problems.

*Physics.*—To be acquainted with the elements of physics as treated in Huxley's Introductory Science Primer and Balfour Stewart's Science Primer.

*Drawing.*—Freeland, practical geometry, perspective, and industrial designs.

Candidates taking music will be allowed a bonus not exceeding 75 marks, which will be added to the aggregate of marks obtained in the obligatory subjects; such candidates will also be allowed to take, as an additional bonus subject, one—but not more than one—of the following: Botany, 75 marks; or Latin, or French, or German, each 150 marks.

For third class (1885) the work in Latin will be Cato Major; in German, Belagerung Von Antwerpen; and in French, Lazare Hoche, omitting Chapters VII and VIII. In each of the languages an easy paper in grammar and composition will be set. Music and botany, the same as for second class. The work in botany will be the same as last year's work.

For the third-class non-professional examination the marks assigned shall be as follows:

	Value.	Minimum required.
1. { Reading, oral .....	50	25
1. { Reading, principles of .....	50	20
2. Writing .....	75	20
3. English Grammar .....	150	45
4. English Literature .....	150	45
5. Composition and Practical English .....	100	35
6. Dictation .....	50	20
7. Arithmetic and Mensuration .....	150	45
8. Mental Arithmetic .....	75	20
9. Algebra .....	100	25
10. Euclid .....	100	25
11. History, English and Canadian .....	100	25
12. Geography .....	100	25
13. Drawing .....	75	20
14. Bookkeeping .....	75	20
15. Physics .....	75	20

*Requirements for the second-class non-professional examination.*

Candidates writing for *second-class certificates* will take the following course, as well as that required for third class:

*Composition and practical English.*—Candidates may consult Hodgson's *Errors in the Use of English*.

*Algebra.*—Elementary rules; factoring; elementary notions on symmetry, with easy applications; greatest common measure; least common multiple; square root; fractions; surds; simple equations of one, two, and three unknown quantities; easy quadratics; problems.

*Euclid.*—Books I and II, with easy problems.

*Chemistry.*—Combustion. The structure and properties of flame. Nature and composition of ordinary fuel.—The atmosphere. Its constitution. Effects of animal and vegetable life on its composition.—Water. Chemical peculiarities of natural waters, such as rain-water, river-water, spring-water, sea-water.—Hydrogen, oxygen, nitrogen, carbon, chlorine, sulphur, phosphorus, and their more important compounds.—Combining proportions by weight and by volume. Symbols and nomenclature.

*Physics.*—The same as for third class, with the addition of statics and hydrostatics.

## OPTIONAL SUBJECTS FOR SECOND CLASS.

*Music.*—Normal music course, Part II.

*Latin.*—The accidence and the principal rules of syntax and prosody; exercises; re-translation into Latin of easy passages; portions of works in prose and verse as prescribed from time to time.

*French.*—The accidence and the principal rules of syntax; exercises; French authors as prescribed from time to time; rudiments of conversation.

*German.*—The accidence and the principal rules of syntax; exercises; portions of German authors, as prescribed from time to time; retranslation of easy passages into German; rudiments of conversation.

Candidates taking music will be allowed a bonus not exceeding 75 marks, which will be added to the aggregate of marks obtained in the obligatory subjects; such candidates will also be allowed to take, as an additional bonus subject, one—but not more than one—of the following: Botany, 75 marks; or Latin, or French, or German, each 150 marks.

The following option will be allowed at the examination in 1885 only, viz: Candidates for second-class certificates may take Latin, or French, or German, *instead of* chemistry, statics, and hydrostatics. These languages, if taken as *options*, cannot, of course, be reckoned as *bonus* subjects. In all languages, papers in grammar and composition will be set.

Latin (1885): *Cicero*—Cato Major; *Ovid*—Fasti, B. I., vv. 1-300. French (1885): *Bonnehove*—Lazare Hoche. German (1885): *Schiller*—Belagerung Von Antwerpen, Der Tancher.

For the second-class non-professional examination the marks assigned shall be as follows:

	Value.	Minimum required.
1. { Reading, oral .....	50	25
2. { Reading, principles of .....	50	20
3. Writing .....	75	20
4. English Grammar .....	200	75
5. English Literature .....	200	75
6. Composition and Practical English .....	150	85
7. Dictation .....	50	20
8. Mental Arithmetic .....	75	20
9. Arithmetic and Mensuration .....	200	75
10. Algebra .....	150	45
11. Euclid .....	150	45
12. History, English and Canadian .....	100	25
13. Geography .....	100	25
14. Drawing .....	75	20
15. Book-keeping .....	75	20
16. Physics .....	150	40
17. Chemistry .....	75	20

*Non-professional Examinations.*

The results for the last three years were as follows :

Years.	Examined.	Passed.			Inter-mediate. <sup>1</sup>	Failed.
		II A.	II B.	III.		
1882.....	3,090	230	951	452	None.	1,457
1883.....	3,901	98	279	1,205	1,264	1,055
1884.....	5,128	414	657	860	1,676	1,521

<sup>1</sup> Same examination as Class III, but lower percentage.

Candidates for Intermediate were not passed as teachers. This grade is now discontinued.

The candidate is required to pay a fee of \$2 for each examination, *i. e.*, if he tries for both II and III he will pay \$4, which is to be applied towards the expenses of the examination.

One effect of the introduction of this system of examination has been to stimulate and give more definite direction to the work of the high schools, in consequence of the fact that so many of the intending candidates have resorted thither for instruction, the high-school course of study being constructed upon much the same lines as the literary course for teachers. Another effect is that a more thorough preparation and a more strict and impartial judgment of the merits of the papers have upon the whole been obtained than upon the old system of leaving the examination of teachers entirely to the local authorities. It is to be feared that no system of examination is without its drawbacks, or can provide such a perfect test as will always ascertain who is worthy, and some unfortunate results undoubtedly arise in individual cases. A provision is, however, made for an appeal and reconsideration in the case of any unsatisfied candidate, who may pay a fee of \$2 and have his papers re-examined. If he succeed his fee is returned; otherwise it goes to the provincial revenue. Any special case of hardship, if reported to the Minister of Education, is made the subject of inquiry, and redress so far as possible is secured.

In the preparation of papers, the precautions are taken, (1) of securing experienced and highly qualified men on the committee; (2) that each paper is approved by two members of the committee, and any doubtful matters may also be brought before the whole committee by the chairman, before the papers are reported to the Minister of Education, who may require them to be further reviewed if he sees fit; (3) the best security against fraud is obtained by the papers being printed at the Department.

It may be added that the teachers' non-professional examination is used as the matriculation examination for medical students by the Provincial College of Physicians and Surgeons, and *quoad* the subjects it embraces, it is also accepted for matriculation in certain of the universities.

In the case of the professional examination for the full Class III certificates at the county model or training schools, it has not been the practice to aim at such a complete uniformity as in the literary examination, each county board of examiners (themselves experienced teachers) be-

ing allowed liberty of action within the limits of the prescribed subjects, viz :

Education—methods.  
Education—theory.  
Governing Power.  
Teaching Power.  
Manner.

Physiology and Hygiene.  
School Law.  
Music.  
Drill.  
Drawing.

The only papers sent from Toronto for these examinations are in the subjects of, education—methods, education—theory, school law, physiology, and hygiene, and the answers are read and valued by the county boards. As the training at all the county model schools is based on a certain course laid down for them, the several examinations at the close of the session are of as uniform a character as is perhaps desirable.

The examination for the professional or full second-class certificate takes place at the close of each session of the provincial normal schools. There are two of these schools—one at Toronto, the other at Ottawa. There are two sessions of five months' duration annually. In addition to testing the candidate's aptness in teaching, in connection with the report given of him by the teaching staff, the examiners require answers to papers in the subjects of education, psychology, botany, practical English, arithmetic—methods, arithmetic—mental, reading—methods, chemistry, physics, grammar—methods, literature, algebra—methods, music, drawing, writing, and bookkeeping.

These papers are prepared and printed in the same manner as previously mentioned.

Candidates for first-class certificates are also examined on uniform papers, but the examination is conducted at the normal schools in July annually. The candidates may either take the whole examination on one occasion, or may take the literary course one year, and the remainder or more professional subjects in a subsequent year. Formerly the normal schools provided for the instruction and training of first-class candidates, but this has not been the case in recent years. The candidates at present are prepared chiefly at the high schools or collegiate institutions, and no professional training is provided in addition to what they have already received in securing their third- and second-class certificates, the possession of which, however, is one of the necessary conditions of their obtaining the first-class professional certificate. A project is under consideration for securing a more thorough professional training for this class of certificate.

#### FIRST-CLASS EXAMINATION.

The non-professional examination for Grade C will be limited as follows :

##### *English Language and Literature.*

*Grammar.*—A thorough acquaintance with the subject will be required.

*Composition.*—Candidates will be required to show, by passing an examination on this subject, and by the character of their answers in other subjects, that they are in the habit of writing the English language correctly.

*Literature.*—Candidates will be required to have a general acquaintance with English literature and its history, and a fuller knowledge of special eras and authors to be prescribed from time to time by the Department.

##### *English Literature :*

*Shakespeare*—Coriolanus.

*Scott*—The Lady of the Lake, with special reference to Canto V ; *Irving*—Rip Van Winkle.

### *History and Geography.*

**History.**—A special knowledge of the history of England between 1688 and 1820, as presented in Green's Short History of the English People.

**Geography.**—Political geography of North America, Europe, and the British Empire, with physical geography as treated in Geikie's Primer of Physical Geography, and mathematical and physical geography as treated in Sullivan's Geography Generalized.

### *Mathematics.*

**Algebra.**—Fundamental operations; involution and evolution; resolution into factors; principle of symmetry; theory of divisors; fractions; ratio; proportion and variation; theory of indices; surds; arithmetical, geometrical, and harmonical progression; scales of notation; permutations and combinations; introduction to binomial theorem as far as positive and negative integral exponents; simple and quadratic equations, with relations between roots and coefficients; problems.

**Arithmetic and mensuration.**—The candidate will be required to know the subject in theory and practice; to be able to solve problems with accuracy, neatness, and dispatch; to be familiar with rules for mensuration of surfaces and solids.

**Geometry.**—Euclid, Books I to IV (inclusive), Book VI, and definitions of Book V. Exercises.

### *Elementary Mechanics.*

**Statics.**—Equilibrium of forces acting in one plane; parallelogram of forces, parallel forces, moments, couples, center of gravity, virtual work, machines, friction, experimental verifications.

**Dynamics.**—Measurement of velocities and of accelerations; laws of motion, energy, momentum, uniform and uniformly accelerated motion, falling bodies, experimental verifications.

**Hydrostatics.**—Pressure of fluids, specific gravities, floating bodies, density of gases as depending on pressure and temperature, construction and use of the more simple instruments and machines.

### *Physical Science.*

**Chemistry.**—The examination in this subject will be based on Reynolds' Experimental Chemistry, Parts I and II, and Tilden's Chemical Philosophy.

**Heat.**—Stewart's Elementary Treatise on Heat, third edition.

The limitation for Grades A and B will be as follows:

#### DEPARTMENT OF ENGLISH.

Composition; history and etymology of the English language; rhetorical forms; prosody.

Books of reference: Earle's Philology of the English Tongue; Abbot and Seeley's English for English People; Bain's Composition and Rhetoric, or Hill's Rhetoric; Marsh's English Language and Literature, Lectures VI to XI inclusive.

#### *Literature:*

History of English literature, from Chaucer to the end of the reign of James I. Books of reference: Craik's History of the English Literature and Language, or Arnold's Literature, English edition; Marsh's English Language and Literature, Lectures VI to XI inclusive.

#### *English Literature:*

**Shakespeare.**—Romeo and Juliet.

**Chaucer.**—Prologue to the Canterbury Tales; The Nonne Prestes Tale. **Pope.**—Prologue to the Satires. **Addison.**—The selections from Addison's contributions to the Spectator, made by J. Arnold, under the headings, (1) Manners, Fashions, and Humors; (2) Tales and Allegories (Clarendon Press Series). **Wordsworth.**—Sonnets in Matthew Arnold's Selection. **Macaulay.**—Life and Writings of Addison. Consult "English Men of Letters" on these authors.

#### *History:*

**Greece.**—The Persian to the Peloponnesian War inclusive.—Cox's History of Greece (unabridged).

**Rome.**—From the beginning of the Second Punic War to the death of Julius Cæsar.—Moimmæn's History of Rome.

England.—The Tudor and Stuart periods, as presented in Green's Short History of the English People, Macaulay's History of England (or Franck Bright's History of England, Second Volume), and Hallam's Constitutional History.

Canada.—Parkman's Old Régime in Canada.

*Geography:*

So much ancient geography as is necessary for the proper understanding of the portions of the histories of Greece and Rome prescribed.

DEPARTMENT OF MATHEMATICS.

*Algebra.*—Symmetry, binomial theorem, multinomial theorem, exponential and logarithmic series, interest and annuities, indeterminate coefficients; partial fractions, series (convergence and divergence, reversion, summation), inequalities, determinants as far as in Gross, reduction and resolution of equations of first four degrees and of binomial equations, relations between roots and coefficients of equations, indeterminate equations, problems.

*Analytical plane geometry.*—The point (including transformation of co-ordinates), the right line, the circle, the parabola, the ellipse, the hyperbola, the general equation of the second degree, abridged notation.

*Trigonometry.*—Trigonometrical ratios, general values of angles, functions of sum and difference of angles, multiples and sub-multiples of angles, trigonometrical equations, solutions of triangles, measurement of heights and distances. Inscribed, circumscribed, and escribed circles of a triangle; quadrilaterals; description of vernier and theodolite; trigonometrical and logarithmic tables; Demoivre's theorem.

*Dynamics.*—Moments of inertia, uniform circular motion, projectiles in vacuo, collisions, simple pendulum, experimental verifications.

*Elementary geometrical optics.*—Reflection and refraction of light at plane and spherical surfaces, including prisms and lenses (aberration not considered); the eye; construction and use of the more simple instruments.

The professional examination for all grades of first-class certificates will be the same. Papers will be required on the following subjects:

1. Education, viz: (a) *Education Methods* (the candidate may consult the following works: Teacher's Manual of Method and Organization, by Robert Robinson, Inspector of National Schools, Ireland; Methods of Instruction, by J. P. Wickersham, A. M., Principal of the Pennsylvania State Normal School; Jewell on School Government; Lectures on Teaching, by J. G. Fitch, M. A.). (b) *History of Education* (the following works may be consulted: Essays on Educational Reformers, by Robert Henry Quick, M. A.; Practical Educationists and their Systems of Teaching, by James Leitch, Principal of the Church of Scotland Normal School, Glasgow). (c) *Psychological Foundations of Education* ("Education as a Science," by Alexander Bain, LL. D.; Sully's Psychology).

2. Reading and elocution.

3. Music and drawing.

4. Drill and calisthenics.

Candidates for first-class certificates at the non-professional examination must make fifty per cent. for grade C, sixty per cent. for grade B, and seventy per cent. for Grade A, of the aggregate marks attainable on all subjects.

*Professional (Teachers') Examinations.*

The results for the last three years were as follows:

Year.	Certificates granted.		
	<i>I Class.</i>	<i>II Class.</i>	<i>III Class.</i>
1882.....	7	830	837
1883.....	80	458	791
1884.....	38	422	1,017



## HIGH SCHOOL ENTRANCE EXAMINATIONS.

The examinations for admission to the high (secondary) schools are also conducted on a uniform and simultaneous system, the papers being prepared by the central committee, confidentially printed and sent to the high schools, where examinations are annually held in June and December. The answers are not valued in Toronto, but by the local examiners, a board for this purpose being constituted as follows:

Public school inspector of the county or district.

Public school inspector of the town.<sup>1</sup>

Head master of the high school or collegiate institute.<sup>1</sup>

Chairman of the high school board.

Chairman of the public school board.

Chairman of the separate school board.<sup>1</sup>

But although the results are thus determined, they are subject in any case to disallowance, and the answers are accordingly sent to the Department in Toronto with the report of the examiners thereon. Any tendency to laxity in the examination is thus checked.

The scope of the examination is as follows:

*Orthography and orthoepy.*—The pronunciation, the syllabification, and the spelling from dictation, of words in common use. The correction of words improperly spelt or pronounced. The distinctions between words in common use in regard to spelling, pronunciation, and meaning.

*Writing.*—The proper formation of the small and the capital letters. The candidate will be expected to be able to write neatly and legibly. The special examination will be of a practical character.

*Arithmetic.*—Principles of Arabic and Roman notation; vulgar fractions; decimal fractions; simple proportion, with reasons of rules; elementary percentage and interest; mental arithmetic.

*Grammar.*—The sentence: its different forms. Words: their chief classes and inflections. Different grammatical values of the same word. The meanings of the chief grammatical terms. The grammatical values of phrases and of clauses. The nature of the clauses in easy compound and complex sentences. The government, the agreement, and the arrangement of words. The correction, with reasons therefor, of wrong forms of words and of false syntax. The parsing of simple sentences. The analysis of simple sentences into the subject and its adjuncts, the predicate and its adjuncts, the predicate object and its adjuncts.

*Composition.*—The nature and the construction of different kinds of sentences. The combination of separate statements into sentences. The nature and the construction of paragraphs. The combination of separate statements into paragraphs. Variety of expression, with the following classes of exercises: Changing the voice of the verb; expanding a word or a phrase into a clause; contracting a clause into a word or a phrase; changing from direct into indirect narration, or the converse; transposition; changing the form of a sentence; expansion of given heads or hints into a composition; the contraction of passages; paraphrasing prose or easy poetry. The elements of punctuation. Short narratives or descriptions. Familiar letters.

*Geography.*—The form and the motions of the earth. The chief definitions as contained in the authorized text-book: divisions of the land and the water; circles on the globe; political divisions; natural phenomena. Maps of America, Europe, Asia, and Africa. Maps of Canada and Ontario, including the railway systems. The products and the commercial relations of Canada.

*Drawing.*—Candidates for examination must place their drawing books in the hands of the presiding examiner on the morning of the first day of the examination. Every exercise must be certified by the teacher as being the candidate's own work, and should show his progress during, at least, three months. Examiners should inspect the books, and return them to the candidates on the evening of the second day. An additional paper on drawing will be submitted.

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<sup>1</sup>These three constitute the examining board in cities and towns separated from the county; for other places, where there are the six officials named, they will be the examiners.

**History.**—The outlines of English and of Canadian history; how England, Canada, and Ontario are governed; the municipal institutions of Ontario—all as contained in a History Primer, to be authorized by the Education Department about August, 1875. Until then the examination on this subject will be confined, as heretofore, to the outlines of English history.

**Reading.**—A general knowledge of the elements of vocal expression, with special reference to emphasis, inflection, and pause. The reading, with proper expression, of any selection in the Reader authorized for Fourth Book classes. The passage or passages for each examination will be selected by the Department. The candidate will, in addition, be expected to satisfy the examiners that he reads *intelligently*, as well as *intelligibly*.

**Literature.**—The candidate will be required to give for words or phrases, meanings which may be substituted therefor without impairing the sense of the passage; to illustrate and show the appropriateness of important words or phrases; to distinguish between synonyms in common use; to paraphrase difficult passages so as to show the meaning clearly; to show the connection of the thoughts in any selected passage; to explain allusions; to write explanatory or descriptive notes on proper or other names; to show that he has studied the lesson thoughtfully, by being able to give an intelligent opinion on any subject treated of therein that comes within the range of his experience or comprehension; and especially to show that he has entered into the spirit of the passage, by being able to read it with proper expression. He will be required to quote passages of special beauty from the selections prescribed, and to reproduce in his own words the substance of any of these selections, or of any part thereof. Some knowledge will also be expected of the authors from whose works these selections have been made.

*Valuation of the answers.*

Reading .....	50	Grammar .....	100
Writing .....	50	Geography .....	75
Orthography and orthoepy .....	50	Composition .....	100
Literature .....	100	History .....	75
Arithmetic .....	100	Drawing .....	50

Total, 750; minimum for pass, 375.

One-third of the maximum of the marks on each paper is also required.

N. B.—(1) Of the marks for writing, 15 will be assigned to the paper on that subject, and a maximum of 5 marks may be assigned for *writing* and *neatness* in each of the following papers: Orthography and orthoepy, literature, grammar, arithmetic, geography, composition, and history.

(2) The 50 marks for orthography and orthoepy will be assigned to the paper on that subject; but in valuing the answers in literature, grammar, geography, composition, and history, one mark is to be deducted for *every* mistake in spelling. Such misspelt words are to be indicated by the examiner on the candidate's papers.

(3) Of the marks for composition, 70 will be assigned to the paper on that subject, and a maximum of 15 to history, and of 15 to literature.

(4) Of the marks for drawing, 25 will be assigned to the paper on that subject, and a maximum of 25 may be awarded as the result of the inspection of the candidate's drawing book.

(5) In examining in reading, the local boards will pay special attention to the following: Pronunciation, emphasis, inflection, and pause.

(6) As in the case of the Fourth Book and Spelling Paper for December, 1884, the value of the correct answers to the questions set on each paper will exceed the maximum prescribed above, except on writing, reading, and orthography and orthoepy. But the papers will be so constructed that a well-prepared candidate may obtain the prescribed maximum within the given time.

The object of the preceding regulation is to allow the departmental examiners to present a greater variety of questions, and thereby to enable the candidate to show more readily than heretofore whether he is in a condition to profit by a high school course.

Except in the matter of providing the examination questions, the cost of this examination is thrown upon the local authorities.

The effect of this examination is reported to be beneficial in infusing life and spirit into the teaching of the public (or elementary) schools, from which by far the greater portion of the candidates for admission to the high schools is drawn. The examination gives the same stimulus to the public schools as the teachers' examination gives to the high schools. In both cases the examination marks the limit beyond which comparatively few of the pupils of the school are taken, although both in the high and public schools a more complete course is provided for and accomplished in the more important towns.

The successful candidates at these entrance examinations receive a certificate.

The results for the last three years were as follows:

Month and year.	Number of candidates.	Passed.
December, 1881 .....	4,522	1,947
June, 1881 .....	5,293	2,804
December, 1882 .....	4,300	1,820
June, 1882 .....	5,307	2,551
December, 1883 .....	5,000	3,921
June, 1883 .....	5,662	3,119
June, 1884 .....	6,286	2,987

## HOW SHALL WE AMERICANIZE AND CHRISTIANIZE THE INCOMING TIDE?

BY D. A. LONG, A. M.,

*President Antioch College, Yellow Springs, Ohio.*

*Mr. President*—This I regard the question of the hour. An un-Americanized and un-Christianized voter threatens the Republic.

"AMERICAN. A native of America;—originally applied to the aboriginal inhabitants, but now applied to the descendants of Europeans born in America; and in a restricted sense to the inhabitants of the United States." (Webster.) It is in this restricted sense that I shall consider the subject.

Webster quotes Washington on the same page: "The name American must always exalt the pride of patriotism." Then he quotes Bartlett as saying:

"AMERICANIZE. To render American; to naturalize in America."

Worcester quotes Jackson, the hero of New Orleans:

"AMERICANIZE. To render American; to naturalize in America."

An alien may be naturalized after living in this country five years. Naturalization and the right to vote are separate matters.

"Christianity," says Bouvier (page 312), "is the religion established by Jesus Christ." "Christian," says Webster, "is especially one whose inward and outward life is conformed to the doctrines of Christ." "Christianize, to imbue with Christian principles." Worcester, page 239, says, "To Christianize (from the Greek *χριστιανίζω*; Latin, Christianizo; French, Christianiser) is to render Christian; to convert to Christianity; as to *Christianize* heathen nations."

If the Christian Church were not divided, the union of Church and State would be inevitable. Until men shall cease to say, "Behold how good and how pleasant it is to see brethren dwell separate and apart in sects and divisions," I think it is better for the Church and State to remain separate.

The common law of all the States, except Louisiana, is taken from the common law of England. Archbishop Whately, in his preface to the "Elements of Rhetoric," says, "It has been declared by the highest legal authorities that Christianity is part of the law of the land, and consequently any one who impugns it is liable to prosecution."

The meaning of Chief Justice Hale, to whom the learned Bishop refers, cannot be expressed more plainly than in his own words. An information was exhibited against one Taylor, for uttering blasphemous expressions too horrible to repeat. Chief Justice Hale observed that "such kind of wicked, blasphemous words were not only an offense to God and religion, but a crime against the laws, state, and government, and therefore punishable in the Court of King's Bench. For to say religion is a cheat, is to subvert all those obligations whereby civil society is preserved." (Ventr., 293; Bouvier, 313.)

Although we have no established church, our fathers declared that "all men were created." A great part of the securities of the legal

system of our Federal Union consists in judicial and official oaths sworn upon the Gospels.

Christianity has been judicially declared to be a part of the common law of Pennsylvania (11 S. and R., 394), of New York (8 Johns., 291), of Connecticut (2 Swift, System, 321), and of Massachusetts (7 Dane, Abr. c. 219, a 2, 19). To write or speak contemptuously and maliciously against it is an indictable offense (Cooper, Libel, 59, 144). I think a law to prevent the employment of profane school-teachers would do more to Christianize the "incoming tide" than all the laws forbidding the people to speak against Christianity. It is a pitiful sight to see a human being speaking against the religion of the only One who can save him; it is pitiful to hear a man talk who does not know that religion is retarded more by the inconsistencies of its professed followers than by the bitter assaults of its professed enemies; it is sad, too, to see our young graduates, with a little smattering of science, hurrying for the professor's chair, or rushing into the pulpit in order to demolish Mill, Tyndall, and Huxley. The words of Coleridge in regard to the great teachers and divines of the seventeenth century are worth repeating as the nineteenth draws to a close:

They were not ashamed of the learned discipline to which they had submitted their minds under Aristotle and Tully, but brought the purified products as sacrificial gifts to Christ. They baptized the logic and manly rhetoric of ancient Greece. They made incursions into every province of learning, and returned laden with the choicest plunder. The scheme of the philosopher, the narrative of the historian, the vision of the poet, were all rendered subservient to the one predominant object of their researches; the gold of idolatrous shrines was transmuted into a pure ore by their spiritual alchemy.

When our teachers and preachers are thus consecrated, the questions in regard to how the incoming tide is to be Christianized will be answered.

I wonder if unbelief was not thoroughly organized in the Jewish Church when Christ was on earth? Will any man deny that the logic of the philosophers of two thousand years ago was not about as keen, subtle, bold, and commanding the attention of the intellectual elements of society and the best reasoners of the world, as any of to day? A speculative philosopher might spend much time in proving that man has a soul. Yet I defy any man to point to chapter and verse where Jesus undertook to prove that man has a soul, and that his soul is immortal. He appealed to consciousness. He roused the proud reasoner who was demanding proof and looking for signs when he said, "What shall it profit a man if he gain the whole world and lose his own soul?"

I am glad to say that the United States has never had an infidel President; some of them were profoundly religious men. Our Christian philanthropists have built hospitals, asylums, alms-houses, and orphanages, for the relief of all conditions of suffering, and this work is being pushed forward more energetically at present than ever before. This will have a mighty influence towards Christianizing the incoming tide. Evolution, with cold brow, book in hand, and an air of superior wisdom, carefully notes the "survival of the fittest" in the struggle for existence. I like that very well. Christianity modestly goes to work to "make something more fit to survive." I like that still better. The Christian Church has organized institutions of learning from Chicago to New Orleans, from Boston to San Francisco. That is very good. Infidelity has founded and endowed one college, so far as I recollect, Girard College. That is very good, too, as far as it goes.

Again, when we speak of Christianizing the incoming tide, we must remember that the United States has received not only the immigrants

from other lands, but it has been the recipient of their ideas. If we strike out the history of any prominent nation, our history would be changed. Some of our hymns were first heard in Arabia and Judea; our religion is from Palestine; the disciples were first called Christians at a city in Upper Syria, on the banks of the Orontes; Spain was led by the sailor from Genoa to open up America to emigration; the lily of France was with the star spangled banner at Yorktown; old England gave us our system of representative government; our jurisprudence is principally from Rome; our arts are from Greece; our maritime code was taken principally from Russia; and in searching out the roots of many of the best words of the language we speak we are carried back to India.<sup>1</sup> "As the reciprocal relation between God and humanity constitutes the unity of our race," our country stands to-day, in my humble opinion, not only the most desirable that the sun shines on, but nearer the realization of the unity of the human race. Schools are cheaper than standing armies.

As the "incoming tide" from foreign lands is so great, the statesman may well ask, is there any one efficient source of influence in our country which is naturally calculated to heal those antipathies and animosities that separate the rich from the poor, to act as a check upon those sectarian jealousies that divide us as Christians and break down those distinctions of language and nationality that arise from the different European races composing our population, so as to bind us all together in the bonds of a common brotherhood? I answer, yes. These bitter waters are healed at the fountain-head, by casting the salt of a common education, a common patriotism, and a common Christianity into our common schools. Here the white and black children have equal privileges in separate schools. They work harmoniously. This is better than to undertake to conduct common schools with the two races in the same house.

We should love the common school because it is intensely American. The pathology of drunkenness will soon be taught in all our free schools. Then will the children of America understand more fully that whisky and the religion of Christ do not hitch horses at the same rack.

From the inception of the common school down to 1885, in every stage of its progress, amid the storm and tempests that have attended the mutations of political parties, amid the rancor of theological controversy and the heat of war and religious excitements, our common-school system has moved quietly and majestically along from the smallest beginnings to the present magnificent proportions; its blessings falling upon the children of all colors, all nationalities, "like the dew of heaven," upon the high and low, rich and poor, Catholic and Protestant, "without prejudice and without partiality."

There is another incoming tide. The haggard superstition of the West is sending out its apostles of lust all over the world. Blind in-

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<sup>1</sup> If we look to the negro blessed through slavery in being brought in contact with the Anglo-Saxon until he learned to speak a better language, to use the implements of civilization, to worship the true God, then to have the manacles taken from his hands, the shackles from his feet, the toga of manhood placed on his dark body, and the rights of citizenship flash through his soul, we realize that Africa is represented. Two hundred and fifty years of servitude proved to be both a schooling and a protection to the African. Every Christianized American is glad that the African is free. What two hundred and fifty years of freedom may do for the African is an unsolved problem. He is more prolific than the Saxon. Here is an "incoming tide" that must be educated and Christianized or there will be a war of races,

Which will result in one  
Disappearing with the setting sun.

deed must be the American citizen who does not see that heroic treatment is necessary, and the sooner it is applied the better.

### *Trades Unions.*

I am aware that united action is, in many cases, the best and most effective means for labor to secure fair terms in dealing with capital, and apart from the outrages sometimes perpetrated in the name of the unions, I find nothing to call for reprobation. Yet it should not be forgotten that labor and capital when in conflict are in an unnatural state; harmony is their true relation. These unions started in England about fifty years ago merely as benefit societies. They are an exotic on our soil; their strikes are generally in the hands of persons of foreign birth, who have only become Americanized in name. The way to Americanize them is to teach them that there is really no need of them in a country where the land is not entailed, where every man can leave the workshop and become a farmer, where social and political prestige is on the side of the laborer, and numbers more than on that of the capitalist.

America invites the oppressed, the lovers of civil and religious liberty, of every land, to her hospitable shores. Many are coming who have graduated from the dynamite school of yellow-covered literature. They take shelter under the flag under which Washington fought and Warren fell, in order to manufacture dynamite and preach assassination. These un-Americanized and un-Christianized men who have drifted to our country should have the strong arm of the law thrown around them, until they were taught that the inciter to assassination is as bad as the assassin, and that both are enemies to civilization, and enemies to God and humanity.

### *Monopolies.*

There are four kinds: personal, landed, legal, and concentrative. The last may be useful or injurious, according to the spirit of their use and control. It will require wise and level-headed statesmen to enact laws for the Republic, if these monopolies do not eventually change and control our country. It is said that "corporations have no souls." They ought to have. This is a republic. We do not permit our citizens to receive royal titles from beyond the ocean. Yet public opinion crowns them at home: railroad kings, bonanza kings, cotton kings, cattle kings, etc. Unless these kings are Christianized, the Grand Army of the Republic will not be able to save the country. The cry will go out through the land; "Who shall unlock the fingers of these kings whose arms have been thrown around the pillars of our political and social fabric?" We should never forget that we cannot leave God out of our hearts and live. There is not a page of human history, there is no earth-rocking convulsion, no time-agitating change, which does not teach the people, sooner or later, that God and liberty can never pass away.

There is an "incoming tide" of boys and girls who will quickly ripen into manhood and womanhood. Thousands of them will graduate from our hundreds of colleges, leave their country homes, and crowd into New York, Philadelphia, Chicago, Boston, Saint Louis, Cincinnati, Baltimore, New Orleans, or other cities, where the maelstrom of commercial life has already drawn its thousands into the rapid current. Here they are shut up in counting houses for fifteen out of every twenty-four hours. They are released only when Christian families have closed their doors to visitors. The gates which they find ajar as they start out on the

streets, are those leading to the gilded palaces that fatten our graveyards and populate hell!

Here is work for those who will lend a helping hand in order to save the rising generation from the evil by which they are surrounded.

Europe has 3,800,000 square miles of land. The present people inhabiting Europe, exclusive of those in the Caucasus, are said to be derived from ten distinct races or families. The more ancient the stock, the less numerous are its representatives. The several states of Europe present every form of government, from the absolute despotism to that of little republics and free cities. The Turks alone, as a people, deny the authenticity of Christianity. It is from Europe that the "incoming tide" rolls in its thousands weekly. In Europe civilization has attained its most perfect development. Whence this Samsouian strength, this power, this diversity? It may be attributed more or less to certain physico-geographical conditions, such as climate, productions, maritime convenience, as well as to age and education.

At the treaty of peace, 1783, the United States had 815,615 square miles; now it possesses a grand total of 3,578,392 square miles, only lacking 221,608 square miles of being as large as Europe. Before the last ray of the setting sun has ceased to linger upon the mountains of snow in Alaska, the rays of the rising sun begin to kiss the tops of the white pines of Maine. We have ribbed the continent with steel, and whispered liberty around the world swifter than the voices of the morning. The world grows wiser and better as it grows older. This is the age of light and liberty.

When the nineteenth century came in, every nation on the face of the earth engaged in the slave trade. Before the nineteenth century ends, except to his passions, a slave will not walk this earth.

It is not science which retards the advancement of Christianity. The first telegram ever sent was "What hath God wrought!" The first one ever sent around the globe was the angel chant which shook Bethlehem, "Glory to God in the highest, and on earth peace, good will to men." If bitter sectional text-books are to be used in our schools, if the gospel of hate is to ring out from our pulpits, then the time cannot be far distant when the pleasant gardens of our prosperity will be uprooted by the whirlwinds of anarchy or iron bound by the polar frosts of despotism, and this beautiful government which now looms up in the horizon to the admiration of all the earth, become the mournful dream of the past. If the doctrine of peace and good-will shall be preached from pulpit and press, and taught in the thousands of schools that dot our land, "the incoming tide will be Americanized and Christianized," the rising generation will love their country and their God. There will not be a "soul so dead" as not to love this "land of the free" and this "home of the brave." For me, her rivers are the most majestic, her mountains the grandest, her ladies the fairest, her men the bravest, her flowers the sweetest, the song of her uncaged birds the freest, and the sun above her broad savannas the brightest on earth. The attrition of the tide of time and these great international gatherings will serve to draw closer the ties that bind us. I rejoice to believe that the heart of the solid granite masses of the people of this great American Union beats in unison to the music of the Union and the Constitution as it never did before. May our country live and grow and bless humanity until the muse of history shall write *finis* with a pen of fire, and the nations shall come to judgment at the ringing blast of angel trump.



## THE HARMONIOUS DEVELOPMENT OF THE FACULTIES.

BY BROTHER BARBAS,

*Of the Brothers of the Christian Schools.*

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Education, to be genuine, must *lead forth*, train, and direct harmoniously the several faculties or powers innate in man, giving to each a care and attention proportioned to its relative importance, which importance is to be determined in view of man's destiny or final end.

To be able to do this intelligently and wisely, the educator must know the nature of these faculties, and the end they are intended to subserve. Without knowing their nature, he could not direct them to their proper objects, and consequently could not aid in their development, could not *lead them forth* successfully. Without leading them forth harmoniously, he would do violence to nature, where they exist together for mutual aid, and would thus create disorder where order should eminently reign, in the grandest object in creation, its lord, the microcosm, man. Without knowing man's end, he could not direct them wisely; and it might well be said of the most highly cultured faculties, *Cui bono?* What advantage would they all bring? Were the faculties developed without a view to this end, or were they exercised in contravention to this end, then indeed might it be asked, "Is life worth living?" For, in that event, all the goods attainable would be unsatisfactory, because transitory, and because not conducting to the permanent good, man's end, in which alone are rest, peace, and true happiness.

Now the faculties become known by their operations, and these by their objects. For there must be a due proportion between the operation and its term, on one side, and between the same operation and its agent or faculty, on the other. As Socrates has it: *Τοιοῦτον τμήμα τέμνεται τὸ τεμνόμενον οἷον τὸ τέμνον τέμνει*, which we can convert and say: *Τοιοῦτον τμήμα τέμνει τὸ τέμνον οἷον τὸ τεμνόμενον τέμνεται*. The color perceived, for instance, makes known the act of seeing, and this reveals the faculty, or sense, of sight. Were the eye to speak, it might say: *Video, ergo sum*.

Again, as the object is a material quality, we know that sight is an organic faculty, or one acting through a bodily organ, since matter can act directly only on matter. Furthermore, in perceiving color we feel a sensation, which shows that the bodily organ is vital, and consequently that seeing is the operation of both the life-giving principle or soul and the body united. For the simplest exercise, therefore, of the simplest faculty, as of sight, the soul and body must act in harmony, and contribute each its proper share toward the one effect. Hence the first duty of the educator, who assumes the responsibility of leading forth all the faculties or powers implanted in the child, is to attend himself and lead his pupil to attend to physical well-being. The sympathy between soul and body is so great, that if one ails, the other is

immediately indisposed. Sickness affects the mind, sadness or anger or envy preys upon the body.

It will be seen in the sequel how advantage may be taken of unavoidable physical evil for the furtherance of the highest good, the moral good, and how "all the ills that flesh is heir to" may be converted into so many blessings by the simple act of an upright will. But the same moral law that rewards the voluntary acceptance of unavoidable physical evil, tells us that it is a crime to neglect the first law of nature—self-preservation, both laws emanating from the same Sovereign Legislator, and man being amenable before His supreme tribunal for every voluntary infraction of either.

*Mens sana in corpore sano* must be the motto of the educator. He should know the general principles of hygiene, and point out the advantages accruing from following the simple laws of nature, especially in curbing the passions under the rein of right reason, and in being virtuous. He should be careful how he unduly exaggerates the value of mere literary attainments, lest the pupil, by sacrificing too much of the physical for the intellectual goods, may end with having neither. Much less should he impose such burdens upon the mind as will endanger the body to succumb. He must be persuaded that reasonable recreation is as much a duty for the student as study itself; that time taken from necessary sleep and given to study is an injustice even to the faculties it is intended to benefit, a folly which, sooner or later, brings its own punishment in lack of energy, in lassitude and distaste, leaving unknitted "the raveled sleeve of care," disorder at the fountain head. In laying down principles to guide his pupil in after life, he should not shrink from exposing this among other evils of the theater,—time taken from necessary repose. Sensational reading—novels, romances, etc., should also suggest a salutary warning, lest their devotees may become puny dreamers physically no less than intellectually. Mechanical pursuits should not be discountenanced, nor made the object of invidious comparison with the learned professions. Manual labor should be held as honorable, and rather encouraged than otherwise, pointing out Cincinnatus, Cato, Washington, and others, as instances of nobility allied to rural labor.

These are among the dictates of a true and disinterested regard for the real welfare of the whole man, unswayed and unbiassed by the conventionalities of a questionable progress in refinement, excellence, and genuine worth.

To impress still more upon the pupil's mind the great importance of physical development and well-being, he should be taught that most useful lesson, gratitude to his parents—his first educators physically, aye, and intellectually, too, and morally. All after-educators are building upon the foundation they laid. To the parents belongs the sacred and inalienable right of determining who shall be the educators and what shall be the education of their offspring, as it is their bounden duty to see to the welfare of that precious deposit Heaven has lent them—an immortal soul clothed in their own flesh and blood.

To return to color. We perceive color as inhering in a subject, and we distinguish between the color and the colored, the accident and the substance, which we could not do were we not possessed of a higher faculty than sense. For color is evidently all the eye perceives. But color is not the colored. How then do we know the substance colored? By intellect, which tells us a quality cannot exist without a subject to support it. This we call substance. Again, we cognize the color of an apple apart from its flavor, savor, and tactile qualities.

The eye reaches only the color, the taste only the savor, the smell only the flavor, and the touch only the tactile qualities. How then do we know that they exist united in the apple? Certainly not one nor all of the senses can give us this knowledge, since each severally perceives but its own proper object. There must be a higher power or faculty, then, viz, the intellect. I do not speak here of the sensations caused by color, flavor, etc., but of the objective realities themselves. The perception of the former, indeed, and the distinction we make between them demand another faculty beyond the external senses, viz, an internal sensitive faculty, which, as cognizing, distinguishing, and comparing the different sensations produced through means of the external senses, may rightly be called *common sense*, whose organ is the sensorium or encephalon (*ἐγκέφαλον*).

Here we find that the operation of an external sense calls forth that of an internal sense, and both call into action a faculty above, but not, in our present state, absolutely independent of sense, as we see, viz, intellect. Thus, at each step, we see the necessity of harmonious development, or leading forth, of the faculties. The child might, for instance, be asked some simple questions as to the nature of what he perceives by the senses, their causes, their uses, etc., and thus led on insensibly to connect reasoning and reflection with direct observation. Can you hear the color of a rose or see its odor? Why do not the same sort of flowers grow in every garden? Where does the rain come from? How did it get there? He may not be able to answer your questions, but they will bring him to think. And if once he has learned to think, he may and will take many a profound lesson from the ordinary occurrences around him, and accustom himself to read in the first and grandest of all books, nature, and thus have access to a perennial source of highest enjoyment to the simple, upright, and virtuous mind. "*Cæli enarrant Deum*," "*Domini est terra et plenitudo ejus*," will resound on all sides, filling the ears of his delighted reason with exquisite melody, sublimating and enrapturing all the powers of his soul in the contemplation of so much beauty and magnificence.

That we possess the higher faculty of intellect may also be thus shown from its operation. We are intimately aware that some of our operations have truth for their object; or, as Sir William Hamilton would say, we know that we know the truth. But truth has no dimensions, and therefore cannot be the object of a material operation, nor be reached by an organic faculty. A material organ can act only on a material object. If the object is immaterial, so likewise is the faculty. The eye sees that which is true, not truth. To perceive truth, the knowing faculty must see the relation which itself bears to the object known, for in this relation of conformity between the knowing and the known truth consists. But this requires a reflex act on the part of the faculty, a turning back upon itself, which no organic faculty can do, the direct act alone being competent to such faculty. The eye cannot see itself. It is its image it sees in a mirror.

There is, then, an inorganic or spiritual faculty in us, and therefore a spiritual substance possessing that faculty; for in finite entities no faculty is capable of existing except in an essence, in which it may be said to have its root or foundation, but from which it is distinct, even as color must belong to a subject and yet is distinct from it. But a spiritual substance cannot perish, for it is simple, and therefore incapable of dissolution. And no finite power, moreover, can annihilate it, for it is the effect of a creative act, and it requires the same power to reduce to nothing that it does to produce from nothing. The soul is

therefore immortal, and man's true welfare is then only consulted when provision is made for the life that will not end ; and his faculties are then only rightly employed when directed toward securing their possessor this welfare.

But to show still more clearly the connection of the several faculties, their interdependence, and the consequent necessity of their harmonious development or calling forth, let us return a moment to the apple we were considering. Here we find a new faculty called into play. We do recall our past experiences about the apple and what we have remarked thereon. There is then the faculty of memory in us, which retains and recalls the past. But this is possible only from the previous operation of other faculties, which furnish it with its proper object; otherwise there would be nothing to retain, nothing to recall. Now memory retains only the images or impressions of things, from which it reproduces past scenes and experiences. To do this effectually and easily, the impressions must be sufficiently deep, the images sufficiently vivid, both of which require energetic and vigorous action of the faculties. This again exacts attention, a calling home of wandering thoughts, a concentration of the powers of the soul. For as the total energy of man is limited, the more it is divided on different objects, the more its efficiency on any one of them is diminished. It is for this reason that indulging the passions is ruinous to intellectual vigor, no less than to moral strength and rectitude. What is wasted on the animal man is taken from the intellectual and spiritual man. Aye, and even intellectual pursuits, if allowed to engross more than a just share of our attention, will inevitably dry up the unction of soul necessary to diffuse the aroma of virtue over all our actions.

That justice, therefore, may be rendered to all, and the rights of each aculty respected, there must be a sovereign ruler in the kingdom of man's mind. Let us see if there is such a ruling faculty. The apple I just now spoke of I conjure up before me. I see it in my mind's eye. The tree on which it hangs, the orchard where the tree grows, its environs—all are here. This very act of conjuring up reveals a new faculty, perfectly distinct from though nearly allied to memory. I saw an apple, and a tree, and an orchard before. I never saw the particular apple, tree, and orchard I now see before me, nor did I ever see either of them where this new power, imagination, locates them. It is this taking away of objects from some of the relations and circumstances in which we originally found them, and putting them into positions and giving them surroundings of our own choosing, that constitutes the difference between imagination and memory. Memory recalls the object with its own surroundings. Imagination brings forward the object in borrowed or stolen surroundings.

Too much attention cannot be drawn by the educator to this difference. The one faculty gives us the whole truth, as far as its report goes ; the other a particle of truth with the semblance of the whole, a grain of truth in a bushel of error. But as a microscope is not necessarily a falsifier because it gives you ten feet of error for every barley-corn of truth, since it makes no secret of doing this ; so neither is imagination a false witness for bringing real figures into unreal situations, clothing them in the full dress of reality ; for it too professes to deceive. You can hardly call a man a liar, if you convict him of telling you a lie after he has told you he is a liar ; unless indeed you want to be hypocritical, and argue thus : If the man told me truly he was a liar. he was no liar ; for he told me the truth, and I should believe him as

one who thus far has told the truth; therefore he is a liar for telling me he is a liar when he is not.

✱ Imagination gets its name from giving us an image or picture made up partly of what is and partly of what might be. In order to impress upon the minds of his pupils the excellence, beauty, and grandeur of truth, the educator who knows its paramount value will not fail to note the fact that, to be creditable, fiction, even when most bent upon deceiving, must put on all the appearance of truth, just as the most accomplished forger gives to his counterfeit the nearest resemblance to the genuine article to give it currency. So much the more must the pupil be put on his guard against the allurements of pretended realities set forth as valuables by the cunning device and wondrous dexterity of poet or novelist, lest the gaudy display, absorbing all the energies of the soul through sensational excitement, may lull reason to sleep, and betray the ruler, will, into the hands of voluptuousness, leaving the unwary simpleton, alas! too frequently, deep down in the mire, wearied, yawning, helpless, a moral wreck. Would that this were a poetic picture! But it must be admitted that but too many of the poets, novelists, and romancers of most of our vaunted literatures have drawn many a hapless wight into the vortex of erotic passion. But happily every honest imagination can find ample matter for its most daring and pleasing flights in the pure, and sublime, and beautiful conceptions of many of our own poets of classic fame. But no sparkling gem should tempt the mind to seek it by wading through filth; the soul's purity is a thousand times a brighter gem; and wisdom says, reason says, common sense says, we ought not lose the greater for the lesser gem. Besides, both would then be lost; for the sullied soul cannot have a bright mind, nor one brilliant faculty.

But imagination's simpler and more ordinary occupation is to prepare matter for the intellect, to hold up before it the *phantasma* which calls it forth to act. In this sense it precedes and accompanies every act of understanding, every process of reasoning, all our thinking, which is vigorous in proportion to the vivacity of this faculty. Imagination is wrong only when it asserts independence of reason.

But intellect or reason itself is subject to higher authority. It may not exercise itself upon all objects indifferently, nor search for truth irrespective of times and circumstances and conditions. It would not do to sit down quietly pursuing a train of reasoning while the house was on fire; nor to spend twenty years in counting the joints of a caterpillar or grasshopper, or in studying the anatomy of ants and flies; nor to ransack all the records of the past to find

"Who nursed Anchises; from what country came  
The step-dam of Archemorus, what her name;  
How long Acestes flourished, and, in short,  
With how much wine the Trojans left his court."

We may, in these and similar instances, reason unreasonably. There must be something, then, to determine reason itself, and make it right reason, following which no man goes astray. For following a higher light in matters transcending the powers of reason, is eminently reasonable.

Now it is the will that controls the intellect, directing it to seek truth in this or that direction, as it listeth. But there must be some mover of the will to bring it from the possible into the actual state, for it is not always in act, and nothing can of itself leave the possible state. This mover or motive is the good, in the possession of which lies happiness,

and which therefore moves or attracts toward itself all beings capable of happiness. Aristotle goes farther and says that "all things desire the good." This innate desire of happiness is therefore the ultimate reason why man is moved by the good; and as it is God who implanted in us this desire, He is the first mover of our will, as He is of all things. Not only is it true that "in Him we live, move, and have our being," but that by Him we are moved through the inclination that He gave us.

But just here a grand difficulty meets us: the will needs the light of intellect to point out the good it wills, as nothing is willed if it is not known. How can the will govern the intellect, if it is dependent on the intellect? How can we, admitting this dependence, still maintain the sovereignty of the will? Just as in a monarchy a sovereign is truly sovereign, though he may not be able to govern without the aid of his council; for he can command his council to confine themselves to a subject of his choosing, and can choose his own course of action after they have thrown all their light upon the subject.

But to return to our mode of knowing the nature of the faculties. We have seen how the sight of the color of an apple led to the operation of three internal senses, thence to the operation of intellect. Let us see if no other faculty or power was evoked. It is not a very improbable case to suppose that the first motion, on seeing the apple, was toward plucking it, making it our own. But a voice within whispers, "It is not right; that apple belongs to another; you must have the owner's permission before you can take it," and I immediately check my hand in the very act of reaching for it, and turn away. Here three new faculties have come into action,—sensible appetite following sensible perception, conscience warning about the moral rectitude of the then contemplated act, and rational appetite or will giving the final decision, after weighing the reasons for and against. Here, too, is a conflict between the higher and the lower appetite; here a victory of the higher, moral strength, virtue. That the will was free to go against the voice of conscience, and consequently that the act of resisting the lower appetite was a virtuous act, is again known from the operation or volition, and this from the object. Whoever remembers to have on one occasion rejected the solicitation to a certain act to which he at another time, similarly circumstanced, yielded, has in himself a palpable proof that his will is free. For to do a certain act and not to do it are two contraries, and no necessitated agent can choose between two contraries. If it must go to one of them, it cannot go to the other; and if it can go to either, it must go to neither of them. There is but one respect in which the will is not free: it is not free not to wish happiness. But as the good is as extensive as entity, there is an immense variety of objects in which man may place his happiness, and therefore has an almost illimitable range for the freedom of will to exercise itself, though too often happiness is sought where it is not, and not sought where it is.

From the very nature and office of the will we see at once the superlative importance of cultivating, directing, and strengthening this faculty. Now every faculty is called forth unto act and consequently developed by presenting it with its proper object. The eye is informed by color, the intellect waxes large and strong on truth, and the will by having presented to it the good. But as the appearance of truth without the reality only dwarfs the intellect, so merely apparent good enervates and sickens the will. The real good is that which hinders no greater good. But every good hinders a greater good, if it be not itself the *summum bonum* or conducts not to it. The moment a physical good destroys or

hinders an intellectual good, except in the interest of a higher good, it becomes a positive evil. And when either of these goods destroys or hinders a moral good, they are so far still greater evils. The real good is the permanent, unchangeable, infinite good, with all that in any way tends to it; and all things tend to it, if we will them as means to this end. This is no other than God, the true, the beautiful, and the good in one, in their fullness and in their source, man's last end as He is also his first beginning. The science that instructs man how to reach this his end is the science of religion, rightly styled the queen of all the sciences, not that of man's own choosing, but of God's revealing; that religion which not only enlightens the mind by faith, but strengthens the will by grace, of which it is the divinely appointed channel.

Now the will of the Almighty is man's supreme, unending happiness. Man's will, therefore, to be perfect, must be conformed to the will of his Creator. That is the sublime standard and grand criterion to which he must look as to his guiding star, in sailing over the sea of life. This perfection of the will, so desirable, may indeed, nay, most certainly (let us not hide the truth) will cost many a hard conflict with the most difficult of all enemies—self, many a denial of the cravings of lower appetites. But the contest is a glorious one, the victory magnificent. Reason is on our side, exhorting, "Courage is half the battle! What is of so immense value is cheap at any and every cost, even that of life." Justice, and right, and truth, and fortitude, and honor, and all the virtues, are on our side, ennobling and elevating our every energy. The truly great and good of every age from long before Socrates to more than a century after Washington, have been on our side.

When the will is right, all in man is right, all is orderly, all harmonious. Intellect busies itself in the service of the will, discovering the truth, and by its light pointing out to the will the good that is its object, for every entity is true for the intellect, good for the will in some way. The intellect again is served by imagination, whose normal and ordinary office it is to prepare for intellect its proper object by presenting to it the *phantasma*, on which the *intellectus agens* operates preparatory to its reception by intellect proper or *possible* intellect, as it has been called. But imagination has need of memory to retain the images or representatives of things, on which alone imagination works. But memory proper, or sensile memory, must have sensations or sensile impressions, already distinguished and classified by common sense. But this last must have sensations before it can distinguish or classify them, which sensations are partly preliminary to and partly concomitant with sensile perception or cognition. Here we have a grand chain of successive causes rising in relative importance up to the sovereign will, which directs and controls all. The highest cannot say to the lowest, "We have no need of you"; nor can the senses claim any of the privileges of humanity, except in so far as they are subservient to reason or intellect under the control of the will, itself regulated by the Divine will.

I have not, in this disquisition of the faculties, referred directly to reason or to consciousness, for I hold that neither of them is a distinct faculty, but only names for special exercises of the intellect. Neither do I agree with Reid or Hobbes in considering *common sense*, or the *cognitive* faculty found in all men, as a distinct faculty from intellect found in all men. Common sense is nothing else than intellect revealing to all men either self-evident truths, or such as require very little reasoning for their discovery, and which are necessary to be known for the physical, intellectual, and moral well-being of man.

One remark must here be added, as a fitting conclusion to this paper. Since the ills of life are unavoidable, it is the part of wisdom to study how to make them as tolerable as possible. Now the best way, because the only true way, is to take them for what they really are,— trials for the highest exercise of the highest faculty in man—the will, wherein he can prove that he makes it his pleasure to conform his will to that of his Creator. Such disposition brings a peace no adversity can ruffle. It is thus that unavoidable physical evil becomes a moral good.



## ON VARIATIONS OF MENTAL RECEPTIVITY.

BY EDWIN CHADWICK, A. B.,

*Chairman of Education Committee, Society of Arts, London, England.*

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The effect of a low physical condition in weakening mental receptivity and in debilitating the power of attention, has been dwelt upon by the earliest educationists. Dr. Crichton, in his "Inquiry into the Nature and Origin of Mental Derangement," places poor diet at the head of a list of causes which weaken attention, and consequently debilitate all the faculties of the mind. But there are to be observed in education wide natural variations displayed in the receptivity of members of the same family, and in different races of well-fed people. In a wealthy family of high position there will commonly be found considerable variations in the receptivity of its different members. One, the sharpest boy, is designated for the legal profession, or is trained to try for the scientific corps. Of another of less promise, it is judged that he will not succeed in the open professions; formerly such a one would be given some position in the public service, but now the competitive examinations have barred the way for him to government employment, and he is usually left for the family living, where there is one, or some position in which there is little mental strain.

The variations of mental receptivity may be shown on a large scale, in the results of the great public competitive examinations. Thus, to take the variations in the attainments of even the successful candidates for admission to the scientific corps at Woolwich: the mean of the marks obtained by the upper third of the last batch was 4,013.6; of the intermediate third, 3,576; and of the lowest third, 2,845.8. Of the last batch of successful competitors for the civil service in India, the mean of marks obtained by the upper third were 1,947; of the intermediate third, 1,628; and of the lowest third, 1,434. In the case of the competition for the clerkships of the lower division, in the last batch the mean of the upper third was 1,576; of the intermediate third, 1,333; and of the lower third, 1,245. In these several instances, the best efforts were doubtless made, and wide variations of mental receptivity were determined among classes uninfluenced by variations in feeding.

Of course the school teachers of children of a lower class have to deal with variations in feeding, in addition to natural variations of capacity, and also with racial variations. School teachers of experience in different parts of the country are aware of wide variations of racial receptivity between the children of one part of the country and those of another; for instance, the receptivity of the children in the elementary schools of Lancashire, compared with that of the children of some of the southern counties, is as three to two. I have notes from practical educationists in France regarding the wide variations between the quick children of the South and the slow children of the North. From such experiences will be seen the serious mistake in the fundamental policy on the part of our Education

Department, which puts forward one uniform code, irrespective of all the variations of receptivity that are to be found in children of like ages in the same school. School teachers readily appreciate the division of receptivities into quarts, pints, or half-pints of mental receptivity. In the same school, among a group of children of average capacity, there are found to be 40 per cent. of children classed as of quart capacity, 35 per cent. of pint, and 23 per cent. of half-pint. The teacher gets on easily and satisfactorily for three hours with the quarts of his class; but the pints in that time become wearisome, and with the half-pints it is sad and heavy work to get them up at the same time as the quarts. Yet they are all to be got up in the time. For the pints it would require a year or more to bring them up to the quarts; with the half-pints full two years, and with many not at all. With the pints and the half-pints the effect is more or less of over-pressure, and with the half-pints very severe over-pressure upon them; that is to say, bodily as well as mental pain is the result of the effort to get them up at the same time to the requirements of the code.

These mental evils are accompanied by habitual headaches in 40 per cent. of the children, together with complaints of mothers. The inspector of the school, when told of this, declared that he did not believe a word of the statement, for he had seen all the mothers, and had not heard one complaint from them; and such appears to be the testimony on which reliance is placed by the Department. The fact is, that the mothers do not make complaints to the inspectors against the requirement of home lessons, but they do make them to the teachers at the school.

I have been led to make these inquiries into the variations of mental receptivity in the interests of the half-time principle which I got introduced into the Factories Regulation Act, and into the education of the orphan children under the poor-law administration. I made inquiries of an experienced practical educationist in France as to the racial variations of receptivity of the school children, which he described as very wide indeed between the quick children of the South and the slow, heavy children of the North. It is related of a political chief, the head of the Education Department of France, that to show the extent of excellence to which the Department had got the system in France, he said, "Now if I take out my watch, I shall be sure that the same lesson is being given at that precise time to the children of every school in France!" If he had been aware of the old educational maxim, *Quidquid recipitur, recipitur ad modum recipientis*, and of the wide differences in the recipients, he would be aware that he was surely frustrating the objects of education, that he was inflicting extensive over-pressure and torment on the children, and perplexity, vexation, and weariness on the teachers. The school teachers of England declare that if they were left to their own devices they would save two years of the school life to all the children; that is to say, to the four millions of children in school attendance eight millions of years of wasted and tormented life would be saved, to say nothing of the diminution in the rates. I believe that, if a proper system were pursued, there might be saved four annual examinations out of five, and the pupils be left to what is called in Germany a "leaving examination."

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**SPECIAL REPORT**

**BY THE**

**BUREAU OF EDUCATION.**

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**EDUCATIONAL EXHIBITS AND CONVENTIONS**

**AT THE**

**WORLD'S INDUSTRIAL AND COTTON  
CENTENNIAL EXPOSITION,**

**NEW ORLEANS, 1884-'85.**

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**PART III.**

**PROCEEDINGS OF THE DEPARTMENT OF SUPERINTENDENCE  
OF THE NATIONAL EDUCATIONAL ASSOCIATION, AND  
ADDRESSES DELIVERED ON EDUCATION DAYS.**

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**WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1886.**

**815**



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## LETTER.

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DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,  
*Washington, D. C., November 25, 1885.*

SIR: The accompanying papers,<sup>1</sup> which are hereby transmitted for publication, give the best view, doubtless, that it is possible to preserve, of education at the World's Industrial and Cotton Centennial Exposition. It was early manifest that the exhibition would present a rare opportunity for the promotion of the advancement of education. The desire on the part of the Management to improve this opportunity to the utmost was expressed in the most explicit and emphatic terms by the Director-General, Hon. E. A. Burke, when he declared that they sought not only that the exhibition should be thoroughly national and international and in all its aspects educational, but that education itself, its systems, institutions, principles, methods, and results should be shown as far as possible by its literature and appliances, by models, by graphics, by actual class work, and by papers and discussions from the ablest educators. The following papers will make known how far the purposes of the Management have been realized, and their publication will preserve and extend the usefulness of whatever was accomplished in this behalf. The fullness of the papers and of the report of Lyndon A. Smith, Esq., my representative and chief assistant in immediate charge of the Department of Education at the exhibition, renders it unnecessary that I should here enter into details which would otherwise require more specific reference.

I desire to tender most hearty thanks to all those who have in any way aided in the work here reported, but it would require a catalogue larger than Homer's to specify each one by name.

I have the honor to be, very respectfully, your obedient servant,  
JOHN EATON,  
*Commissioner.*

The Hon. SECRETARY OF THE INTERIOR.

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<sup>1</sup>The catalogue of exhibits may be found in Part I of this Report. The proceedings and papers of the International Congress of Educators in Part II.





NATIONAL EDUCATIONAL ASSOCIATION—DEPARTMENT  
OF SUPERINTENDENCE.

*New Orleans, La., February 24–26, 1885.*

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PERSONS IN ATTENDANCE.

Brother Azarias, Rock Hill College, Ellicott City, Md.  
L. G. Barbour, A. M., D. D., Richmond, Ky.  
Hon. T. W. Bicknell, LL. D., Boston, Mass.  
Rev. G. N. W. Bothwell, M. A., Straight University, New Orleans, La.  
Mrs. L. F. Brockaway, New Orleans, La.  
L. R. Clemm, Superintendent of Schools, Hamilton, Ohio.  
Hon. Asbury Coward, State Superintendent of Public Instruction,  
Columbia, S. C.  
Hon. Newton C. Dougherty, Superintendent of Schools, Peoria, Ill.  
Hon. Julius D. Dreher, M. A., Ph. D., Roanoke College, Va.  
Hon. Warren Easton, State Superintendent of Public Instruction,  
Baton Rouge, La.  
Hon. John Eaton, United States Commissioner of Education, Wash-  
ington, D. C.  
Fanny Espey, New Orleans, La.  
Hon. R. R. Farr, State Superintendent of Public Instruction, Rich-  
mond, Va.  
F. A. Feitshaus, Superintendent of Schools, Springfield, Ill.  
Hon. Frank A. Fitzpatrick, Superintendent of Schools, Leavenworth,  
Kans.  
J. A. Foil, Esq., Newton, N. C.  
Prof. Jas. M. Garnett, University of Virginia.  
Hon. R. H. Gass, State Superintendent of Public Instruction, Lansing,  
Mich.  
W. H. Goodale, Esq., Baton Rouge, La.  
Hon. Aaron Gove, Superintendent of Schools, Denyer, Colo.  
Hon. John Hancock, Superintendent of Schools, Dayton, Ohio.  
W. T. Harris, LL. D., Concord, Mass.  
Hon. Geo. Hicks, Kingston, Jamaica, W. I.  
Prof. Walter Hillman, Clinton, Miss.  
Rev. R. C. Hitchcock, Straight University, New Orleans, La.  
Hon. John Hitz, Switzerland.  
Hon. Alexander Hogg, Superintendent of Schools, Fort Worth, Tex.  
Hon. James L. Hughes, Toronto, Canada.  
P. B. Hulse, New Orleans, La.

## 8 EDUCATIONAL CONVENTIONS AT NEW ORLEANS EXPOSITION.

- Josiah Hurty, A. M., Paris, Ill.  
Prof. R. H. Jesse, New Orleans, La.  
Rev. H. F. Johnson, Brookhaven, Miss.  
Hon. D. L. Kiehle, State Superintendent of Public Instruction, Saint Paul, Minn.  
Rev. S. E. Lathrop, Straight University, New Orleans, La.  
Leslie Lewis, Superintendent of Schools, Hyde Park, Ill.  
Anna E. Mallon, New Orleans, La.  
Prof. L. W. Mason, Boston, Mass.  
Rev. A. D. Mayo, Boston, Mass.  
John H. McLean, Esq., Georgetown, Tex.  
Adda Meadows, New Orleans, La.  
Hon. M. A. Newell, LL. D., State Superintendent of Public Instruction, Baltimore, Md.  
Hon. Gustavus G. Orr, LL. D., State School Commissioner, Atlanta, Ga.  
R. L. Packard, Esq., Washington, D. C.  
Hon. Solomon Palmer, State Superintendent of Education, Montgomery, Ala.  
W. B. Powell, Esq., New Orleans, La.  
T. C. Richardson, M. D., Tulane University, New Orleans, La.  
Hon. W. C. Rote, Superintendent of Schools, San Antonio, Tex.  
B. B. Seelye, Esq., Vicksburg, Miss.  
Miss May Wright Sewell, Indianapolis, Ind.  
Hon. W. E. Sheldon, Boston, Mass.  
Hon. J. A. Smith, State Superintendent of Public Instruction, Jackson, Miss.  
Hon. F. Louis Soldan, Saint Louis, Mo.  
Prof. Edward A. Spring, Perth Amboy, N. J.  
A. R. Taylor, M. A., Principal of Normal School, Emporia, Kans.  
Henry Whitall, Esq., Camden, N. J.  
Hon. E. E. White, LL. D., Cincinnati, O.  
I. N. Wyckoff, Esq., Washington, D. C.

### FIRST SESSION.

The first session of the Department was held in Tulane Hall, Tuesday, February 24th, beginning at 9.30 A. M.

The President of the Association, Hon. Le Roy D. Brown, being absent, Hon. JOHN HANCOCK was called to the chair. Mr. WM. E. SHELTON was elected Secretary, and Prof. D. C. TILLOTSON, of Kansas, Assistant Secretary.

The session was opened with prayer by the Rev. L. G. BARBOUR, of Kentucky.

Hon. WARREN EASTON, State Superintendent of Public Instruction of Louisiana, then delivered the following address.

ADDRESS OF WELCOME.

*Mr. President and Gentlemen of the Convention*—This is an occasion of great interest and importance to the South, to Louisiana, and especially to the city of New Orleans, as it has brought into her midst a gathering of men who are devoting their lives to the cause of education.

As State Superintendent of Public Education, it is my privilege and pleasant duty to extend a welcome to you, who have come from many sections of this Great Republic to attend this meeting. In extending this welcome, I do so with the warmest of feelings, assuring you that your coming has awakened no fears, no doubts, but has brought with it only the pleasures and glories of a sunshiny day. Many of you come as strangers, both to our people and our surroundings, but your stay with us I am sure will be an occasion of much pleasure and profit to us all.

A gathering of men ranking, and, I often think, overshadowing the ministers of the Gospel in their self-sacrificing efforts for the advancement of their profession can find but one place in the hearts of our people.

The welcome I extend is most hearty and cordial, and may the time spent with us ever be in your memories as green and fresh as the tiny blades of grass you see around you.

Our city is one of interest, and invites study; gathered within her limits are found people from all quarters of the globe, and within an area of a half a mile may be heard the tongues of every nation, which, I think, will be of particular interest to the learned linguists who have met with us. To the scientist, who loves the study of nature, I offer the "Father of Waters," still flowing as he did when the great De Soto first smiled upon his turbid bosom. Here the scientist can study how we battle with this river and keep him from sweeping away our homes. A short trip to the mouth of this majestic body of water will show him how the brain of man can bridle the forces of nature and guide them for the good of mankind.

The botanist I turn to our woods, fields, and gardens; and here he may revel in the foliage of a tropical clime, while his brethren at home are shivering under the icy darts of stern winter's blasts.

To the thousand-fold wonders of our great World's Cotton Exposition I ask your attention, and I have no doubt that your pilgrimage through those collections of man's ingenuity and God's boundless resources will fully repay you for your long journey into this far southland.

The business to be transacted at this meeting covers a wide field, presenting many of the prominent questions of the day, and will result in much good to the cause of education.

The absorbing question in this section is, Where are we to get the means to educate our children? The Southern States are doing what they can. Louisiana appropriated \$300,000 this year and as much for next year for the common schools, but her local taxation is not sufficient to educate the 300,000 educable children equally divided between

whites and blacks. More than 27 per cent. of the whites and 73 per cent. of the blacks of this State cannot read or write. Here is this fearful cloud of illiteracy hanging over us and we are powerless. But we stretch forth our almost shackled hands and call upon our great Government to render us the aid necessary to save us from ruin.

Friends, I ask you, as I welcome you, to carefully consider this question of National Aid to Education, and again with greater emphasis call upon the National Government to render this much-needed assistance as soon as possible.

Finally, dear friends, you have the hospitable welcome of the Southern homes awaiting you, and in this land of magnolia and palm there will be nothing left undone to make you feel that your coming among us was in vain.

The President then called upon Hon. E. E. WHITE, LL. D., of Ohio.

Dr. White began by alluding to the fact that at the meeting of the National Superintendents' Association in Washington, D. C., in 1866, he was made a life member, and that he presided at the meeting held in Nashville, Tenn., in 1868.

These facts, as he assumed, gave him the honor of now making response to the very earnest welcome just voiced by the Honorable State Superintendent of Schools of Louisiana—a welcome that needed no formal expression, as its reality is otherwise evident to all.

He stated that he spoke for a body of men who had in their official keeping the deepest and widest interests of the country. The time has at last come when all intelligent men recognize the vital relation of education, not only to the higher interests of society, but also to material civilization—a relation that is made manifest by every international exposition of human skill and industry, and most impressively by the marvelous exposition now in progress in this city.

Education teaches both of the great laws of wealth: it awakens and intensifies human desires, and then, through these, impels man to effort to secure the means of their gratification. As a result of this twofold influence and impulse, human industry exists, and the land is filled with the hum of varied and multiplying forms of labor. *Wealth is the child of education.* In the face of these obvious facts it is strange to hear the charge which Bacon made against the schools of England in his generation, that they were “filling the realm with idle, indigent, and wanton people,” repeated against the public schools of the United States.

The truth is, that just where education has done its work most universally and most completely, there will be found the least idleness, the intensest industry, and the greatest wealth. As a few pounds of imprisoned steam in the great engines in Machinery Hall in yonder Exposition is the unseen force back of all that marvelous motion and deftness of machinery, so the school is the force back of the still more marvelous industry that is filling the world with comforts and satisfactions for man.

There is danger that we may be dazzled by these impressive displays of human skill and forget that the mind is back of hand and eye ; that all human inventions and all products of human skill borrow their significance and their value from man himself; that man is higher and greater than the material civilization he has created, than even the governments and institutions which he has organized.

The supreme end of education is the well-being of man, and hence the highest function of the school is not to make an artisan or an artist, a merchant or a soldier, but *to educate men*. Manhood is the richest and best product of education. The school is under an almost divine contract with every child that enters its door to do its best to help him to the highest and truest manhood of which he is capable.

The speaker said in conclusion that he was speaking for a cause that knows no section, no race, no condition, but is as universal in its reach as the human family. Education is the common interest and the universal need of all peoples—of the entire race.

The Secretary then made an appeal to all persons present to become members of the Association.

**THE CHAIRMAN:** We will now proceed to the first regular subject on the programme. I have the pleasure of introducing Hon. ANDREW J. RICKOFF, who will read a paper on "School Economy."

Mr. RICKOFF then proceeded as follows:

#### SCHOOL ECONOMY.

*Gentlemen*—My subject will at once be recognized as of interest to tax-payers and educators. The former will reflect that, according to Mr. Eaton's Reports, nearly a hundred millions of dollars are annually spent in the United States for the support of the public schools, and that the expenditure is leaping up by from three to five millions annually. On the other hand, the educator reflects that there are ten millions of children who are fit subjects for education, as witnessed by the fact that that many were actually enrolled in the schools last year. The tax-payer justly inquires whether he gets a fair return for the money spent. On the other hand, the educator cannot fail to consider how far short it comes of meeting the wants of the ten millions of children. Thus we are brought to face the question, Is the money spent to the best advantage?

Were our school resources equal to the real wants of the schools, it would even then be of interest to know whether the expenditures were properly balanced for different purposes.

But the school moneys are not illimitable. A certain amount of real estate and personal property, at a rate of taxation pretty well determined by the circumstances of each State and locality, yields annually only a certain income. In most cases this sum falls within the real or supposed wants of the schools. I have, in fact, never known it to equal the demand. How then to lay it out to the best advantage, how avoid waste of every kind, becomes a proper question for our discussion.

Certainly there is no class of men who are so deeply concerned as we are to maintain a just equilibrium between receipt and expenditure. To none can waste or injudicious outlays be just cause of so deep regret as to ourselves, not alone because we are so often held responsible for unwise appropriations, but for the reason that money lost is loss of opportunity, loss of time in the mighty enterprise of educating a generation that will not stay its growth to manhood and womanhood, when it will be no longer within our reach.

Expenditures for school purposes may be classified under three general heads: (1) For buildings and furniture; (2) for apparatus and other supplies; (3) for tuition or instruction.

Fifty years ago you would have been safe in picking out the most dilapidated structures in cities and villages as the school-houses; shortly after, buildings began to start up here and there that were talked of as "magnificent," though they were dreary, prison-like structures, inferior to the county jails in external appearance and hardly equal to them in internal finish. This, however, was but the beginning of a great revival. It was not a long while till these structures gave way to a class of buildings so superior that now you may be quite confident in pointing out the finest specimens of architecture which grace our cities, towns, and villages, as the people's colleges, as the common schools are sometimes called.

To some extent this change may be owing to an ambition on the part of one town or city to have as good or better school-houses than its neighbors; but, generally, it is due to the growing appreciation of the value and importance of education to the community. A good school building is its very natural expression of its desire to have a good school. But too many school boards have expended so much money on their school-houses that they have little left with which to conduct their schools. They have built the workshop, but the proper machinery is lacking, and their funds are insufficient to employ good workmen. They have built a school-house of which all are proud, and in consequence are forced to content themselves with a school of which they should all be ashamed. In the first outburst of their enthusiasm they forgot that it is not the steeple of the church that promotes and maintains the religious character of the community, but the learning, eloquence, and devotion of the man who occupies the pulpit; that it is not to the court-house that they must look for justice, but to the wisdom and purity of the judge who sits upon the bench.

If the building of palatial school-houses, or, I will say, of only moderately good ones, leaves them so impoverished that they are unable to provide the supplies which are indispensable to the comfort of teachers and pupils, to furnish the apparatus and reference books which are necessary to good instruction; above all, if its energy and means have been thereby so far exhausted that they can bid only for the cheapest, and therefore generally the poorest, teachers; and if, in addition to this,

they have to shorten the school year because their funds are insufficient to keep their schools open as many months as may be desired, they have indeed made a fatal mistake. It would have been better if they had contented themselves with the shabby structures of fifty years ago, if by that means they might have been able to call to the instruction of their children superior men and women. What would it profit them if they had Windsor Palace for a school-house, if ignorance or incapacity sat in the teacher's chair?

But I do not care to argue any further the case of good teachers *vs.* a magnificent display of bricks, mortar, and mansard roofs, and will content myself with the simple declaration that in school affairs every aid and appliance should be esteemed as nought if they be in the way of employing skillful teachers, of sound learning, cultivated tastes, and good manners and pure hearts.

In justification of what may appear to some too violent language on my part, I will state a case within my knowledge, and which is not without its parallel, as I am told, in many hundreds of villages and towns, some, indeed, in every State of the Union. I know a thrifty town of some ten thousand inhabitants which twenty-five years ago had schools of excellent reputation. They attracted visitors from every quarter of the State in which this town was located. But the school board and its officers finally became ashamed of the very shabby buildings to which they were compelled to conduct their visitors, and they determined to have a fine high school building. It was built, and, when completed, was the finest in the State, and though built from twenty to twenty-five years ago, it has even now few rivals in the State. But their ambition was not tempered with wisdom. The town was so crippled that it could no longer pay their teachers a fair salary, and in consequence one after another of their best ones resigned to take more lucrative places, till none remained which anybody else cared to have. Their schools of course soon lost their good reputation, and went almost to ruin.

But I cannot avoid the reflection which doubtless occurs to many of you, that it may be very well after all for boards of education to go on spending lavishly for school-houses, if they do not comprehend the superior claims of good teaching; for though they were to retrench expenditures on the side of the material, they might rise no higher on the side of that which pertains to the development of the great possibilities which lie in the children of their generation. Possibly we are yet fated to suffer decades and decades of this brick and mortar age in educational administration before we come to that of intellectual and moral supremacy, just as the ages before us have advanced by slow steps through tawdry ornament to artistic decoration. In the mean time, however, let us disclaim any responsibility for extravagance in that which is only an obstacle to the real improvement of our schools. That must rest with boards of education, who generally keep the business of build-

ing school-houses in their own hands. Let us be content with the responsibilities of practical school management.

The question of large and small school-houses, of cost of sittings, and of cost of care and management, as related to efficiency of instruction, is one that should be taken up and thoroughly disposed of. As simple as the problem seems to some, it has never yet been sufficiently considered to enable us to arrive at safe conclusions. It might be supposed that a simple comparison of the cost of three or four school-houses of different sizes, built at the same time and under like conditions as to cost of sites, material, and labor, would settle the question; but when thus settled, considerations of the original cost of proper heating apparatus, pay of janitors, pay of teachers, and efficiency of supervision, come in to unsettle it again. It would surely be of service if some one would collect and arrange such facts relating to school architecture as would enable us to advise in such matters with some degree of confidence.

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I must here mention another source, or cause rather, of waste in public school expenditures, which applies generally to the country rather than the city school, viz, the employment of incompetent, and the frequent changes of teachers. We all know too well how far a very large percentage of teachers falls short of the knowledge and professional skill which teachers should have. I do not mean that they fall short of that excellence which would be welcome in some of the cities where the interests of the schools are most carefully guarded, but short of such qualifications as would be barely tolerated in them. An estimate of the ratio of these to the whole number employed would hardly be welcome to any audience, if the speaker were to make it. I leave it, therefore, for each individual to make it for himself. We may, however, safely draw attention to the fact that in most States the average experience of teachers falls short of five school years, which in many cases, I believe, consist of less than five months each; and we may safely ask, What success in teaching could be expected of young men and women, sometimes mere boys and girls, who having little rudimentary education, no special preparation at all in normal schools, possibly not even a week's flirtation at a teachers' institute, and resorting to teaching only for a few months during the often frivolous period of transition from youth to manhood—what estimate ought to be placed on the value of their services in this most difficult of all callings, in the pursuit of which they are generally left without direction or competent supervision? The usual practice of men in other affairs would seem to indicate the answer. The father trains his boy to the work of the plow, the workman in the shop serves his apprenticeship, and without this preparation he is said to do more harm than good. Is the untrained teacher likely to escape the same judgment? The answer suggests a cause of waste beyond calculation or estimate.



I come next to speak of what is of interest alike to city and rural schools—to graded and ungraded alike—the indiscriminate, or nearly indiscriminate, pay which is awarded to apprentices and master workmen. In no other profession or business is so little regard paid to the difference between skilled and unskilled labor as in the schools. You will often find side by side the young apprentice and the skillful teacher of years and years of experience receiving the same salary because they teach the same grade. And again you will often see two teachers starting out together, one adapted by nature to the care and instruction of children, endowed with such tact that her scholars seem to anticipate her wishes, the other arousing such antagonism that she can control only by force; one inspiring her scholars with a love of school and of books, the other with aversion to everything associated with them. These two will sometimes teach in the same school or the same city and under the same board of management year after year, at the same salary, because they continue in equal grades, or it may be at salaries advancing with equal step, because they began to teach at the same time. The consequence of such mistakes as these is either to dishearten the successful teachers, or drive them to other fields of labor where their ability is duly appreciated and rewarded.

The CHAIRMAN: Ladies and gentlemen will come to order and remain so until relieved by the Chair. I have been requested to make the following announcement with reference to the International Congress of Educators: The first session will be held this evening at 7.30 o'clock in this hall. A preliminary session of the International Congress will be held in this hall at 2 P.M. for the purpose of considering the kindergarten question, and the programme will be very interesting.

Discussion on Mr. Rickoff's paper was then opened.

Sup't. W. C. ROTE, of San Antonio, Texas, said:

In regard to the heating of school-houses<sup>1</sup> I think we must be governed by the condition of the country and climate. While these large furnaces are very excellent in the North, they answer poor purposes in the South, especially in the country I represent; for frequently we have it so warm in winter that we have no fires at all, and then if a norther comes up it sometimes reduces the temperature twenty degrees in as many minutes, and we want to have a fire at once, and by having a small stove it is obtained, whereas it would require several hours to get furnaces in working order. It is therefore better to have stoves in this climate; whereas North you have three or four months of cold weather and you want to keep a fire from the time it begins until its expiration, furnishing a constant heat. I know something of the weather there as well as here.

I also would say in regard to the matter of inexperienced teachers that it is probably one of the most difficult things to determine that a board of education has to deal with. We can get all the inexperienced

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<sup>1</sup> Referring to the part of Mr. Rickoff's paper omitted.

teachers we want; and I have a word to say in regard to what superintendents frequently do: I know it is a fact, and a shame as well, that to get rid of an inexperienced teacher who has failed, they frequently write out a fine testimonial and send him off. They do that in order to get rid of him. I think this is wrong, and that superintendents of schools ought to be governed by higher principles and motives. They should tell the truth, the whole truth, and nothing but the truth. If they cannot write anything that is good they should not write anything at all, because some one else may be imposed upon.

I have often found that persons raised in northern schools have a good physique but poor teaching faculty. It is not always one who has a good physique who is a good teacher. There is such a thing as a teacher born to work, born for instruction. It is in a person, and you cannot put it in him, if he has not got it.

Experience is worth a great deal, but you must have something to build on. I think, therefore, that all who are inexperienced should not be rejected. They should be put on trial, and when they have proved themselves efficient in the work and have become strong and able, I think, after a year or so, they should be put in as teachers. It is a hard thing to discriminate between teachers teaching in the same grade of schools and having the same experience. It is hard to discriminate in favor of one party or another. The only thing to do is this: where you find persons with good ability you must retain them in the service. I heartily concur with the speaker, that a great many teachers are paid too much, and a great many more too little.

Mr. RICKOFF: I expected that the proposition I made to pay young teachers less and old teachers more, or I would rather generalize in this way, to pay apprentices and poor teachers less and master workmen more, would raise considerable opposition here. For instance, in Cincinnati or Cleveland (and I know something of both) a proposition to reduce to \$200 the salaries of young teachers, those who get \$400, in order that you might raise the salaries of those of large experience, the masters of the profession, so that, instead of receiving \$1,000 or \$1,500, they might be paid \$3,000 or \$5,000, would meet with strong opposition. The fact is, that in this business of instruction there is not the advancement that there is in any other work, there is not that possibility for the young teacher that there is for the young mechanic, for the young mechanic may become the master workman, and thus he sees a way for advancement; but what is there for the teacher but a life of great industry and exertion, with nothing in the end to show that he has been doing a work most valuable, a work requiring the finest and deepest knowledge of the mind itself and exercising the most delicate art? What is there for one who is conscious of such work to consider? What is there for such a one to gain but a good reputation? It may be that that is worth a good deal. I would have this placed before the young teacher: I would not have her come in as an apprentice, paid merely

for subsistence; but when she comes into the schools now she is paid nearly as much for receiving instruction as the master is paid for giving it. I think that there must be a revolution in this direction. I would pay apprentices as apprentices, and I would pay master workmen as master workmen.

Mr. ROTE: Who is to decide who is the master workman?

Mr. RICKOFF: I should say, an expert.

The CHAIRMAN: The time for discussion is closed. The most important point that has been presented, and well presented, is the payment of work according to its ability.

Mr. JAS. L. HUGHES, of Ontario, Canada, inquired if there was a committee on resolutions. He thought that, if they had opinions, they should crystallize them in the form of resolutions and send them out.

The Chairman stated that there was no such committee, and called for resolutions, if there were any.

No response being made, he stated that he would take the responsibility of offering such resolutions himself during the session.

The CHAIRMAN: I now have the pleasure of introducing Prof. JAS. M. GARNETT, who will read a paper prepared by him.

Professor GARNETT proceeded as follows:

#### THE INNER WORKING OF THE UNIVERSITY OF VIRGINIA, AND THE PREPARATION NECESSARY FOR THE UNIVERSITY.

When I received an invitation from the chairman of the Executive Committee of the National Educational Association to read a paper at the present meeting, it was accompanied by the suggestion that I should give "a brief historical account of the University of Virginia and a description of its present organization." It happened, however, that just such a pamphlet, entitled "A Sketch of the University of Virginia," had been recently prepared by the venerable senior Professor of Law in the University (Prof. John B. Minor), chairman of the committee of the Faculty appointed to prepare such a sketch, as a part of the University exhibit in the World's Exposition; and it had been directed by the Faculty that copies should be placed for gratuitous distribution in both the Virginia State exhibit and in the National educational exhibit. It is, therefore, unnecessary for me to do more, in response to the above suggestion, than to call attention to this pamphlet, which contains a brief history of the origin of the University, an account of its early organization, and the subsequent additions to its subjects and means of instruction in both the academic and professional departments, and a particularly full account of its local arrangements, endowments, and income.

I thought, however, that it would not be uninteresting to this body if I were to supplement this pamphlet with a more detailed account of the "Inner Workings of the University of Virginia," and a statement of the "Preparation Necessary for the University," which would make

its elective system better known, and enable this audience to judge of it more intelligently; for, notwithstanding the many publications that have been made by the University, there still seems to be in some quarters a lack of knowledge concerning it, and even a misunderstanding of its working. If I were addressing an exclusively Southern educational association, this would be but "carrying coals to Newcastle"; but in this "International Congress of Educators," it is not to be taken for granted that the system of the University of Virginia is so well known as to need no further exposition, as, indeed, the invitation extended to me showed, and I offer this paper simply as a contribution to the general educational work now going on in this country.

The University of Virginia was first opened for the reception of students on March 7, 1825, so that it may now be said to have completed its period of middle life, and to have attained the comparatively venerable age of sixty years. The system with which it started, then altogether unique in this country, continues to be the system at the present day, notwithstanding the many changes and additions which have since taken place. This system was an arrangement of the subjects of instruction taught at that time into *eight* separate and distinct *schools*, as they are technically termed, namely, Ancient Languages, Modern Languages, Mathematics, Natural Philosophy, Natural History (same, however, limited to Chemistry), Moral Philosophy (including Mental Philosophy), Anatomy and Medicine combined, and Law. These *eight* schools have expanded into *nineteen*, in some of which, besides the professor, there are assistant instructors, and of these *twelve* are academic schools, *six* being literary and *six* scientific (though *two* of the latter are attended only by specialists), and *seven* are professional schools, *three* being in the Medical Department, *two* in the Law, *one* in the Engineering, and *one* in the Agricultural.<sup>1</sup> Each of these schools is independent of every other as far as its course and methods of instruction are concerned. The professor himself is the sole judge of the special

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<sup>1</sup> These schools are now designated as follows:

#### ACADEMIC SCHOOLS.

*Literary Department.*—Schools of Latin, Greek, Modern Languages, English Language and Literature, Historical Science, and Moral Philosophy (six).

*Scientific Department.*—Schools of Mathematics, Natural Philosophy, General and Industrial Chemistry, Analytical and Agricultural Chemistry, Natural History and Geology, and Practical Astronomy (six).

#### PROFESSIONAL SCHOOLS.

*Medical Department.*—Schools of Physiology and Surgery, Anatomy and Materia Medica, Medicine, Obstetrics and Medical Jurisprudence, and Chemistry and Pharmacy—same as Academic (four).

*Law Department.*—School of Common and Statute Law, and of Constitutional and International Law, Mercantile Law, Evidence and Equity (two).

*Engineering Department.*—School of Mathematics applied to Engineering (one).

*Agricultural Department.*—School of Agriculture, Zoology, and Botany (one).

subjects which he shall include in his course, and of the manner in which he shall teach those subjects. Within the limits, then, of each particular chair, there is the greatest freedom allowed in the selection of subjects and arrangement of the course. One of the cardinal principles of German university organization, *Freiheit des Lehrens* (freedom of teaching), was thus initiated in this country sixty years ago.

The Faculty, as a whole, consisting of the professors at the head of each school, is the immediate governing body of the University, and controls the number of hours, and even the particular hours, which are devoted to instruction in each school; and, subject to the approval of the Board of Visitors, representing the State authority, directs what honors shall be awarded in a part, or the whole, of the course taught in each school, and what schools, in whole or in part, shall be required for the academic and professional degrees of the University. The Faculty is presided over by a chairman, appointed annually by the Board of Visitors, although, in practice, the same professor is reappointed as often as he is willing to undertake the onerous duties, which no one desires to undertake, notwithstanding the additional compensation. Upon the chairman devolve all the administrative and executive duties usually discharged by the president of a literary institution, but his power is more limited, for every question that arises outside of the ordinary routine must be referred to the Faculty, and be decided by that body. The Faculty acts usually through committees, but no decision of a committee is final unless approved by the Faculty. This feature of the university system is thought by some to be open to objections, and the more common organization, with a president at the head of the institution, is considered, in some respects, better; but the plan has been found to work well in practice, it is thought to place more responsibility upon the individual professor, and it is at least an open question whether a different organization would be better for this particular institution. Moreover, it was a pet idea of Mr. Jefferson's, derived, perhaps, from the annual election of a *Rector Magnificus* in the German universities, and we are told in a paper from the pen of Professor Minor, written thirty years ago, that "Mr. Jefferson attached not a little importance to this republican feature of rotation, insomuch that at the very last meeting of the Board [of Visitors] before his death [in 1826], Mr. Wirt, then Attorney-General of the United States, having been appointed Professor of Law and President of the University, Mr. Jefferson, while expressing his hearty concurrence in Mr. Wirt's appointment to the Chair of Law, entered upon the minutes, with his own hand, so strong a protest against the creation of the office of president that, upon Mr. Wirt's declining, the proposition was never renewed."<sup>1</sup> But though the rotation existed in the early days of the University, no professor having then held the office more than two years in succession, this ceased forty years ago, and, as already stated, it is customary for the Board of

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<sup>1</sup> *Jefferson and Cabell Correspondence*, Appendix Q, p. 519.

Visitors to re-elect the same professor as often as he is willing to retain the office. Another feature of the organization of the Faculty deserves notice, and that is, that there is no distinction whatever between the professors in the academic and in the professional departments. They all meet on an equal footing as one body, and questions relating to each department are decided by the whole body. The division of the Philosophical Faculty, which has recently agitated the German universities, has not yet been suggested here, even so far as relates to a separation of academic and professional schools, but each professor avails himself of whatever light may be thrown upon the subject under discussion by any one of his colleagues. This tends to prevent narrowness, to avoid considering the claims of one school, or department, separate from the rest, and to give force to a decision of the Faculty as that of the whole body, and not of a fractional part of it.

The Board of Visitors has been referred to as the highest authority of the University. This Board consists of nine members, appointed every four years by the Governor of the State and confirmed by the Senate,—three from the Piedmont Region, in which the University is situated, and two from each of the other three grand divisions of the State, the Valley, South-west Virginia, and the Tidewater Region. In the hands of this Board are lodged all powers usually exercised by boards of trustees, and especially the control of the finances of the University, although in respect to these the Faculty, at the close of each session, through one of its committees, prepares for its annual report a statement of estimated receipts and expenditures for the ensuing session, with such suggestions as it may think proper in respect to expenditures for special purposes, which statement serves as a guide to the Board of Visitors in authorizing the disbursements. This Board is required by law to make to the Legislature an annual report of the condition of the University. The University receives from the State an annual appropriation of forty thousand (40,000) dollars, in return for which it is required to admit, free of charge for tuition in the academic schools, all Virginia students sixteen years of age who pass an elementary examination for admission into the respective schools which they desire to attend, or who present certificates of satisfactory attainments from some college or preparatory school. The limit of age has heretofore been *eighteen* years, but this was changed by the Legislature in 1884 of its own motion.

Having thus briefly sketched the organization of the University as regards its subjects of instruction and its governing bodies, let us consider it from the point of view of those for whose benefit the University is established, and see how it affects them. A student who enters the University is supposed to have arrived at such an age as to know what he wishes to study, or to have had directions from his parents to pursue certain subjects of study. This is, of course, true with respect to professional students, whose average age on entrance is over *twenty-one* years, and it is presumed to be true with respect to academic students.

The average age of these students on entrance is about *nineteen* years, so that the presumption is reasonable.<sup>1</sup> The entering student finds at least *ten* academic schools open for his selection, *three* of which he is required to enter, unless he is of age or has his parents' authority to enter a less number. Sometimes as many as four are entered, in whole or in part, but it is seldom advisable for a student, and especially a first-year student, to enter more than three. Cases frequently occur where a student has taken up more studies than he can attend to, and therefore applies to the Faculty for permission to drop some one school. If the student is a candidate for a titled degree, he will find these schools grouped in accordance with the requirements for that degree, but the order in which he shall take up the specified schools is left entirely to his own selection. The schedule of hours is to some extent a limitation upon his selection, as, of course, students cannot enter the same year schools of which the lecture-hours conflict. If the student is not a candidate for a titled degree, he may select any three schools he pleases; there is absolutely no restriction upon his choice but that necessarily imposed by the schedule of lecture-hours. Thus another principle of German university organization was introduced into this country at the inception of the University of Virginia, sixty years ago, that is, *Freiheit des Lernens* (freedom of learning). As is well known, this is termed the *elective* system in distinction from the *curriculum* system, and it has been gradually introduced into many of our higher institutions of learning. But the mistake has been made, as it

<sup>1</sup> Table of ages of First-Year Students in the University of Virginia for Session 1884-'85.

Ages.	Academic.		Professional.		Mixed.	
	Virginia.	Foreign.	Virginia.	Foreign.	Virginia.	Foreign.
16	1	4				
17	10	7		2		1
18	6	9		3	8	3
19	11	7	8	4	2	
20	7	2	4	8	4	1
21		1	6	9	1	1
22	2	1	9	6	2	1
23	2		6	4		
24	1	1	1	1		
25			1	1		
27				1		
29		1				
30					1	
* 36	1					
* 38	1					
40				1		
Total .....	42	33	35	40	13	7
Average age..	19½	18½	21½	21½	20½	19½

Average age of Virginia students in Academic Department, excluding those marked with an asterisk as resident clergymen, 19. Total number of *first-year* students of all kinds, 170; average age of *first-year* students of all kinds, 20½. Number of students of 1884-'85, according to duration of attendance: 1st year, 170; 2d, 64; 3d, 44; 4th, 14; 5th, 8; 6th, 1; 7th, 1; 8th, 1. Total, 303.

seems to me, of introducing it into many of our lower institutions of learning also. We are told by Professor Charles F. Smith, of Vanderbilt University, in an article on "Southern Colleges and Schools" in the *Atlantic Monthly* for October, 1884 (p. 548), that "at least *thirty-five* Southern colleges and universities have adopted this system, following the example of the University of Virginia." I am inclined, however, to agree with the President of Tulane University, who is quoted in the above article as saying (p. 551): "It is just as demoralizing for a college to invade the domain of true university work as for a preparatory school to attempt to be a college"; and again: "While I approve of the 'elective system' for *real* universities, I regard its application to colleges and schools as a misfortune."

The elective system as it prevails in the University of Virginia, which has never known any other system, has been often misunderstood. It has been sometime imagined that the University of Virginia confers a *titled* academic degree for any combination of studies that the student himself may select, provided that he fulfills the requirements of the written examinations. This is, of course, an entire mistake. There is attached to each school the degree of *graduate* in that school, conferred on completion of the entire course taught in that school, which is tested by means of rigid written examinations, on which the student is required to attain at least three-fourths of the total value of the questions. A student who has received this diploma of graduation in Latin, say, is entitled to call himself a "graduate of the University of Virginia *in Latin*;" and so for all other schools. In some schools, where the subjects are capable of division, the degree of *proficient* is similarly conferred on completion of certain specified partial courses in these schools, and in a few schools the attainment of *two* such proficiencies on distinct subjects constitutes *graduation* in the school. These degrees, however, are not *titled* degrees. The requirements for titled degrees are strictly specified.<sup>1</sup> In some of these degrees there is no option possible, but certain fixed requirements are made, which the student must fulfill if he wishes the particular degree; in others option is permitted within very narrow limits; and in only *one*—the recently-established degree of bachelor of philosophy—does the option vary to the extent of *one-half* of the academic schools of the University, graduation in *five* schools, *any three* of the *six* literary and *any two* of the *four* scientific schools, being requisite for the attainment of this degree, which is, to my mind, more consonant with the genius of the elective system and of a university than any other one of the bachelor's degrees. It will thus be seen that the requirements of the University of Virginia are stricter with respect to subjects for the titled degrees than those of many institutions which still retain the curriculum system; which fact, combined with the high standard requisite for graduation in each school, will account for the small number of titled degrees con-

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<sup>1</sup> For these see Annual Catalogue.



ferred by the University. In respect to titled degrees, there is another point which deserves mention. The B. A. degree is not preliminary to the M. A. degree, as in most institutions; it is merely a degree conferred for lower attainments. A student may attain the M. A. degree without ever having received the B. A. degree, or, in certain cases, without ever having studied some of the subjects specified for the B. A. degree, as in this last a limited substitution is allowed. Again, a student may receive the B. A. degree and never attain the M. A. degree, for it is not conferred *in course*, but only after graduation in the specified schools. The two degrees have, then, no relation to each other, and, as a matter of fact, the M. A. degree was established in 1831, seventeen years before the institution of the B. A. degree, the only degree originally instituted being that of *graduate* in a *school*, which may be called the basis of all degrees. Just here I may be permitted to correct a slight error into which Professor C. F. Smith has fallen, in the article above referred to, with reference to the requirements for the M. A. degree in the University of Virginia. There is no such "student public opinion" which "hold students to a certain order of studies" (*loc. cit.* p. 549) as that with which the University is credited. I presume none would be more surprised than the students themselves to hear that such "public opinion" was reported to exist. The illustration given, namely, that "a student who has taken French and Spanish as the two modern languages for his [M. A.] degree found, after he had gotten his certificates of proficiency [read, *diplomas of graduation*], that student public opinion regarded no other modern language as an equivalent for German for the M. A. degree, and he therefore took German in addition,"—must have been based on misinformation as to the requirements for the M. A. degree. From 1832, when graduation in the school of Modern Languages was first required for the M. A. degree, to 1859 the student was at liberty to take *any two* of the four modern languages taught for his M. A. degree. In 1859 the requirement of French and German as *the two* modern languages necessary for this degree was made obligatory, and has so continued ever since. It is the Faculty, under approval of the Board of Visitors, that regulates the requirements for all degrees at the University of Virginia, as at other institutions, and no "student public opinion" affects these or concerns itself in any way with the order of studies that any student chooses to pursue. As already stated, if the student is a candidate for a *titled* degree, he finds the requirements strictly specified; if not, he is at liberty to study any subjects he pleases, and the only concern of the Faculty is to see that his time is fully occupied, which is sought to be effected by the requirement that he must enter at least *three* schools, unless special circumstances exempt him from it, and that, having entered these schools of his own choice, he attends the lectures regularly and discharges the duties incumbent upon him. If the student is a candidate for *any* titled degree, he will find, also,

that no limit of time is specified for its attainment; this depends entirely upon his ability to fulfill the requirements. Of *nine* M. A. graduates of 1884, the time of attendance at the University varied from three years to six, the usual time being three and four years. The *one* B. S. had attended for two years, and the *one* B. A. for six years. (I should add that the last was a professor's son, who had entered quite young,—only fifteen years of age,—and had therefore gone very slowly through the course.) In like manner graduation in a *school* is not dependent upon the time of attendance. While a student who is well prepared may graduate in a particular school the first year, another may take several years to accomplish graduation; and cases have occurred where a student has attended the senior class of the same school for three years, and still failed to graduate. As there is no annual promotion from class to class, as in a curriculum, the element of time does not enter, and a student may accomplish his course fast or slow, according to his inclination and ability. The same standard is set for all, and it must be reached regardless of time. There is also no entrance examination, except for Virginia students who desire free tuition,—and this is of a very elementary character in each school,—so that no student is rejected for lack of preparation. Upon the student himself rests the responsibility of undertaking the courses prescribed. In the schools of Greek and Mathematics there are three classes,—junior, intermediate, and senior,—and in those of Latin, Modern Languages (that is, in French and in German), and Natural Philosophy, there are two classes, junior and senior, and the student enters whichever one, after consultation with the professor, he finds himself prepared for; but only those who complete the course of the *senior* class can apply for graduation in the school.

The class-work during the year, consisting of the preparation of certain portions of the text-books, the writing of exercises in the languages, and the preparation of the notes taken from the oral lectures of the professor, is by no means all of the student's work. In all the language-classes certain authors are assigned to be read privately, from which reading of the senior classes one of the pieces for translation in the graduation examination is usually taken, the other being taken from the classical writers of the language at will. The pieces for translation in the graduation examination are never taken from what has been read in the class-room. It was formerly customary to leave to the student himself the selection of his private, or extra, reading, both pieces for translation in the examination being taken from the classical writers of the language at will, but now the so-called "parallel-reading" is assigned by the professor at the beginning of the session, and the student reads it from time to time during the year. In the mathematical classes extra problems are assigned for solution each week, or even each day, so that the student's original power for this kind of work is continually tested. In some other schools a course of parallel-reading

in connection with the subjects studied—or corresponding private work in addition to that of the class-room—is assigned, the object being to encourage the habit of private study along with the preparation of a certain portion of the text-book or a certain quantity of lecture-notes from day to day. The proper preparation of this last also is tested by careful questioning at each lecture on the portion of the text-book assigned and on the subjects of the preceding lecture.

The student's presence at each lecture is ascertained by a regular roll-call, and if his absences reach as many as three during the month in any *one* school without valid excuse, his name is reported to the Faculty, and he is admonished to be more particular in attendance. Also the number of times that he has absented himself from lectures in each school, and a brief statement as to how he is doing, are entered upon the monthly report regularly rendered to his parents. A student who is persistently idle and neglectful of admonition, or whose conduct is deserving of severe censure, is usually informed at the close of the session that his presence during the following session will be dispensed with; or, in flagrant cases, his parents are requested to withdraw him forthwith. It may be truthfully said that cases of this kind seldom arise, and I do not suppose that any institution in the country enjoys greater immunity from bad conduct on the part of its students than the University of Virginia. Every student is treated as a gentleman, he respects himself as such, and conducts himself accordingly, and cause for censure very seldom arises. Supposing that the student has applied himself to his studies, and maintained a good class-standing during the year, which is determined by the regularity of his attendance at lectures and by the judgment of the professor as to the student's answers in the class questioning,—for there is no marking-system in vogue in the University,—he presents himself for the written examinations. These occur twice during the year, in February and in June, and in some schools the two examinations count as of equal value, being on different portions of the course, while in others the whole stress is laid on the *final* examinations. The professor endeavors in these examinations by a series of questions, some of which often require lengthy answers, to test *thoroughly* the student's knowledge. A list of examination questions is often very deceptive; so much depends upon the character and extent of the answer required, and even upon the judgment of the examiner. While the professor in each school sets the questions and examines the papers, two other professors along with him constitute the committee of examination for that school, and any question that may arise relative to the examination or to the student's papers is decided by the committee and not by the professor alone. The examinations for graduation last usually from six to eight hours on each subject, though sometimes, in the case of students who write slowly, they may extend to ten hours or more. They are seldom limited to a shorter period than six hours, so that a student is not re-

quired to write against time; he is given a full opportunity to state what he knows, even if he may think slowly. As already stated, he must attain *three-fourths* of the total value of the questions, or he fails of graduation, and in the professional schools the standard is higher, being *four-fifths* in the Medical Department, and *five-sixths* in the Law Department. Each student appends to his examination paper a pledge that he has "neither given nor received any assistance during the examination," which pledge is most rigidly observed as a point of honor by all the students. I have never known, personally, of but *one* violation of this pledge, and in that case a committee of his fellow-students waited upon the offender and informed him that he must leave the University, which he did forthwith. I have heard that a few similar cases have occurred in the history of the University, which were similarly treated. Here it is "student public opinion" that regulates the matter and sets the tone of the University. A violation of the examination pledge may not even reach the ears of the Faculty, but is dealt with by the students themselves. It is simply an impossibility for any Faculty to regulate this, and it must be left to the honor of the students. The University of Virginia is not peculiar, however, in this respect, for the same tone and practice exist in other institutions in Virginia and the southern States, and have extended to the preparatory schools also. They may, too, exist in institutions in the Northern and Western States, but as to this I am not so well informed.

Thus by means of class teaching and private study during the year, and rigid written examinations at the close, the University of Virginia endeavors to secure *thoroughness* of attainment on the part of its students. A diploma of graduation in any school is an evidence that the student has worked hard on the subjects taught in that school, and has come up to the standard required, whether he has spent one, two, or three years in obtaining his diploma. A *titled* degree is evidence that the student has accomplished such hard work in several specified schools, and as the M. A. degree requires graduation in more schools than any other, it has always been regarded as the highest honor of the University.

There have been established, however, recently, Doctorates of Letters, Science, and Philosophy, which require that a student who has obtained the corresponding Bachelor's degree, or, in the case of the last, the degree of B. A. or of B. Ph., shall pursue post-graduate courses in *two* schools of his own selection out of those in which he has graduated. His proficiency in these courses is tested by theses and examinations, and while no limit of time is fixed, it is estimated that the completion of the post-graduate courses will require at least two years of study after attainment of the Bachelor's degree. The candidate's thesis must show independent research in the subject of his selection, and, on approval, must be printed. The effort is thus made by means of the Doctorates to encourage and reward *specialization*. The system has been

in operation too short a time as yet to produce results, but there are now certain students pursuing post-graduate courses who will apply for the Doctorates in due time.<sup>1</sup>

It deserves to be added here that no *honorary* degree is conferred by the University of Virginia. It may be taken for granted that any one of its graduates who writes a titled degree after his name has worked hard for it, and has attained on the written examinations the standard requisite for graduation in the several schools specified for that degree.

In order not to prolong this paper to too great length, it remains to notice briefly, in conclusion, the character of the preparation necessary for *academic* students to enter the University of Virginia profitably. Professional students, of course, being over twenty-one years of age, will enter with whatever preparation they may have been able to acquire, and will profit accordingly. From the average age of entrance of the academic students, already stated as about nineteen years, it will be seen that they have attained greater maturity of mind than the first-year students of many institutions of learning, and their preparation should correspond.

In several schools of the University no previous knowledge of the subjects taught is required, and a student may enter these schools without further preparation than is implied by the possession of a good common English education, such as the highest grade of public schools can supply, for the teaching begins with the elements of the subject, as in chemistry, for example, or moral philosophy; but some maturity of mind is requisite in order to profit by the courses taught. In judging of this preparation, then, it will be necessary to take those subjects which the preparatory schools profess to teach, namely, Latin, Greek, mathematics, French, and German, if, indeed, these last can be rightly added. I wish I could add English also, but as yet the courses in English are so meager and so varied in the preparatory schools that one cannot, for the large majority of students, count upon more than instruction in the ordinary English grammar, and in the elementary principles of composition and rhetoric. There are some important exceptions to this statement, but I think that I speak rightly as regards the English course taught in the great majority of preparatory schools in the South, which is the chief constituency of the University of Virginia, and possibly in the North and West,—but of these I speak under correction. In my judgment, the great want in most of our preparatory schools is a thorough course in English parallel with the courses in Latin, Greek, and mathematics, and of equal importance. We are not so deficient in good preparatory schools, at least in Virginia, as one would infer from a letter of Professor W. M. Baskervill, of Vanderbilt University, printed

<sup>1</sup> The degree of Doctor of Philosophy was conferred for the first time in 1885, and it was in that year also decided to recognize the B. A. degree from other reputable institutions as a preliminary to this Doctorate, the requirement, however, of graduation in the two selected schools of the University being still maintained.

in *The Nation* of December 18, 1884 (No. 1016), in which, after enumerating five schools by name,—one in North Carolina, one in Tennessee, and three in Virginia,—he adds: “All the rest of the South cannot add five more such schools to this list.” I would beg leave to say that I can easily add, from Virginia alone, “five more such schools,” and over, whose course is equally as high in grade as that of those mentioned, and, in fact, a colleague informed me that he could count *fifteen*. But these schools have not yet established full and thorough courses in English equal in extent and importance to their courses in classics, mathematics, and modern languages, though I look hopefully for this to come in time, even if something else must “go by the board.” While our schools are doing good work, and sending up some students every year prepared to enter the senior classes in the university, they are not now equal in numbers, nor, perhaps, in the grade of their work, to the schools in what was “the golden age” for Virginia preparatory schools, and for the University,—the decade from 1850 to 1860. Then there were at least a half-dozen schools in the State, whose number of boarding-pupils varied from sixty to a hundred, and several others with a less number, all preparatory to the University, and drawing their pupils from all parts of the South. The University during this period was in its most flourishing condition, having, for at least six years successively, over six hundred students in attendance,—nearly four hundred of whom were *academic* students,—coming from all of the Southern States from Maryland to Texas. Almost all of these preparatory schools either were conducted by graduates, usually M. A.’s of the university, or drew their principal teachers from it. Having been educated in one of these schools, and having taught in another, I may be permitted to speak from personal experience of the preparation afforded, as an illustration of the school course. In the school attended we had been reading, for three years, the higher Latin and Greek authors,—others having been previously studied,—of which I recall, in Latin, Tacitus and Juvenal, Plautus and Terence, Cicero’s Letters and Tusculan Disputations; and, in Greek, Euripides, Sophocles, Thucydides, and Theocritus,—and we had written weekly exercises in Latin and Greek composition, retranslating into these languages a piece of English translated from some classical author; we had studied trigonometry and surveying, analytical and descriptive geometry, and the class succeeding ours studied also the differential and integral calculus; we had pursued a French course during the three years, reading lastly Racine and Molière, and writing weekly exercises. I do not now recall any English studies pursued, except spelling, which was rigidly insisted on for the whole school, and composition and declamation,—for the time of English was not yet. I cannot say that all, or even a majority, of the students entering the University enjoyed this amount of preparation, but it was not any too much for entering the *senior* classes in the respective schools, and any student who desired to graduate the first year in the schools named must

have had somewhat equivalent preparation, even if he had not read quite as much Latin and Greek. I speak of "senior classes," and of "graduation the first year," because a student may enter the lower classes in the schools of Latin, Greek, mathematics, and modern languages, with very much less preparation, or he may even enter the senior classes and profit by the instruction given, but he will not graduate the first year. Comparing the courses taught in these schools of the University *now* with those taught twenty-five years ago, I should say that graduation in Latin and mathematics is somewhat more difficult now than it was then; in Greek and modern languages it is about the same. The preparatory schools have, therefore, now a somewhat harder task than they had then, and, with some exceptions, it does not seem to me that they fulfill it as well, but I may be mistaken. Education in Virginia, if not in the whole South, does not seem to have recovered from the great cataclysm, notwithstanding twenty years have elapsed, and a new generation has come on the scene. The University of Virginia is certainly now much better equipped for its work than ever before. Its *thirteen* schools of 1860 have expanded to *nineteen*; it possesses a chemical laboratory and a museum of natural history and geology of extraordinary value; its gifts, endowments, and appropriations are greater than at any former period; and it has just been provided with an endowed observatory and a refracting telescope equal to any in this country, and excelled by few in Europe. That its students are not as numerous as formerly is due, in my opinion, to two causes,—the one, perfectly just in itself and not to be regretted but in its effect, that other southern States are building up their own institutions, and are educating for themselves the students whom Virginia formerly educated for them; in this they are wise, and are to be congratulated, and no lover of education would wish to see them take one step backward; the other cause is, I fear, not so creditable to our people, as a whole, and here I include Virginia, as well as other southern States; it is, that there is not as great a desire for higher education as there once was; our people have been occupied with their material interests, and have starved their minds; young men are growing up all around us with a mere smattering of education, but as it is sufficient to enable them to enter upon an agricultural, manufacturing, mercantile, or commercial life, they are satisfied; education costs money and postpones the time for making money, and we are content to do without it. But the "three R's" will not suffice; the education given in our public schools is very desirable as far as it goes, and these schools should, by all means, be extended; but, if we are content to stop there, it will not answer; we can never rear a cultured community on the rudiments of learning; we can never take the position we once occupied in the statesmanship of this great country, nor even hold our own, if our higher institutions of learning are neglected.

The so-called "New South" has developed in many ways, has expanded prodigiously, from a material point of view, and has extended

the blessings of elementary education to a much larger number than ever before. But I question seriously whether, in proportion to the population, there are as many young men now seeking a higher education as there were in 1860.<sup>1</sup> Some who write about the condition of education in the South previous to 1860 do not know what was the real condition of affairs. They do not reflect that the higher institutions of learning in each State, and the private schools preparatory to them, were generally well attended, and that the character of the liberal education supplied by them was in no whit inferior, if it was not superior, to what it is now. While we have broadened, we have not deepened. Lack of private means, doubtless, has had much to do with this, but as material interests have progressed, this lack is being gradually supplied. The caution which, it seems to me, is now most needed by the people of the South is not to let regard for material interests override consideration of intellectual growth. Mind must rule, and mind must have the opportunity of being developed to its highest capacity if we would keep pace with the intellectual progress of the world. Our higher institutions of learning must be cherished, not only supported from the public funds, but aided by private benefactions, and especially sustained by receiving for education the sons of all who can afford to send their sons to be educated. With much increased facilities for instruction, the colleges and universities should not lack students, for whom these facilities are provided. Higher education should be at least as highly appreciated now as it was by our fathers, or the result will inevitably be seen in the career of our sons. We cannot afford to neglect the higher education, for, if we do, it will undoubtedly react upon the lower, and we shall stand before the world a half-educated people, regardless of our most important interests. Moreover, we can never contribute our share to the literature of the world unless we lay the foundation broad and deep. Writing novels and works in the negro dialect is not contributing to the highest forms of literature. Does any of this ephemeral literature, or all of it together, deserve to be placed beside the papers which emanated from the statesmen of the past, or the speeches with which the halls of legislation once resounded? Let us not deceive ourselves. Let us realize that the higher education must be maintained, and that we must take advantage of it if we would be an educated people; that there is a higher life than the mere material, and that making money is not the chief end of man.

This sketch of the way in which the University of Virginia is endeavoring to do its part towards securing that *thoroughness* in the higher education which is so essential to success, is offered as a contribution

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<sup>1</sup> This view is expressed also in two thoughtful and well-written articles on "Education in the South," which appeared in the Nashville *Christian Advocate* of January 24 and 31, 1885, but the anonymous writer is rather pessimistic in regard to education, not only in the South, but in the whole country.



to the general educational work in this country, and especially as a plain description of one modest phase of that work.

## APPENDIX.

### DEGREES.

No honorary degree is conferred by the University of Virginia. The degrees are conferred only upon examination, as follows:

1. A Certificate of Proficiency is conferred on one who has passed examination on any of the following special subjects: Anglo-Saxon, English language, rhetoric and English literature, general history, political economy and science of society, logic, philosophy, junior and intermediate mathematics, junior physics, agricultural chemistry, geology, mineralogy, botany, physiology, human anatomy, medical jurisprudence, pharmacy, and international and constitutional law.

2. A Diploma of Graduation is conferred on one who has passed examination on any of the following general courses: Latin, Greek, French, German, Spanish, Italian, modern languages (any two of the last four), English, historical science, moral philosophy, pure mathematics, mixed mathematics, applied mathematics, natural philosophy, practical physics, practical astronomy, general chemistry, industrial chemistry, analytical chemistry, mineralogy and geology, natural history and geology, and agriculture, zoology, and botany.

#### *Academical degrees with titles.*

1. The title Bachelor of Letters of the University of Virginia (*B. Let. Univ. Va.*) is conferred on one who has graduated in Latin, Greek, and moral philosophy, and in modern languages, or English, or historical science.

2. The title Bachelor of Science of the University of Virginia (*B. S. Univ. Va.*) is conferred on one who has graduated in pure mathematics, natural philosophy, general chemistry, and natural history and geology.

3. The title Bachelor of Philosophy of the University of Virginia (*B. Ph. Univ. Va.*) is conferred on one who has graduated in any three of the following: Latin, Greek, French and German, English, historical science, and moral philosophy; and in any two of the following: pure mathematics, natural philosophy, general chemistry, and natural history and geology.

4. The title Bachelor of Arts of the University of Virginia (*B. A. Univ. Va.*) is conferred on one who has attained: First, a Distinction ( $\frac{1}{2}$ ) in the work of senior Latin, and of junior and intermediate Greek, and a Proficiency in junior and intermediate mathematics, in junior physics, and in either class of moral philosophy; second, any two of the following: a Distinction in a prescribed course of general chemistry, a Proficiency in geology, in either class of English, in either class of historical science, and a Diploma in either French or German; third, Graduation in any two of the ten schools indicated.

N. B.—The examination in senior Latin for this degree is limited in the translation of Latin into English to the Latin read in the lecture-room, and in the translation of English into Latin to a designated one-fourth of the exercise assigned for graduation.

5. The title Doctor of Letters of the University of Virginia (*D. Let. Univ. Va.*) is conferred on one who has attained the degree Bachelor of Letters, and accomplished a graduate course in any two or more of the literary schools.

6. The title Doctor of Science of the University of Virginia (*D. S. Univ. Va.*) is conferred on one who has attained the degree Bachelor of Science, and accomplished a graduate course in any two or more of the scientific schools.

7. The title Doctor of Philosophy of the University of Virginia (*D. Ph. Univ. Va.*) is conferred on one who has attained the degree Bachelor of Philosophy, or Bachelor of

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Arts, and accomplished a graduate course in any two or more of the literary schools, or in any two or more of the scientific schools.

N. B.—The candidate for a doctorate is also required to prepare and have printed a fortnight before Public Day an approved thesis, showing independent research in the subjects of one or other, as he may elect, of the schools in which he pursues a graduate course. Candidates for the Doctorate of Philosophy may come up for examination at any time which the committee of the examination may fix upon.

Graduation in a school is prerequisite to admission to the advanced graduate course of that school. Graduation in practical astronomy may replace the graduate course in mathematics and natural philosophy. The elections of a candidate for a doctorate are subject to the approval of the Faculty.

8. The title Master of Arts of the University of Virginia (*M. A. Univ. Va.*) is conferred on one who has graduated in Latin, Greek, French, and German, moral philosophy, pure mathematics, natural philosophy, and general chemistry.

### *Professional degrees with titles.*

1. The title Bachelor of Law (*B. L.*) is conferred on one who has passed examination on all the subjects of instruction in the schools of the Law Department.

2. The title Doctor of Medicine (*M. D.*) is conferred on one who has passed examination on all the subjects of instruction in the schools of the Medical Department.

N. B.—A candidate for the degree Doctor of Medicine, who in a previous session has become a Proficient in physiology, anatomy, or medical jurisprudence, or a Graduate in general chemistry, is not required to stand examination in these subjects anew. The same rule applies to a candidate for the degree of Bachelor of Law, who is a Proficient in international and constitutional law.

3. The title Civil Engineer (*C. E.*) is conferred on one who has attained a Proficiency in junior and intermediate mathematics, accomplished a prescribed course on the infinitesimal calculus, and graduated in natural philosophy, general or industrial chemistry, mineralogy and geology, and applied mathematics in the course of civil engineering.

4. The title Mining Engineer (*M. E.*) is conferred on one who has attained a Proficiency in junior and intermediate mathematics and in junior physics, accomplished a prescribed course on the infinitesimal calculus, and graduated in general and industrial chemistry, analytical chemistry, mineralogy and geology, and applied mathematics in the course of mining engineering.

5. The title of Bachelor of Scientific Agriculture (*B. S. A.*) is conferred on one who has attained a Distinction in junior applied mathematics and in analytical chemistry, and a Proficiency in junior physics and in agricultural chemistry, and graduated in general and industrial chemistry, natural history and geology, and agriculture, zoology and botany.

There was no discussion upon Prof. Garnett's paper, and, after the announcement of the programme for the next session, at 12.40 o'clock P. M. the Association adjourned.

## SECOND SESSION.

The second session of the Department was called to order at ten o'clock A. M., Wednesday, Feb. 25th, Hon. JOHN HANCOCK presiding, and prayer was offered by Rev. L. G. BARBOUR.

The CHAIRMAN: I am requested by Dr. Traver, of Leland University, to extend to the educators who may be in the city a cordial invitation to visit that institution.

The SECRETARY: I am requested by the Treasurer of the National Association to state that the committee in charge of the publication of

the proceedings of the meeting at Madison will have the volume ready for delivery to members about the first of March. The volume will be unusually large, and will be valuable. The Association is obliged to defray the cost of publication, which will be about \$500. The Treasurer desires that no volumes shall be sent out that will not positively reach persons desiring them. It is therefore requested that all persons desiring copies will forward their present address to N. A. Calkins, 124 East 80th St., New York City, and also send fifteen cents in defrayment of postage.

Dr. E. E. WHITE, of Cincinnati, O., then read the following paper:

A TRUE COURSE OF ELEMENTARY INSTRUCTION; ITS PRINCIPLES  
AND METHODS.

Education as an art is based primarily on the nature of the being educated. This fact is illustrated, not only in the education of different classes of human beings, as infants and adults, the blind, the deaf, and the feeble-minded, but also in the training of different brute animals, as the horse, the dog, and the monkey.

It follows from this fact that the devising of proper methods of education for any class of human beings involves a knowledge of their educable nature, and hence the devising of methods and courses of school education involves a knowledge of the nature of children and youth, and especially of their *psychical nature*.

How is this guiding knowledge best obtained? It is believed to be best reached by a careful analysis of psychical processes and powers as revealed in consciousness, and then determining the relations of these processes to each other and the relative activity of the corresponding powers in the successive periods of school life, by a wide and careful comparison of children of different ages and conditions. The true basis of child psychology is general psychology.

We can only give a brief summary of the results reached in an earnest attempt to pursue the line of inquiry thus suggested.

*Analysis of Psychical Processes and Powers.*

The human soul is capable of three distinct activities,—*knowing*, *feeling*, and *willing*. The power of the soul to know is called the *Intellect*; the power to feel, the *Sensibility*; the power to will, the *Will*.

These three capabilities, or powers, of the soul are called *Faculties*. A faculty is not a separate organ or part of the soul, but a power of the soul as a unit. The human soul is a unit in essence, with a trinity of distinct powers or capabilities.

It is also important to observe that the intellect, sensibility, and will are distinct, but not independent, powers or faculties. They act and react upon each other, and their interactions are marvelously blended in many complex psychical acts and states. They condition each other.

For pedagogical reasons, we would prefer to begin our analysis with the Sensibility, but the limits of this address compel us to omit the phenomena of the Sensibility and the Will, and pass at once to an analysis of the processes and powers of the

## INTELLECT.

To know an object is to be certain that it is, and hence knowing may be defined as the perceiving of the certain existence of an object of knowledge.

I. The Intellect is endowed with the power to know directly and immediately *present objects of knowledge*. This power is called the *Presentative Faculty*.

The present objects of knowledge, thus known by the Presentative Faculty, include (1) subjective or psychical objects—the acts and states of the soul and the soul itself; (2) objective or material objects; and (3) the necessary relations between objects of knowledge, as the relations of space, time, cause and effect, means and end, design, etc.

The power of the soul to know directly its own acts and states and itself as the knower is called *Consciousness*. On the certainty of this subjective perception depends the validity of all knowledge.

The power of the soul to know directly external material objects is called *Perception*; and since the soul perceives physical phenomena through, or by means of, the six senses, this power may properly be called *sense-perceptive*.

The power of the soul to perceive or know directly the necessary relations of objects, i. e., to know necessary truths, is called *Intuition*. The necessary relations of objects are known directly and immediately, and the act is *presentative*.

Every act of the presentative faculty results in a psychical product. The products of consciousness and intuition are called *ideas*, and the products of sense-perception, *percepts* and *concepts*—a percept being the result of a single act of perception through a single sense, and a concept being a synthesized whole, composed of several percepts and ideas. All sense-concepts are *individual*, that is, they represent individual objects.

What would be man's intellectual condition were he endowed only with this presentative power—the power to know present objects of knowledge? It is evident that the products of consciousness, sense-perception, and intuition would constitute the sum total of human knowledge, and *each of these would vanish with the act that produces it*. There would be no past in consciousness and no anticipated future. The conscious psychical life of every human being would be its present—a moving point. The so-called universe of man's knowledge would be bounded by the limited reach of the physical senses, and, without the aid of the higher powers of the mind, as hereafter shown, this reach would indeed be very limited. The effects produced in the sensorium by material objects, through the senses, are at best but very imperfect *indicia*

of what the mind actually sees. In all sense-perception, the mind, by the power of thought, perceives much more than the eye or other sense discloses.

II. But the Intellect is further endowed with the power to represent to itself and reknow objects previously known—to reproduce, in a sense, its past experience. This power of the Intellect is called the *Representative Faculty*.

The power of the mind to represent an object previously known without recognizing it as an object of previous cognition is *Simple Representation*. This is the basis of what is called *Phantasy*.

The power of the soul to represent and reknow an object previously known is *Memory*. Memory includes two distinct acts, to wit: (1) the representing of an object previously known, and (2) the reknowing of it. It includes, in other words, *Representation* and *Recognition*.

The power of the mind to represent and *modify*, or *recombine*, objects previously known is called the *Imagination*. It is this power to *modify* objects of previous cognition that distinguishes the imagination from memory, which represents and reknows without modification, and from simple representation or pure phantasy, which represents without either recognition or modification. The imagination is not only the representer, but the modifier, constructor, and creator of psychical images. Phantasy may passively or wildly recombine represented objects, as in dreams and delirium. The imagination acts under the guidance and control of the intellect and the will.

It seems important to note, in passing, that the imagination has three phases of activity—*modifying*, *constructive*, and *creative*. The modifying phase includes, (1) the imagining of one known object to be another known object, as a broom to be a horse, or a doll to be a live baby; and (2) the conceiving of a known object, material or spiritual, enlarged or diminished in size or intensity, or otherwise changed in some quality or attribute, as the conceiving of a mouse to be as large as a horse, or a horse to be as small as a mouse, snow to be red, ice to be warm, etc.

The constructive phase is the combining of known psychical materials presented by another mind into suggested wholes, as the imagining of a house, a tree, or an animal, from a few lines drawn on paper or other pictorial representation, or from a description in words, oral or written.

The creative phase is the construction of new wholes from materials furnished by representation, the whole thus constructed being an original creation, as the imagining of an unseen landscape, a dramatic scene that represents no real occurrence, etc. It is this phase of imagination that furnishes the artist, the inventor, and the discoverer with their ideals, and that characterizes the poet, the dramatist, and the novelist.

In all forms of its activity the imagination uses the materials furnished by experience. It creates no new element. The painter cannot imagine a new color, nor can the dramatist imagine a new emotion, affection, or desire.

What knowledge would be attainable by man, and what would be his intellectual condition, were the intellect endowed only with the presentative and representative powers? Since every object known directly by the presentative faculty is *individual* (the intuitions possibly excepted), every representative object would be individual, including the creations of the imagination, and hence all knowledge would relate to *individual objects*, and each man's knowledge would be limited to his *individual experience*. His language, if any, would be limited to the few vocal and visual signs which instinct marvelously interprets. The sentence, if not the word, would be impossible.

III. But the soul is endowed with the further power to form and apply general concepts and ideas. This psychical process is *thinking*, and its product *thought*. The power to think is called the *Rational Faculty*, or *Thought Faculty*, or more simply, *Thought*.

The simplest act of thinking is the forming of the general concepts or notions which represent *classes* of objects. It includes comparison, analysis, abstraction, synthesis, and generalization; but since these processes all assist in forming the general concept, the entire process may properly be called *Conceptive Generalization*, or, more simply, *Conception*. The forming of the general concept is the primary act of thinking. Each general concept or idea may be represented by a sign or word. This is the primary source of words. The applying of a general concept to the individual objects which it represents and arranging them in a group under it is *Classification*.

The next thought process is the comparing of objects of knowledge and formally affirming their likeness or unlikeness. The concepts *grass* and *herb* may, for example, be compared, and their discerned likeness affirmed by the sentence, *Grass is an herb*. This thought process is called *formal judging*, to distinguish it from the comparison, or *simple judging*, involved in conception or the forming of the general concept. The power of formal judging is called *Formal Judgment*, or, more briefly, *Judgment*.

It is thus seen that judgment is the psychical source of what are called *facts*—the affirmed results of observation and thought. A fact may be defined as a true judgment formally affirmed. A judgment formally expressed in words is a proposition or *sentence*, and thus by formal judgment we pass from words as such to sentences, or language proper.

But the tendency of thought is to pass beyond the particular or general facts of judgment, limited to known objects, to universal truths, and hence the third and final thought process is *the forming and applying of general facts or universal truths*. This form of thinking is called *reasoning*, and the power thus to think is called the *Reason*.

In reasoning the mind passes from particular facts as *reasons* to a general truth, or from a general truth to the included particular facts. It is thus seen that there are two forms or processes of reasoning, to

wit: (1) the inducing of a general truth from particular facts, called *Induction*, and (2) the deducing of particular facts from a general truth, called *Deduction*. In inductive reasoning the mind passes from particulars to a general; in deductive reasoning it passes from generals to particulars.<sup>1</sup>

The foregoing analysis of psychical processes and powers brings us to an important inquiry respecting the—

*Order of Activity and Development of the Intellectual Powers.*

The presentative faculty awakens into activity before the representative, and both of these faculties before the thought faculty. This order is a *psychical necessity*. It is impossible for the mind to recall and represent an object not previously known, and it is equally impossible for the mind to form and apply general concepts of any kind if it be not in possession of individual concepts and ideas to compare and generalize. In activity both consciousness and sense-perception must precede memory, and consciousness, sense-perception, and memory must precede conception, the simplest form of thought activity.

In like manner and for a like reason, the activity of the several powers of the same faculty and the higher phases of activity of the same power are conditioned upon the lower.

Sense-perception is conditioned upon sensation—the primary psychical act, and consciousness is conditioned upon both sensation and perception. The cognition of objects of knowledge must condition the intuitive perception of their necessary relations, and, in turn, the intuitions condition the completed acts of sense-perception.

It is not meant that there is necessarily a conscious interval between these related presentative acts. Consciousness accompanies and blends with the acts and states which it perceives, and the intuitions are blended with the acts of perception and consciousness. The idea of extension arises in connection with and conditions the perception of material bodies as extended.

The activity of the three representative powers follows the same order. Memory is conditioned upon simple representation, since an object previously known must be represented to be reknown; and the imagination is conditioned upon both simple representation and memory, since these furnish the imagination with the materials which it modifies and recombines into new wholes. The higher phases of the

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<sup>1</sup>There is an important distinction between a general fact of judgment and an induction. A general judgment includes only known objects; an induction includes all objects of a class, known or unknown. I have seen, for example, several elephants and have observed that each has a proboscis, or trunk. I now generalize these particular observations into the fact, *All these elephants have trunks*, which is a formal judgment. If now I enlarge this general judgment by an inference, based on some discovered reason, to the general fact, *All elephants have trunks*, I make an induction—a general assertion that includes all elephants, known and unknown. Every sure induction is an important addition to our real knowledge.

imagination likewise succeed the lower. It is not easy to determine which of its two modifying phases appears first, since they both appear very early, as every nursery clearly shows. The constructive phase appears later, and this is succeeded by the creative phase. It is not meant that these successive phases wholly disappear before the higher phase appears. They *characterize* the activity of the imagination in the order indicated.

The same order is observed in the activity of the several thought powers. Conceptive generalization precedes formal judging, and both conception and formal judging precede reasoning. It is thus seen that reasoning is conditioned upon judging, and judging upon conception.

The order observed in the activity of the several intellectual powers also prevails in their development. The presentative faculty reaches what may be called its maximum natural power before the representative, and both before thought. The last of the representative powers to reach an activity and energy equal to that of the presentative power is the creative imagination, and the last of the thought powers to reach a like development is reasoning, the power of deductive reasoning appearing and developing later than that of inductive.

There are considerable intervals between the periods in which the higher faculties reach a development equal to that of the lower, but it is an error to infer that there are corresponding intervals between their awakenings into activity. The first conscious acts of perception and memory accompany each other; the forming of general concepts and ideas is near the synthesis of sense-concepts; formal judgment follows conception closely, and inductive reasoning appears only a little later. The two powers which awaken into activity latest are the creative imagination and deductive reasoning.

*But how early do the several intellectual powers become active, and what is their relative activity and energy in the successive periods of the child's life?*

The answers to these important questions can only be determined by the observation and study of children, and fortunately this is not a new field of inquiry. No other beings have been so carefully and lovingly studied. The recorded results of these observations cover many centuries, and they present child life under many and diverse conditions. This study of children has been greatly stimulated in later years by the writings of Comenius, Locke, Rousseau, Pestalozzi, Froebel, and other educational reformers, and it is now receiving the earnest attention of progressive educators both in this country and in Europe.

The study of individual children is rendered difficult by their marvelous power to divine the answer in the mind of the questioner, and the equally marvelous facility with which they use words with or without the ideas which they represent. There is also great difficulty in applying the general conclusion reached to individual cases—a fact due to the marked differences among children of the same age and often of the same family.



One child may possess a power of imagination at six years of age which a brother or sister may not reach before sixteen, and like striking contrasts are observed in the development of the several thought-powers, and especially of the reason. But notwithstanding the difficulties involved, the results already reached by this child-study indicate, with some clearness, the psychical activity of children at different ages; and this is especially true when these results are interpreted in the light of general psychology.

The accompanying diagram represents the results of my study of this problem. It is designed to show the activity and energy (more especially the activity) of the several intellectual powers of *the average child* from birth to twenty years of age. It seems unnecessary to add that, like all graphic devices, it represents the facts only *approximately*.

[A large graphic chart was here presented and explained.]

What light do these psychical facts throw on methods and courses of instruction? It is believed that they clearly disclose the following principles—the most important that underlie the art of teaching.

#### PRINCIPLE I.

*Instruction, both in matter and method, must be adapted to the capability of the taught.*

This is a primary *axiom* of teaching, requiring neither proof nor elucidation. The most elementary conception of education involves the truth that the *what* and the *how* of instruction must be adapted to the pupil's capability, psychical and physical. This principle is fundamental, since all other principles are based upon it.

The application of this principle to school instruction raises two important questions, to wit: (1) Do the pupils in our schools present a varying capability as they pass up through the successive grades? (2) If so, in what respects does their capability vary, and to what is the variation due? The fact that the capability of pupils varies as they pass from the primary to the higher grades is too obvious to require formal proof, and so we pass at once to the consideration of the second question—the most important and fruitful question which modern pedagogy is called upon to answer.

The varying intellectual capacity of pupils in the successive grades of school must be due to one or more of three facts, to wit: 1. A variation in the activity and energy of the intellect *as a whole*. 2. The *absence* or *non-activity* of certain faculties in the younger pupils, and the successive awakening of these dormant faculties to activity as pupils grow older. 3. A variation in the *relative* activity and energy of the several faculties at different ages.

The first of these supposed facts is the basis of the theory that primary pupils may be taught the same kinds of knowledge as the pupils in the higher grades, and by essentially the same methods, the only

radical difference between primary and advanced instruction being in the *amount* of matter taught, the former covering daily less ground than the latter. Forty years ago, and even later, elementary text-books were constructed on this theory. The earlier elementary arithmetics began with formal definitions, and rules preceded the problems. The primary geographies began with the same definitions as the more advanced treatise, even including mathematical definitions, and otherwise covered substantially the same ground, the only essential difference being the fact that the first book was *thinner* than the second.

The second of these supposed facts, in its more extreme interpretation, assumes that the intellectual powers active in primary pupils are the presentative, especially the power of observation; that later in school life the representative powers, memory and imagination, become active, and still later the thought powers, generalization and reason.

It is the basis of the theory that a course of school instruction may be cut horizontally into three distinct sections, or periods,—primary, secondary, and advanced, the primary including sense, or perceptive, knowledge, the secondary reproductive knowledge, and the higher or advanced period generalized and rational knowledge. These three periods of school instruction have been respectively designated as perceptive, conceptive, and rational; also as objective, reproductive, and elaborative.

The third supposed fact assumes that all the intellectual faculties are active when the child enters school at six years of age, and that his intellectual condition as he advances in the course is characterized by changes in the *relative activity* of the several intellectual powers. This view supports the theory that both the matter and the method of school instruction should correspondingly change from year to year—the successive phases of instruction being characterized by the *relative attention* given the different kinds of knowledge, and especially by the *manner or method in which such knowledge is taught*.

Which of the above suppositions is true?

The foregoing diagram, presenting the activity and growth of the powers of the intellect, shows that the nine intellectual powers are all active, though not equally so, at six years of age, the child's intellectual condition being then characterized by the activity of sense-perception or observation, constructive imagination, and conceptive generalization (the word-faculty), sense-perception being the leading faculty; that later the imagination, judgment (the fact-faculty), and inductive reasoning become more active, and characterize intellectual activity; and that the higher phase of development is characterized by the activity of the creative imagination and the reason, inductive and deductive. There is a marked change in the relative activity of the three thought powers, conception, judgment, and reason—the first being the leading thought faculty at six years of age and the last at sixteen. It is true that there is an increase in the activity and energy of the mind as a whole, but the

characteristic feature of its activity and development—and the guiding one in teaching, is *the variation in the relative activity of the several intellectual powers*.

It is also to be noted that in these changes in the relative activity of the different faculties there are no sudden transitions. While the presentative powers are at first the most active, the higher powers increase in activity from year to year until they become the leading powers of the intellect. We have found no psychical basis for the theory that children do not reason before they are near ten years of age. When a child asks for the why, or reason, of things that interest him, the reasoning faculty is active. A bright child makes many inductions, and intelligently acts on some of them, before he is six years old. Ask a bright boy in his sixth year why dogs cannot fly, why people wear thicker clothes in winter than in summer, why a stone will fall if you drop it, and he will give *reasons*, though not scientific ones.

It is doubtless true that most of the generalizations of young children are judgments, not inductions, and as such are limited to known objects; but it is a mistake to suppose that primary pupils do not reason. Locke held that children reason as early as they understand language, "and," he adds, "if I misobserve not, they love to be treated as rational creatures sooner than is imagined."

But it is to be observed that, in their earlier thinking, children acquire concepts and facts which involve the *more obvious* qualities and relations of things, and they reach one by one inductions which are based on indications admitting of easy interpretation. As they grow older, they are increasingly able to discover less obtrusive attributes and relations, and form more sharply defined concepts, and at length they acquire by training the power to form what are called *scientific* concepts, and, generalizing and applying the resulting facts, reach scientific inductions, principles, laws, etc.—in a word, *science*. It should, however, be noted that this scientific phase of thought depends on no newly awakened faculty, even deductive reason being active long before it is reached. The inductions of common life, even of child experience, differ from the inductions of science in "subject matter," as Dr. Porter expresses it, and not in the essential thought processes involved. Scientific thought requires closer and longer continued observation, more accurate conception and judging, and a deeper insight of the reason than common thought. This fact will be made evident by comparing the thought processes involved in the common concepts, facts, inductions, and classifications which make up a child's knowledge of common plants, with the thought processes involved in the scientific concepts, facts, inductions, and classifications which constitute the *science* of botany.

I can only allude to the fact that the development of the intellect involves the corresponding development of the sensibility and the will, and, in children, the growth of the body. The activity of the mind in knowing depends on the acuteness of the senses, the intensity of the

emotions and desires, and the energy and constancy of the will; and these are conditioned upon the sustaining power of the body, which, other conditions being favorable, increases as children grow older. The young child can not attend to one object as long as an adult, and the same is true of the relative duration of all psychical states. There is a general law of interdependence and interaction that runs through all psychical activities.

We are now prepared to state and consider—

#### PRINCIPLE II.

*There is a natural order in which the faculties should be exercised and the corresponding kinds of knowledge taught.*

The natural order of exercising the faculties is necessarily the same as the order of their activity, to wit: first the presentative, second the representative, and third the thought faculty; and the natural order of exercising the thought powers is, first conception, second judgment (formal), and third the reason, first inductive and later deductive. The movement of the mind in the earlier processes of knowing is from perception through representation to conception, and from conception through judgment to reason; *that is, from sense-activity to reasoning through the activity of the intermediate powers.*

This principle has been specialized in the form of *maxims* of elementary teaching, including the following:

1. *Observation before reasoning.*
2. *The concrete before the abstract—sense-knowledge before thought-knowledge.*
3. *Facts before definitions or principles.*
4. *Processes before rules.*
5. *From the particular to the general.*
6. *From the simple to the complex.*
7. *From the known to the related unknown.*

It should be specially noted that these maxims relate to that phase of the process of knowing in which the mind is acquiring primary concepts and ideas, elementary facts, and simple inductions, as a preparation for the acquisition of higher or scientific knowledge. They are maxims of *elementary teaching*, and not universal principles. The maxim, "Processes before rules," is, for example, an important precept for teaching elementary arithmetic, but no wise instructor would uniformly or generally follow it in teaching the higher mathematics, and it has its exceptions in the higher applications of arithmetic. The same limitation obviously applies to the maxims, "The concrete before the abstract," and "From the particular to the general." In the higher phases of instruction the true order is often from the abstract to the concrete and from the general to the particular, this being always true in deductive processes. It is, however, to be observed that this inverse order is only

possible when the mind is in possession of those primary concepts, ideas, and facts, which are essential to the apprehension of the abstract and the general. The above maxims are true directions for the teaching of all *inductive* branches, but they have more special application to elementary schools. They are the criteria which differentiate an elementary method from an advanced method or a general method.

The observing of this natural order in school instruction does not imply that there should belong intervals between observation and reasoning, or between any lower activity and the related higher. The successive steps may be taken in the same year, and even in the same lesson. The principle does, however, imply that *the several intellectual powers are best developed and trained by observing their natural and harmonious activity*. The child must observe as a child, must think as a child, must reason as a child *in his psychical condition*. Any attempt to force the young mind to do what it has not the preparation or energy to do, is to weaken it. There is, however, danger of falling into an opposite error and limiting the mind to one kind of activity, when it is prepared and has a natural impulse for a higher activity. Children may unwisely be kept swinging on the gate of sense when they are prepared to make fruitful excursions into the garden of thought.

#### PRINCIPLE III.

*There is a variation in the relative attention to be given the several faculties and the corresponding kinds of knowledge, in the successive years of school instruction.*

This is a corollary of the two preceding principles, but its practical importance justifies its separate statement. In the first years of school instruction, the presentative powers, being naturally most active, should receive most attention; later, attention should be more equally divided between the presentative, the representative, and the lower thought powers; and still later, chief attention should be given the higher powers. This change in the attention given to the several faculties is also true of the attention that should be devoted to the corresponding kinds of knowledge. In the primary school, chief (but not exclusive) attention should be given to observation and sense-knowledge; but as pupils pass up in the grades or classes, more and more attention should be given to thought knowledge, and especially to rational knowledge.

This leads to—

#### PRINCIPLE IV.

*The primary concepts and ideas in every branch of knowledge must be taught objectively in all grades of school.*

The psychical processes involved in sense-perception show that the forming of an individual concept requires the presence of the object; and since general concepts are derived from individual concepts, it fol-

lows that no concept, individual or general, can be taught *without presenting the appropriate object or objects to the mind*. The same is true in teaching ideas, particular or general. A concept or idea is the *product* of the mind's action, and the act of perceiving an individual object requires the presence of the object.

It follows from the above principle that *no primary concept or idea can be taught through its word*. A word can recall and represent a *known* concept or idea associated with it, but a word can not summons a *new* idea into what has been called the "presence chamber of the soul." The futile attempt to teach primary concepts and ideas through words is responsible for more unsatisfactory results than any other error of elementary instruction. Carlyle characterizes his teachers as "hide-bound pedants," who crammed him "with innumerable dead vocables and called it fostering the growth of the mind." Carlyle's pedants once represented a very large class of so-called teachers, and it is feared that this race of word-cramming pedants is not yet extinct.

The so-called maxim, "Ideas before words," may not be a necessary principle even of primary instruction, but it is excellent advice. The essential thing is to teach both the idea and its sign, and especially to connect them indissolubly together, and *to make this connection sure*, it is wise to teach the idea *before* the word, whenever this can be done. The facility with which children learn words, especially as sounds, is constantly giving them new words which to them have no meaning. It is important that these empty words be filled with their ideas, and especially that all new words learned and used *in school* be associated with clear ideas. To this end, all primary concepts and ideas must be taught *objectively*.

It is true that a general word may at first only represent an individual concept. A child sees a strange animal, a monkey for example, and learns its name. The word is associated with the individual monkey and recalls it in memory. When, however, the child has seen several monkeys, the individual concept is unconsciously generalized, and the word monkey then represents the class. It is believed that young children learn most of their words in this way—learning the word before they form the general concept.

This principle of objective teaching applies to all grades of school—to the high school and the college, as well as to the primary school. The modern method of teaching the physical sciences is increasingly recognizing the fact that all primary concepts are acquired by the study of the objects to which they relate. This is the meaning of the laboratory and the museum. They afford facilities for the study of things as a preparation for the study of books. When the concepts and ideas back of words are thus objectively learned, books become important means of acquiring knowledge.

PRINCIPLE V.

*In the teaching of any school art, clear and correct ideals should inspire and guide practice.*

The first step in learning any art is the forming of ideals of the results to be attained, and, as a rule, the clearer and more correct the ideals formed, the better will be the results reached by practice. This is not only true in the practice of such simple arts as the pitching of a ball or quoit, the drawing of a line, etc., but also in the higher arts of oratory, music, painting, sculpture, etc.

It follows that the first step in teaching any art is to lead the pupil to form *correct ideals* of what he is to do; and, to this end, he should be presented with models and examples. This is not only true in teaching the formative arts, as drawing, painting, etc., but also in teaching oratory, music, and literature. Jenny Lind gave to her generation a new ideal of human song, and that ideal has awakened in many human voices an almost divine melody. Wendell Phillips and John B. Gough have, respectively, given to many American speakers their inspiring ideals of oratory.

The next step in teaching any art is to give the pupil a *knowledge* of the processes by which his ideals can best be embodied. The earlier this knowledge is acquired, the more fruitful will be his practice. But the processes of every art are based on *principles* which are included in a complete knowledge of it. These guiding principles are of little, if any, value to the young learner, and hence should not be taught too early; but in the later and higher practice of an art they are of great value, and may finally take the place of the living teacher.

It is thus seen that the so-called Comenian maxim, "We learn to do by doing," is at best only a half-truth. Simple doing, without the guidance of knowledge, never made an artist or an artisan. The poorest teaching, for example, is often done by teachers who have grown gray in the school-room. What is needed to transmute practice into teaching skill and power is the inspiration of true ideals and the guidance of correct principles. Blind experience is always and everywhere a plodder.

The arts taught in elementary schools, as reading, writing, drawing, language, music, etc., are never properly mastered by mere practice. Automatic exercises may increase mechanical facility in the repetition of known processes, but such practice never corrects errors or suggests better methods.

On the other hand, no mistake in elementary teaching is more futile than the attempt to teach a school art by simply imparting a theoretical knowledge of its principles and processes. The mastery of an art involves the acquisition of *skill*, and a knowledge of its processes and principles is chiefly valuable *as a means to this end*. Instruction without practice cannot impart skill, and hence cannot make an artist.

The old-time attempt to teach the art of using good English by means

of technical grammar is an illustration of this error. This attempt was based on the false notion that skill in speech and writing is a necessary result of a knowledge of the rules of language—an error still too common in American schools. The stupid custom of teaching formal analysis and parsing before practical composition richly deserves the ridicule now heaped upon it, but is there not evidence of a tendency to the opposite extreme? It now looks as if there would soon be an opportunity to laugh at the equally futile attempt to teach the art of correct speech by haphazard, cut-feed language lessons, some of which are about as mechanical as the filling of a basket with chips, and result in about the same kind of skill.

The function of language is to *express thought*, and no exercise in the use of language can impart much skill, that does not begin with thought and end with its correct expression. What is needed is a language training that begins with the use of language under correct ideals and ends with its scientific study. In such a course there is a place for technical grammar and rhetoric.

For one, I gratefully acknowledge my indebtedness to Lindley Murray for some of the little skill which I have acquired in the use of the English language, and especially am I indebted to what has been characterized as the "grammatical dissection" of good English. The thorough grammatical analysis of Pollock's "Course of Time," Pope's "Essay on Man," and Milton's "Paradise Lost," and later the rhetorical analysis of Goldsmith's "Deserted Village" and Shakespeare's "Macbeth" and "Julius Cæsar," gave me guiding ideals of correct, forcible, and elegant English. It is, however, important to note that these were not the studies of early childhood, and that manhood has afforded me some of the practice which was so unwisely denied in school and college.

#### PRINCIPLE VI.

*Oral teaching and text-book study are complementary means of school instruction, the former being chiefly preparatory to the latter.*

Oral teaching has three somewhat distinct phases. It includes—

1. The presenting of objects, material or psychical, to the pupil's mind, including the exciting of his curiosity, the directing of his observation, the fixing of his attention, and the affording of such other assistance as may enable him to know these objects. This may be called *objective oral teaching*.

2. The leading of the pupil to recall and reknow absent objects, previously presented to the mind and known, and by thinking to discern their likenesses and differences, their relations as parts of classes or wholes, as means and ends, as causes and effects, etc. This involves the use of words which represent concepts and ideas known to the pupil, and, being reknown, become present elements of thought. The teacher's special function is to lead the pupil to reknow these elements, and by



thought to attain the desired knowledge. To this end, the teacher does not directly tell the pupil what he wishes him to learn, but by skillful direction leads him to discover or discern it for himself. This may be called *indirect oral teaching*.

3. The direct communication of facts to the pupil by means of oral language. To this end, the teacher expresses relations (new to the pupil) between known but absent objects of knowledge by means of words which represent ideas of things, qualities, actions, and relations, familiar to the pupil. The words of the teacher recall known concepts and ideas, and the pupil apprehends or thinks the relation or thought expressed, which completes its communication to his mind. This presenting of new relations of known objects to the pupil by means of language may be called *direct oral teaching*.

Direct oral teaching has been seriously and widely abused; but it is a mistake to suppose that it has no place in school instruction. Speech is one of man's highest and best endowments, but its practical value depends on its being understood. It is an important function of school education to train the pupil to apprehend thought expressed in language—to pick thought out of its verbal husk. All true teaching contributes directly or indirectly to this result. Every oral direction for observing, every question asked, and every expression by pupil or teacher of the results of observation or thought, increase the pupil's power to interpret and use language. Even an object lesson is not a "dumb show." The pupil is not only led by questions and suggestions to observe and think, but related facts may be directly told to excite his curiosity, deepen his interest, and widen his knowledge. All three forms of oral teaching (objective, indirect, and direct) are often blended in the same lesson. It is, however, an important principle of oral teaching that *the pupil should not be directly told what he can be easily led to observe or discern for himself*. The function of oral teaching is not only to train the pupil in the acquiring of original knowledge, but also in the acquiring of knowledge expressed in language, and it thus prepares the pupil to obtain knowledge from books. Books are the depositories of the recorded knowledge of the race, and it is only by reading books that man can come into the possession of this rich inheritance. The ability to read is the key that unlocks these treasures of knowledge, and hence the training of the pupil in the intelligent reading of the printed page is an important function of school instruction.

When a pupil apprehends facts expressed orally, he may be scarcely conscious of the word-medium through which they are presented to his mind; but in acquiring facts expressed in written language, his activity is directed immediately and consciously to the language, and his energy is put forth to discern and grasp the thought embodied in it—to go from the verbal expression to what is expressed. This is evidently a more difficult task than the grasping of thought expressed in oral language,

and this suggests at least that oral teaching should precede and prepare the way for text-book study in elementary schools.

The union of oral teaching and text-book study is illustrated in the teaching of reading. Reading proper is the apprehension of the relations between known but absent objects, when these relations are presented to the mind by written or printed language. In primary classes, pupils are prepared to apprehend these relations, thus expressed, chiefly by oral teaching; in secondary classes, by oral teaching and text-book study united; and in more advanced classes they are apprehended chiefly by study.

As pupils pass up in the grades, they should be increasingly trained *to acquire knowledge from books by study*, and, to this end, the oral lesson should be increasingly supplemented *by the recitation with its searching tests*. There ought to be no chasm between oral teaching and text-book study in school training, but they should be harmoniously and effectively united as complementary means of instruction—and this, I take it, is the most important problem of instruction that now demands the attention of American teachers.

All that has been said leads to and sustains—

#### PRINCIPLE VII.<sup>1</sup>

*A true course of instruction for elementary schools cuts off a section of pre-  
• sentative, representative, and thought knowledge each year.*

Children at six years of age have not only acquired much presentative knowledge, but are in possession of a considerable number of general concepts and facts, and by the natural activity of their minds are passing increasingly from sense knowledge to thought knowledge, and from the particular facts of observation to general judgments and, to a limited but increasing extent, to the general facts of reason.

It follows that while primary instruction should give chief attention to presentative knowledge, the concepts and facts of observation and experience, it should also increasingly teach the more obvious generalizations of these facts and their expression in language. The first year's instruction in reading, for example, should exercise not only the presentative powers, but also memory, imagination (modifying and constructive), conception, formal judgment, and sparingly inductive reasoning. The reading lessons of the first year abound in words expressing general concepts and ideas, and their little sentences express facts which relate to the feelings, actions, and duties of children and adults, the characteristic actions of domestic animals, birds, insects, etc., the more obvious qualities and relations of common objects, including their class relations, and other common phenomena. These facts are both particular and general, as a glance at any primer or first reader will show.

<sup>1</sup> This principle was illustrated by a large diagram based on the facts of psychology.

It is to be specially noted that while a course of elementary instruction should include general knowledge from the beginning, the general knowledge first taught should consist of common concepts, common facts, and common inductions—the concepts, facts, and inductions of child experience—the higher forms of thought knowledge, called science, appearing later in the course. There should, however, be no sudden transition from common to scientific knowledge. The more elementary concepts and inductions of science may be taught certainly as early as the fifth school year, and should thereafter receive increasing attention until the so-called scientific phase of instruction is reached. It is not possible to draw a line through any branch of knowledge, as developed by the race or the individual, and say that here elementary knowledge ends and science begins. The elements of every branch of science include not only its primary concepts and ideas (its simplest elements), but also those elementary facts and inductions which are the basis of its higher generalizations; and it is neither possible nor wise to hold the mind back from these simple generalizations until the period specially characterized by scientific thought is reached.

It has already been seen that mental development has its successive phases, each characterized by certain leading activities of the mind, and it is important that these successive phases be properly recognized in arranging courses of elementary instruction. If the first four years of a school course be called primary, the second four years secondary, and the next four years higher or high-school, the primary course may be characterized as *sense conceptive*, the secondary course as *transitional*, and the high-school course as *scientific*—these terms respectively designating the characteristic features of the course in the periods to which they are applied.

In that educational classic, "The True Order of Studies," Dr. Thomas Hill compares a true course of study to a spiral stairway, surrounding the five great columns of human knowledge and cutting off a section of each at every round of its ascent. While this famous simile clearly recognizes the important fact that there is a natural sequence of knowledge to be observed in teaching, it fails to indicate that this sequence is lateral as well as vertical. A true course of study not only cuts off a section of all the great branches of knowledge each year, but each section includes presentative, representative, and thought knowledge and activity. In its progress through each annual cycle of its ascent school instruction passes from sense knowledge to thought knowledge—from sense to reason.

The CHAIRMAN: Hon. John G. Parham, President of the School Board of New Orleans, desires to say a few words.

Mr. PARHAM said:

*Ladies and Gentlemen of the Department of Superintendence and International Congress of Educators*—I do myself the pleasure to call upon you this morning for the purpose of extending to you an invitation to

visit our city schools at whatever time may suit your convenience, and in any numbers you may choose. I have sent to the Secretary's table a printed list of the public schools of New Orleans and of our teachers. This gives the exact locations of the schools, and I extend to you, in behalf of the Board of Directors, a cordial invitation to visit them, and I take pleasure in referring you to the honored secretary of the University, Prof. Richards, who has been superintendent of our schools since 1856 to the 31st December last, and to whose untiring exertions their present efficiency has been to a great extent due. I am proud to say that between the old Bay State and our State of Louisiana, and especially between its capital and our commercial metropolis of the South, there exists the warmest feeling. I had the pleasure of spending several months in that State within a few years, and was most cordially received, and I extend to the representatives from that State, and from all the other States of our glorious Union, this cordial invitation this morning.

The first superintendent we had for our schools was from Massachusetts,—John A. Shaw, of Bridgewater. He remained with us many years, and finally went back to spend the last days of his life in his native State, and to his exertions we are indebted for what we think is a fine system in this city. Giving you this invitation and stating that our present superintendent will be happy to accompany any gentlemen that may wish to visit particular schools, I will leave you.

Before further proceedings, the chairman announced N. C. Dougherty, W. H. Bartholomew, G. J. Orr, and J. W. Dickinson, as a committee on the nomination of officers, and requested a report the following morning.

Dr. White's paper was not discussed.

The Association then took a recess for five minutes.

After the recess, W. C. ROTE, Superintendent of Schools, San Antonio, Texas, read the following paper:

#### THE RISE AND PROGRESS OF PUBLIC EDUCATION IN TEXAS.

I come to-day to bring you greetings from the Lone Star State, a State noted for the vast extent of its domain and for the grandeur of its historical associations. Texas, though one of the younger States of the Union, has a history beginning before the landing of La Salle in 1685. The same year when the Duke of York, James II, ascended the English throne, and when Governor Andros demanded the royal charter of Connecticut, afterwards hid in an oak by Captain Wadsworth, La Salle with streaming pennon entered Matagorda Bay and took possession of the soil of Texas in the name of his sovereign, the Grand Monarch, Louis XIV of France.

More than a century before this event the Spanish adventurer, soldier, and priest, had traversed its broad extent; and while La Salle and his heroic band were erecting their stockade fort, or angling in streams skirted by the live-oak, pecan, yucca, ebony, cypress, and va-

rious species of acacia; or while they were chasing the deer and bison on its broad savannas, the rude children of the forest, gathered into the missions by the Franciscan Fathers, were worshipping in chapels, and paying orisons which rose and fell at the tinkling of the sanctus bell.

This early period may be called the period of exploration and adventure. From 1685 to 1820 Spain and France were rival claimants to at least a part of this territory; but the Spaniards held permanent possession, and established numerous missions which have given to this era the name of the "Mission Period." Most of those earlier mission buildings are now in ruins, but the few that remain give evidence of the skill and zeal displayed by their founders in behalf of those native children of the sunny plains. During the first part of this period, down to 1725, Texas was united with Coahuila; after that time Texas had a governor of its own, whose headquarters were at San Antonio.

For nearly three centuries Mexico was under the iron rule of Spanish viceroys. Long had the people borne the spoliation of plundering tyrants, enriching themselves in the offices purchased in the city of Madrid. While the native Mexicans were denied almost every kind of useful learning, the printing-press was illuminating the dark corners of the world. The discovery of America had aroused a spirit of adventure and enterprise which could not brook the shackles of despotism, nor give passive obedience to kingly authority. This bold and independent spirit first bore its fruit and ripened into the federal republic of the United States. The contiguity of our own country to Mexico helped to spread among its people ideas of liberty and self-government. After 1810 revolt followed revolt, until success in 1821 crowned the leadership of Iturbide. Ten short months brought his reign to an end, but out of insurrection and blood finally developed in 1824 a constitutional government similar to that of the United States.

In the constitution of 1824, no provision was made for the establishment of public schools, but the constitution of the state of Coahuila and Texas, adopted in 1827, provided for the establishment of common schools (*primeras letras*), in which should be taught "reading, writing, arithmetic, and the catechism of the Christian religion;" but no laws for the benefit of Texas under this provision were ever enacted.

The unsettled political affairs in Mexico caused by the rivalry of leaders, affected the peace and prosperity of Texas to a greater or less degree, especially the liberty-loving Anglo-American colonists. Discontent, under Mexican rule, was everywhere springing up. Convicts were transported to Texas, armed troops quartered among them, and immigration from the United States was prohibited. Great excitement and indignation were aroused; but at this juncture of affairs, in 1832, Santa Anna pronounced against Bustamante and in favor of the abrogated constitution of 1824. This movement of Santa Anna was favorably received in Texas, and they looked upon him as the representative of

popular liberty and republicanism. But that bright prospect was soon overshadowed. The ambitious and unscrupulous leader who, through revolution and blood, placed himself in the presidential chair, was not long in abrogating all constitutional government and proclaiming himself Dictator. Nearly all parts of the country, except Texas, acquiesced in the revolution. The Texans refused to submit to this centralized government and the usurpation of Santa Anna. To subdue their proud and haughty spirit, and to hold them in subjection, troops were quartered in various objective points. The Texans formed committees of safety and finally a provisional government. At last, believing a general invasion and subjugation imminent, and for the purpose of presenting the justness of their cause before the civilized world, delegates of the people assembled in convention March 1, 1836, and issued a declaration of independence, which recited, among the enumerated grievances against the Mexican Government, that "it has failed to establish any public system of education, although possessed of almost boundless resources (the public domain), and although it is an axiom in political science that, unless a people are educated and enlightened, it is idle to expect the continuance of public liberty or the capacity of self-government."

This first public utterance in behalf of general education indicates the soundness of the public policy held by the patriots of Texan independence; but it is a remarkable fact that the same men that enunciated their grievances in regard to public education, did not, in preparing and adopting the first and only constitution which the Republic of Texas ever had, insert in it any section referring to public schools or public education; and yet both instruments emanated from them within fifteen days!

This *magna char'a* had yet to be sealed in blood. It was freely and heroically shed at the fall of the Alamo, the Thermopylæ of Texas, and at the direful massacre of Goliad; but the great and eventful day of Texas was drawing nigh. On the victorious field of San Jacinto, reverberating with the cry of "Remember the Alamo!" the invaders were vanquished, Santa Anna, the President-General and Dictator, was taken prisoner, the independence of Texas acknowledged, and a treaty of peace concluded.

The reason why the omission was made in the constitution in regard to education may be accounted for by the sanguinary scenes of the revolution then going on around them, diverting the public mind from all other objects save those pertaining to present security and the immediate preservation of the young government. Notwithstanding this omission in the fundamental law, the Third Congress, by act of January 26, 1839, established a system of general education, and for that purpose appropriated *three leagues* (a league = 4,428 acres) of land to each county, and fifty leagues of land for two colleges or universities to be thereafter created.

The Fourth Congress, by act of Feb. 5, 1840, created commissioners in each county to carry out the provisions previously made, and to organize common schools in their respective counties. There being no historical record of the establishment of any schools under this act, it is presumable that, while the several counties obtained the grants of land, the schools continued as before under private auspices.

But now the time had come when another change was to take place in the political status of Texas. From a republic she passed, a lone star of bright effulgence, into the galaxy of States. The first constitution of the State of Texas, adopted in 1845, provided, in Art. X, for the maintenance of free schools throughout the State, by directing that not less than one-tenth of the annual revenue of the State derivable from taxation shall be set apart as a perpetual fund for that purpose; and that all public lands heretofore granted, or that might thereafter be granted, for free schools, should not be alienated nor diverted from the uses to which they were consecrated.

The Third Legislature, by act of Jan. 16, 1850, appropriated four leagues of the public domain for free schools for each county organized after Feb. 16th, 1846; and it also appropriated, by act of Feb. 11th of the same year, one-tenth of the annual revenue of the State for the support of free schools during the years 1850 and 1851. It also, by act of Dec. 2, 1850, ordered the issuance of five per cent. State bonds to the amount of \$36,000, to be deposited in the Treasury to the credit of the common school fund.

The Fifth Legislature, by act of Jan. 31, 1854, set apart as a public school fund the sum of \$2,000,000 of five per cent. U. S. bonds then in the Treasury, the interest arising therefrom to be annually distributed among the several counties according to scholastic population between the ages of six and sixteen, for the maintenance of public schools therein. The same act also provided for the organization of a public school system throughout the State. The same Legislature, by act of Feb. 11, 1854, also appropriated for educational purposes one-tenth of the annual revenue of the State arising from direct taxation.

At this time there were reported 65,463 pupils of scholastic age, but it is probable that the census was imperfectly taken.

The first free school established in the State was in the city of San Antonio in 1854.

The Comptroller of the Treasury was then *ex-officio* Superintendent of Public Instruction.

The Sixth Legislature, by act, February, 1856, again appropriated one-tenth of the annual State revenue for the years of 1856 and 1857, and it provided also for the re-investment of the \$2,000,000 for ten years in first mortgage railroad bonds bearing interest at six per cent. per annum. The same Legislature, by act of Aug. 30, 1856, authorized the sale of alternate sections of the fifty leagues of land appropriated in 1839 for colleges or universities, the proceeds to constitute a

fund for such institutions, the minimum price to be \$3 per acre and a credit of twenty years given to the purchaser. On the same day, by act, the Governor was directed to cause the survey, out of unappropriated lands, of the unlocated balance of the fifty leagues donated to the universities. On the same day also, by act, it was declared that no statute of limitation should ever be pleaded against the universities by settlers or occupants of any part of the land donated for public education.

And again, the same Legislature, by act of Aug. 29, 1856, directed all specie belonging to the school fund to be converted into United States bonds, and the interest arising from the special school fund of \$2,000,000, together with the one-tenth of the State revenue derived from taxation, to be distributed annually among the several counties for public education, according to scholastic population; the school age had been fixed by this legislature at 6 to 18 years, instead of 6 to 16, as before.

The Seventh Legislature, by act of Feb. 5, 1858, provided for a more efficient government of public free schools, and also for the distribution of the school fund among the several counties. It also, by act of Feb. 11, 1858, established the University of Texas, and set apart for its maintenance and endowment the fifty leagues of land previously appropriated by the Congress of the Republic of Texas in 1839 for the two colleges or universities. It provided that it should be located, built, and conducted, under the supervision of a board of administrators, and it further appropriated one-tenth of all the land surveyed and reserved for the use of the State under an act donating lands to railroad corporations, for making such surveys.

The Eighth Legislature, by act of Jan. 31, 1860, authorized to be used for future defense \$100,000 of the United States bonds belonging to the University fund, the same to be returned to the said fund out of the general revenue, without interest.

Provision had been made for the organization of the University of Texas by the Seventh Legislature; but as the Eighth Legislature had borrowed a hundred thousand dollars of its available fund for defense against the Indians, who were committing serious depredations upon the unprotected settlers along the Rio Grande, no university was established for want of available funds. The donation of the public domain for various educational objects was at that time a magnificent fund in futurity.

Up to this time, from 1855 to 1861, the school population had increased from 65,463, as previously stated, to 105,200, and the average amount annually distributed during that period was a little in excess of one dollar *per capita*. The money was usually applied to pay for the tuition of indigent children. The generosity of the people of the State, in those times, provided for the education of the poor, and, in the various provisions thus made, they were building wiser than they knew; for out



of such generous and charitable sentiments have grown such facilities of education as to embrace all classes with beneficence.

But another event was impending which again changed the political status of the State, the War of the Rebellion and the secession of Texas from the Federal Union. Like a star she entered the Union, but like a meteor she darted beyond its confines.

The constitution of 1861 was the same as that of 1845, with the exception of such changes as was made necessary by the secession of the State from the United to the Confederate States. The article on public education remained the same. Under the new constitution the Eighth Legislature, by act of April 6, 1861, provided that the whole of the one-tenth of the annual revenue from taxation should be distributed for public education.

The absorbing interest felt by all men in the terrible conflict overshadowed all other considerations, and left a legislative hiatus of five years in educational affairs.

The constitution of 1866, Art. X, directed that all the funds, lands, and other property that had been set apart for the support of public schools, should constitute a school fund, which, together with the income derived therefrom, should be devoted to the *white* scholastic inhabitants of the State; and it further provided that the Legislature might levy a special tax for educational purposes, of which tax all amounts collected from *colored* persons should be applied to the education of *colored* children. It also appropriated as a perpetual school fund all the alternate sections of land reserved out of grants made to railroads and other corporations. It also prohibited the loan or investment of any part of the school fund for other purposes than public education, except that the money on hand and that derived from sale of lands should be invested in State or United States bonds, or such other bonds as the State might guarantee. It also provided that under the direction of the Legislature, and with the consent of the counties concerned, the school lands donated to the respective counties might be sold and the proceeds of sale added to the school fund of the State, the interest of such proceeds to be reserved to the counties respectively. It also provided that the money and lands belonging to the universities should constitute a sacred fund for their maintenance and endowment, and until they were located and commenced, such fund should be invested in bonds as provided for the perpetual school fund; and it directed the Legislature to make provision for the opening of a university. It also provided for the appointment by the Governor of a superintendent of public instruction, who, together with the Governor and Comptroller, should constitute a board of education.

The constitution of 1866, like the constitutions of 1845 and 1861, with all the legislative acts under them, solemnly reiterates the sacredness of the school fund, as previously set apart. The only striking anomaly in this constitution is the discrimination made against *colored* children.

But when we consider the growth of the civilization of Texas, the loss of its personal property caused by the incidents of the war and the Thirteenth Amendment, reducing many of its foremost citizens to a state of helplessness, we may understand why the benefit of general education was denied to a class never before educated, and who, from time almost immemorial, had been held by the people as a species of property.

The Eleventh Legislature, by act of Oct. 20, 1866, granted an extension of time till Jan. 1, 1869, to purchasers of university lands to pay interest due. By act of Nov. 1, 1866, the police court of the several counties, upon a vote by the people in favor thereof, was authorized to sell the school lands belonging to the several counties respectively, and to send the proceeds to the State treasury to be kept as a perpetual school fund, the interest thereof to be applied to the education of the white children of such counties respectively. By act of Nov. 6, 1866, further provision was made for the sale of alternate sections of the university lands; and also by act of same date was directed the transfer of \$25,616.10 from school fund to State revenue, the same having been wrongfully credited to the school fund. Also, by act of Nov. 12, 1866, the public schools were reorganized by constituting the police court of each county a board of school commissioners for the same, which board should divide its county into school districts to be administered by trustees; the fund belonging to each county to be distributed by the police court to the trustees of the several districts for purposes of general education, and the amount of fund so distributed to be determined by the apportionment made by the State treasurer, based upon the record of free white children between six and eighteen years of age on file in his office. The police court of each county was also required to appoint a board of examiners to determine the qualification of public school teachers. Also, by act of Nov. 12, 1866, the previous legislation of Feb. 11, 1858, establishing a University of Texas, was so amended as to set apart only one-half of the university endowment for the university then established, and to reserve the other half for a similar university to be thereafter established in a different section of the State. Other amendments were enacted relating to the curriculum and general conduct of the institution. The same act further provided for conflict in locations of alternate sections of lands sold under previous legislation; and it also authorized police courts to levy a tax, not exceeding one-half of the State tax, upon the property of white persons for the education of the indigent white children of their respective counties. It also by act of same date directed the issuance of five per cent. State bonds in the sum of \$134,472.26, to be placed to the credit of the university fund, as a reimbursement of United States bonds and interest transferred in February, 1860, from the university fund to the general State fund; and also the issuance of similar bonds to equal in amount the sum realized from U. S. bonds belonging to

the common school fund which had been used as general revenue, to be returned to the credit of said fund.

The joint resolution of Nov. 13, 1866, provided for the establishment of a second university, and appointed a board of administrators to select the site thereof; and by another joint resolution requested the Governor to appoint the board of administrators for the first university, authorized by the Seventh Legislature, Feb. 11, 1858.

The constitution of 1866, framed under the amnesty proclamation of President Johnson, was made inoperative by acts of Congress during that memorable period when the great antagonism prevailed between the President and Congress. The government of the State of Texas was declared a provisional one, subject to the authority of the United States, to be abolished, modified, or suspended at any time. The government was suspended, and a military Governor appointed, July 30, 1867. Up to 1869 there was another legislative hiatus, when, in order to conform to the Fourteenth Amendment and provide for the principles enunciated by the Fifteenth Amendment, yet on its adoption by the States, it was necessary to form a new constitution for Texas before she could be thoroughly reconstructed.

The constitution of 1869 provided for compulsory attendance at school of all children between the ages of six and eighteen, four months each year; it provided for a superintendent of public instruction, and for a uniform system of public schools. It set apart as a sacred fund for public schools all lands, funds, and other property previously acquired for that purpose, and also the proceeds of all sales of public lands to be thereafter acquired by the State, and also one-fourth of the annual revenue derived from all taxation, and also the whole of the poll-tax. It also provided for the sale of lands belonging to the school fund of the several counties, to be used for scholastic purposes therein, and it provided for all scholastic children without distinction, by annual appropriations of interest derived from the school fund and of the part of the general tax collected. It also set apart for school purposes\*all sums derived from fines and forfeitures.

The Twelfth Legislature, by act of Aug 12, 1870, authorized the Comptroller to invest \$60,258 of the school fund in five-twenty U. S. bonds and deposit same in State treasury. By act of Aug. 13, 1870, the Legislature provided for the election of a superintendent of public instruction, with large powers, and directed that county courts should be *ex-officio* boards of school directors for their respective counties; and it also directed that all children between six and sixteen years of age should attend school at least four months in the year. By act of April 17, 1871, the Legislature directed the Comptroller to invest the school fund in U. S. bonds, and on the same day by another act provided for the establishment of the Agricultural and Mechanical College, in view of the 180,000 acres of land donated by Congress to the sev-

eral States; the Governor was authorized to appoint three commissioners to select a suitable site of at least 1,280 acres of good land, and \$75,000 was appropriated out of the school fund for the erection of buildings. The control and care of said college was to be governed by act of Feb. 11, 1858.

The same Legislature, by act of April 24, 1871, granted to the superintendent of public instruction almost absolute power. He was authorized to appoint school supervisors for each judicial district, and they had the right to subdivide each county into school districts and appoint five school directors for each. The superintendent with the Governor and attorney-general formed the State Board of Education. This board, by law, was empowered to adopt all rules, provide for the examination and employment of teachers, fix their compensation, define a course of study, and select text-books and apparatus to be used. Schools were to be maintained under the provisions of the constitution, besides such a tax as the directors might levy, not exceeding one per cent., for the erection of school buildings and for maintaining schools in their respective districts. Compulsory school attendance for four months annually, either at a public school or at a private school taught by a certificated teacher, was required of every child of scholastic age under a penalty of \$25 and costs, provided such child was in good health and lived within three miles of any public school.

By joint resolution of Feb. 14, 1871, the Texas & New Orleans R. R. Co., having complied with their contract to pay a certain amount to the school fund, were released. Also by joint resolution of March 31, 1871, the Comptroller was directed to transfer \$35,950 from the school fund to the State revenue account, as it had been wrongfully credited to the school fund.

The Twelfth Legislature, second session, by act of Nov. 29, 1871, enacted that the Board of Education divide the State into educational districts, not exceeding twelve, and that the Superintendent retire all supervisors previously appointed, and with the approval of the Governor appoint one supervisor for each newly-created district, such supervisor to act as examiner of teachers, to divide counties into suitable school districts, and, by and with the approval of the Superintendent, to appoint five directors for each school district.

The scholastic population in 1861, as previously stated, was 102,200; in 1871 it was 228,355. The first annual report under the law of 1871 shows that 1,324 schools, enrolling 73,804 pupils, had been taught by 1,578 teachers.

The Thirteenth Legislature, by act of April 30, 1873, vetoed by the Governor, but passed by a constitutional majority May 23, 1873, diminished the power of the Superintendent of Public Instruction, provided for the election of five school directors in each county, one from each magistrate's precinct, and the president of the board became *ex-officio*

county superintendent, who was to examine all applicants and certificate teachers on the last Saturday of each month. For each sub-district three trustees were to be elected, schools were to be in operation at least four months annually, and the directors were empowered to levy a tax which, with the State fund, would keep the schools open that length of time. The act levied an *ad valorem* tax of twenty-five cents on the hundred dollars. Compulsory education was still continued, though somewhat modified. Appropriations out of the available school fund, as usual, were authorized. It also permitted the trustees of any school district to contract with any high school to teach the children within the scholastic age, provided such high school be placed under the supervision of the county board of directors. By act of June 2, 1873, \$400,000, or so much thereof as might be necessary, was appropriated out of the available school fund to pay the amounts that might be due the teachers of the public free schools throughout the State before March 1, 1873.

By act of June 3, 1873, \$1,600 was appropriated to pay for an additional clerk to the Superintendent of Public Instruction, and also scholastic census takers were to be allowed their pay for the year 1872, if they had sent in their reports before March 1, 1873.

The Fourteenth Legislature, by act of April 24, 1874, enacted that all the alternate sections of land theretofore surveyed, or which might thereafter be surveyed by any railroad company and not set apart by the State for common schools, should be sold as further provided.

By act of May 2, 1874, the school law of April 30, 1873, was so amended as to require the Superintendent of Public Instruction to apportion, on the 1st day of August annually, the school fund to the several counties, and to interpret the school laws; and it directed the Comptroller to make an exhibit of the school fund on the first day of January and July of each year. It provided, in case of necessity, for a lower grade of teachers.

The election of trustees was changed from the first Tuesday in September to the first Saturday in July. Trustees were directed to take the scholastic census within ten days after their election and forward the same to the county superintendent, who was required to forward it to the Superintendent of Public Instruction five days after its receipt. This act permitted, not only high schools, but also colleges and universities to contract with the trustees for the education of scholastic children in any district.

The Fourteenth Legislature, second session, by act of February 8, 1875, appropriated \$32,000 out of the State treasury for completion of buildings and inclosures for the use of the Agricultural and Mechanical College of Texas; and by act of March 9, 1875, enacted that the Governor, Lieutenant-Governor, Speaker of the House, and six directors chosen by the Legislature, one from each Congressional district, shall constitute the board of directors of the Agricultural and Mechanical College of Texas.

By act of March 15, 1875, it was provided that any incorporated city

could assume control of the public schools within its limits, subject to the general laws of the State; that appropriations could be made direct to any such city; and that such city could levy a tax for school purposes, provided a two-thirds majority of the voting tax-payers voted in favor of such a levy.

This act started the great onward movement of public education in Texas. At first a few cities availed themselves of the privilege granted by this act. These soon demonstrated the value and efficiency of a graded system of public schools, and one city after another wheeled into line. The value of public schools properly conducted began to influence public opinion in favor of popular education.

Also, by act of same date, the act of 1874 was so amended that only one school for white and one for colored pupils, except in cities, could be included in a district, and no teacher was to receive more than ten cents per diem for each pupil in actual attendance, and sheriffs were authorized to collect school taxes assessed by the justices of the peace in their respective counties.

The constitution of 1869, dictated by military rule, was objectionable in many respects to the party then in power. A convention having been called, there was framed a new constitution, which was adopted by the people, and known as the "Constitution of 1876." This constitution in its article concerning public education was no improvement on its predecessor, as it did away with the office of superintendent of public instruction and with local taxation for the support of schools, to which a more enlightened view has again partially returned through amendments since added to the constitution. Yet the constitution impartially provided like facilities of public education for white and colored children; added a million of acres of land to the university fund; set apart \$40,000 for the Agricultural and Mechanical College; donated all alternate sections of land granted to railroads or other corporations; and provided for the establishment of a branch university for colored youths.

The Fifteenth Legislature, by act of June 30, 1876, authorized the Board of Education to convert United States bonds belonging to the permanent school fund into State bonds, in order to obtain a higher rate of interest. By act of August 14, 1876, the Governor was authorized to appoint a commissioner to select a site and to erect buildings, for which \$20,000 was then appropriated, for an agricultural and mechanical college for the use of the colored youths of the State. By act of August 19, 1876, the Governor was made President of the Board of Education, for which a clerk was provided; and there was appropriated one-fourth of the occupation and *ad valorem* taxes assessed, all poll taxes, and the interest derivable from the permanent school fund, to the several counties and cities as per scholastic population. The scholastic age was fixed at from eight to fourteen years, without

regard to race or color. The principal feature of this act was the organization of school communities; and they have become the incubus which has retarded our educational progress. A good feature, however, of this act invested the council, or board of aldermen, with larger power to establish and maintain a system of public schools.

The Sixteenth Legislature, by act of Feb. 21, 1879, appropriated \$600,000 out of the available school fund as an emergency fund to pay teachers then teaching in the public schools. By act of April 3, 1879, the mayor of any city, upon the petition of fifty qualified voters, was authorized to order an election to decide whether such city should assume control of its public schools. If the vote was in favor, the management of the schools was to be placed in the hands of six trustees to be elected, of which board the mayor or county judge was to be an *ex-officio* member. By act of April 21, 1879, a normal school was established at Huntsville, and placed under the general control of the Board of Education. Two students from each senatorial district, appointed by the senator thereof upon competitive examination, and four from the State at large, were permitted to enter the normal school and to receive instruction one year or more, and the Legislature appropriated \$14,000 in addition to the \$6,000 donated by the Peabody Fund, to pay for the tuition, books and board of said students.

The Seventeenth Legislature, by act of March 16, 1881, authorized cities and towns to levy a tax of one-half of one per cent. for school purposes, provided that two-thirds of the voting tax-payers shall vote in favor thereof, such tax to continue for two years or more, unless discontinued by a vote of such tax-payers. By act of March 30, 1881, it was provided that the Governor shall appoint, from the different sections of the State, five directors for the Agricultural and Mechanical College, who should hold office for six years. It also provided for the appointment by the senator of each district three students from the same, who were to be maintained and instructed free of charge in said institution. The act of March 26, 1881, sets apart from the unappropriated domain three hundred leagues of land, to be held in trust for the unorganized counties, in order to grant each its four leagues of land. Another act, March 30, 1881, provided for the location of the university. It provided that the medical department may be located, by a vote of the people, at a different point from the university proper. It provided that its government should be vested in a board of eight regents appointed by the Governor and confirmed by the Senate. The board was directed to establish a university of the first class, and \$150,000 was appropriated to erect a building which was to form a part of its general plan. The people by vote located the main university at Austin and the medical department at Galveston. By act of April 6, 1881, towns and villages having two hundred inhabitants and over were authorized, if a majority of the votes cast was in favor of such incorporation, to

elect a board of five trustees to organize and levy taxes under the restrictions laid upon cities, and receive their *pro rata* of the available school fund. This act was a great advance in educational affairs. Another act of same date reiterates the setting apart of alternate sections of land for school purposes, and it provides for their sale and makes discrimination in price when watered. The called session of the Seventeenth Legislature, by joint resolution of May 5, 1882, provided for an election to be held to locate a branch of the university for colored youths. By act of May 3, 1882, there was appropriated \$13,837 for the support and maintenance of the Prairie View Colored Normal Institute.

The Eighteenth Legislature, by act of February 3, 1883, provided that all lands surveyed by any railroad or other corporation, whether valid, void, or not, should be lands belonging to the public schools, and by act of April 7, 1883, it was enacted, that though the act of 1881 only granted three hundred leagues of land, yet as three hundred and twenty-five leagues of land had been surveyed, the whole should be donated for the use of the unorganized counties; and by act of April 10, 1883, one million acres of land were set apart for the university fund, and one million for the public school fund. The act of April 12, 1883, provides for the sale and leasing, under certain restrictions, of lands belonging to the public schools and university. By act of April 14, 1883, prospectors or miners could acquire certain interest in school lands. The Legislature also appropriated from the available school fund \$18,000 to maintain the Sam Houston Normal School, \$6,000 for the summer normal schools, and \$10,300 for the Prairie View Normal School for colored teachers.

The amendment to the constitution adopted by the people August 14, 1883, forbids relief to purchasers of school lands; prescribes the investment of the proceeds; sets apart one-fourth of the sum derived from State occupation taxes, a poll-tax of one dollar, and a special *ad-valorem* tax for schools not to exceed twenty cents on one hundred dollars, in order to maintain, with the aid of the interest derivable from the permanent school fund, free schools for a period of six months annually; and provides that the Legislature may authorize the districting of all or any of the counties of the State for school purposes, and the levying by districts of a tax not exceeding twenty cents on one hundred dollars of taxable property; provided, however, that this limitation of assessment does not apply to cities and towns.

At a special session of the Eighteenth Legislature, February 6, 1884, provision was made for the election of a State superintendent, who should also be secretary of the Board of Education, which is composed of the Governor, the Comptroller, and the Secretary of State. The State Board is required to make the apportionment among the several counties, cities, and towns, and the commissioners' court is to divide the apportionment to each county among the several districts or communities of each. It also provides that any district may vote for the levy of a spe-



cial tax, not exceeding twenty cents on one hundred dollars, under the restrictions applied to cities, and that the tax, collected by the county collector, shall be paid out by the treasurer upon proper warrants drawn by said district. The county judge is *ex officio* county superintendent. Every teacher must pass a satisfactory examination in prescribed subjects before a board of examiners appointed by the county judge, and will receive a certificate which shall be good for one year in the county in which it is granted. Diplomas from any State normal school shall be good in any part of the State during good behavior; a certificate granted after an attendance of one year at any State normal school shall be good for three years, and a certificate from a summer normal institute shall be good for two years; both diplomas and certificates shall be good in any part of the State. By this Legislature some counties were exempted from the district system. The same session of the Legislature directed that the State should levy and collect twelve and a half cents on one hundred dollars annually for the support of public free schools, as prescribed by the constitution.

Thus I have detained you with the legal aspect pertaining to the changes, growth, and development of educational affairs in Texas. Through all the changes of the government the people have preserved with jealous care the several funds set apart for educational purposes. The brief synopsis of the several constitutions, and of the various legislative enactments under each, is not adequate to form a due conception of our permanent school fund. Hence it will be necessary to present you with a summarized statement in order to comprehend the full force and meaning of grants of alternate sections and donations of millions of acres of land. The permanent university fund consists already of invested bonds amounting to \$523,156, and of 2,025,000 acres of land remaining unsold, an area nearly equal in amount to the combined area of both the States of Delaware and Rhode Island. The permanent public school fund at present invested in bonds amounts to \$5,397,206, and the public lands donated to the same fund remaining unsold amount to 32,000,000 acres, which in area is greater in extent than the great Empire State of New York. You remember that in my synopsis mention was made of the grants of four leagues of land to each county. This is still separate and apart from the land granted to the university and public schools, and constitutes by itself an area greater than the States of Delaware and Rhode Island.

Besides the various private schools and other higher institutions of learning, we have the University of Texas, situated in the city of Austin, with its nine professors and four assistants imparting instruction free to students resident in Texas; the Agricultural and Mechanical College, a branch of the university, situated at Bryan, employs eight professors and one assistant, who are training the young men of the State in the sciences of agriculture and mechanics. For instruction in the science

and art of teaching, the State has provided two normal schools, one for the training of white teachers, at Huntsville, called the Sam Houston Normal Institute; another for the training of colored teachers, the Prairie View Normal Institute. No tuition is charged, and the State furnishes books and board free to all appointed students. Over two hundred are now enjoying the benefits of this generous provision.

Besides the training afforded by its normal schools, the State has provided a summer normal institute of four weeks, in each senatorial district for white teachers, and one in each congressional district for colored teachers. Last year the State, at a cost of over \$6,000, employed forty-one principals to teach a like number of institutes. At these institutes there were enrolled 1,270 white teachers and 518 colored, in all 1,788. Of those who entered for examination, 227 white teachers and 27 colored obtained certificates of the first grade; 99 white teachers and 77 colored, certificates of the second grade; 21 white teachers and 67 colored, certificates of the third grade.

In an address, "On Normal Schools," delivered before the Superintendents' Association convened at Austin in 1883, during the Christmas holidays, your speaker recommended a syllabus of a course of study, to guide teachers in study preparatory to the instruction to be imparted at the summer normal institutes; and he also recommended that at the close of each institute there should be an examination, and all those who passed the different standards upon a uniform set of questions prepared by the State department of education should be granted certificates. Subsequently the Legislature provided for such examination, and enacted that certificates so granted should be valid in any part of the State for two years, and the State superintendent authorized the preparation and publication of such a syllabus. The syllabus is published monthly in our valuable *School Journal*, and is one of its most attractive features.

The scholastic population between the ages of eight and sixteen years, for the year 1884, as reported by the seventy-four towns and cities, and by most of the counties of the State, reached a total of 406,574, for whose benefit there was appropriated by the State \$2,032,870, derived from taxation and from the revenue of the permanent school fund, being \$5 *per capita*. The seventy-four cities and towns with graded schools are awakening an interest in public schools never felt before. The State is moving onward to grand educational results, and with its extensive domain granted for public education monetized, it bids fair to become ere long the foremost State in the Union as regards its common schools and higher institutions of learning.

The tide of youth moving toward the East, seeking knowledge, will at no distant day ebb toward the beautiful, semi-tropical plains of Texas, to be reared in her grand institutions of learning, and then to woo and wed her dark-eyed maidens and dwell in her genial clime.

Brother NOAH, of the Brothers of the Christian Schools, then contributed the following paper :

CO-ORDINATION IN INSTRUCTION AND IN EDUCATION.

This subject, which I shall treat in the most cursory manner, owing to pressing engagements at the Exposition, is one which must deeply interest every educator worthy of the name.

Yet this co-ordination in instruction is a subject which an experience of over a quarter of a century in the school-room and the lecture-hall convinces me is not fully grasped, and therefore not carried into practical use.

But before going further it is necessary to define what is meant by co-ordination in instruction and in education, and also to state why the distinction should be made between instruction and education.

By co-ordination in instruction is meant that combination of ideas, the gathering of such a sum of information, the eliciting from children that collateral knowledge, which will go to make of any subject or lesson a matter of such interest that each pupil will feel that he has contributed his mite to the general fund which the discussion of the lesson has determined.

It will be seen that this idea of co-ordination implies that the children should have a large share of the talking. Most American children will take this share, in any case, if encouraged or allowed ; why not turn this national characteristic to good account ? It is only the master or professor who knows how to make the very defects of his pupils a source of progress and improvement, who is fit to maintain the mission he has undertaken.

We are told that our children are taught too many 'ologies and 'ographies ; that physicians deplore the cramming and the urging to which children are now subjected. This reminds us forcibly of a remark made to the writer at the London International Health Exhibition, during the educational conferences, by one of the oldest and most respected inspectors of schools in Her Majesty's service ; said he, " Feed a boy or girl well, see that they sleep at least seven hours daily, and you cannot give them too much to do." Remark, the experienced inspector did not say that you could not give such a boy or girl too much to study or to memorize, but " too much to do," a distinction which must not be lost sight of. Doing and studying are indeed different things ; the professor who forgets this, remembers but half his duty.

By co-ordination, then, is not meant the teaching of a great many subjects, as such, but simply their introduction in such times and places, in such manner, and to such degree, as may be necessary for the proper interpretation of any subject.

Certain topics now separately taught would, on the plan here sug-

gested, be acquired to a sufficient degree without becoming the burden they now are to master and pupil.

As suggested in so many of the latest works on method in teaching, the professor should, by means of "class talks," give such information, either by directly communicating it himself, or by eliciting it from the pupils, who, if twelve years of age or over, should be encouraged to take notes, however imperfectly.

It may be said, and has often been asserted, that boys or girls of this age cannot be expected to take notes, or that if they do take them, these are generally useless. To this we may reply that such notes on various subjects, or developed into short literary efforts, are sufficiently numerous in at least one of the educational exhibits to prove their feasibility.

Children may be induced to do almost anything if they have a live teacher, up to the times, ever awake to any issue which may interest his pupils. And this is truer of American children and their teachers than of any others in the world. The American child learns earlier, is more inquisitive where real subjects of importance are concerned, than his Continental or English cousins, and, it may safely be asserted with Brother Achille in his latest work on method, that it is only by giving intelligent direction to this natural curiosity of children that its dangerous tendencies may be controlled and corrected.

And here would be the point at which it would be desirable to introduce a few remarks about that co-ordination of ideas and sentiments so essential to the formation of the heart, teaching it and causing it to love that positive morality, that fixity of Christian principle, without which instruction is, in the language of Voltaire, a double-edged tool which is sure to injure its possessor. Here might that magnificent utterance of the illustrious Guizot be dwelt upon: "I wish religion to be the permeating atmosphere of the school-room." Well will it be for peoples and nations to heed in time warnings which are not wanting to show, in the language of a Pontiff whose first acts proved his love of true liberty, that "if the world is to be saved, instruction must be made more Christian"; and, with our distinguished United States Commissioner of Education, Hon. John Eaton, we may add, "Educators may well seriously inquire whether the tendency of the systems they are conducting are as thoroughly promotive of the practice of virtue as they ought to be and can be, \* \* \* yet no one, contemplating the means of promoting the individual good or the public welfare, can be satisfied with an education which so intensifies intellectual activity as to overlook the necessity for the training and direction of the moral nature."

In speaking of the manner of co-ordinating matter, it has been said that the professor may be obliged to furnish the greater part of the information, in which case it may be claimed that we will need a higher order of intelligence among our elementary teachers, to which it is only necessary to answer that the passing of the ordinary normal school

examination is sufficient proof of intelligence in the young teacher. What we need is that study should not be dropped, as it is so frequently after the normal course. Teaching is a profession, a vocation, it is a special mission from above; no lower estimate will beget the constant study, not only of books, but of human character, of the soul. its power, its relations to human nature, and the many other interesting questions which the subject involves. In brief, the true teacher must be a man of thought, and this thought must be directed to his daily betterment in his profession. It is for this reason that many founders of teaching bodies in the Catholic Church require their disciples to devote at least two hours daily to the study, meditating upon, and discussion of topics bearing upon their mission as teachers, apart from their character as religious, and the venerable De la Salle, founder of the Brothers of the Christian Schools, has written a series of studies, or meditations, simply to convince his followers that without becoming men of thought, without making of their mission as teachers their sole occupation, they can not be worthy of their calling, nor realize suitable results. The same vein of thought pervades his "Treatise on the Government of Schools," and his "Twelve Virtues of a Good Master."

These same habits of study and thought, outside of a teaching community, may be realized by appointing and requiring the following of certain courses of educational reading; and, as is the case in several Continental countries, some further tests should be required to show that the teacher keeps up the sacred fire of study. Probably this may best be done, not by examining the teacher anew, but by an intelligent inquiry into the intellectual progress of the children, requiring the teacher to show his or her "Notes of Lessons," just as they have been used in the class-room.

Personally, we have little faith in diplomas granted for mere knowledge, nor does experience go to show that the measure of a teacher's information is the measure of his usefulness. This has been tested so often, and so often admitted, as to be, probably, beyond the line of discussion. Why not adopt the more rational plan of judging the tree by its fruits, instead of by its leaves? Why not award the diploma to that person who, in a given time and under ordinarily fair conditions, produces the best results? At this moment, the best infant class teacher in the city of Liverpool, perhaps in England, since Inspectors come from all parts of the United Kingdom, and send their teachers likewise, to study her methods, is a lady who has never taken a diploma, will not ask for one, and, sensibly enough, is accepted on her own conditions by the Government. Examples are not wanting to prove that this is not an isolated case. It may be said of the teacher as of the poet, that he is "born, not made."

The first topic to which this paper calls attention must be our arithmetics. Co-ordination in them is almost unknown. Let us take a prob-

lem in simple division, or, as some boys and girls call it, a sum. Their classification is eminently just. Indeed, youngsters often use terms whose full force they do not seize. Yes, our problems, especially in the elementary rules, are sums, great weights, huge nothings, having no earthly interest for our little ones. Thus, how insipid the problem, divide 2,150,000 by 5. What idea does this bring to the child's mind? Is there anything about it in any shape, manner, or form, that is interesting? On the contrary, suppose a little New Yorker is told that in Brooklyn and New York there are 2,150,000 persons; that in each family there are about five persons; how many families in the two cities? The child has the same work to do, but he learns four things instead of one. He learns how to divide by 5; he knows the combined population of New York and Brooklyn; he finds that five is the average number in a family, and the number of these families is the last point of information. Going back, with this same problem, and talking the matter over leisurely, the child is taught that five in a family will leave about three children in each, supposing both parents living. Here is another piece of information quite easily taught, and in a review lesson in multiplication, I would make them find the number of children, and of the grown persons in both cities, all of which would prove interesting.

It would afford pleasure to discuss our geographies and atlases, just as our arithmetics have been examined—those ponderous volumes, three-fourths of whose matter is as worthless as dead sea fruit. If in all this distinguished assembly there is one lady or gentleman who can say that during any one year, or in any school, there has been a single student who mastered the entire matter of the highest numbers of any of our ponderous atlases, let me ask as a special favor to make that person's acquaintance.

I have been looking for one such teacher for the last fifteen years, but have had a bootless search. How much more sensible the plan of preparing small "year books," in which only so much matter is introduced as may be easily and intelligently co-ordinated in a twelve-month; these manuals would, moreover, be of such a limited price as to prevent either the State or the individual from "paying too dear for its whistle." With such ponderous volumes as we now use, co-ordination is impossible. The whole lesson becomes a mere recitation, the pupils so many machines, and the teacher the great hear-all, who has no time to interest his pupils.

There is one subject, however, among the many to which reference might be made, that must call for notice here. That subject is reading. With many leading educators it may fairly be assumed that, in grammar and high schools, the students read too often. Two readings per week, intelligently given, are sufficient. If properly co-ordinated these would create a vast improvement in the status of our schools.

Suppose we take Robertson's delightful description of "Three Days in the Life of Columbus." After the plan which co-ordination sug-

gests, it might be well, a few days before this reading, to announce a "class talk," in which Columbus and his times would be discussed. Easily procured manuals should be suggested, and instructions given to a certain number of pupils to consult the local library, with whose librarian an understanding should be previously established.

Next, the teacher might draw a rough sketch of the island of San Salvador, or, using the more modernized name, Cat Island. This done, the subject might be dropped till the day for the reading lesson, when the entire subject might be divided as follows:

Suppose a class of thirty, let the pupils be divided into groups of four, five, or six. The first group might undertake the geographical tracing required to show the course taken by Columbus. The second could memorize De Lisle's exquisite poems on this same lesson, each boy or girl only learning enough to complete the poem in the group. The third would be directed to read something about the Moors in Spain, with a request to furnish a very short *résumé* of same. To the fourth might be assigned the sketching of the coats-of-arms of Ferdinand and Isabella, while the fifth would be busily engaged reading up the sketches of other American explorers. Finally, to the fifth, composed of the so-called duller lads, but often the most practical, could be assigned the collecting of sea-weed or moss, or the cutting out and fashioning of a little ship similar to one of those shown in the illustrations. Of course, if there were any girls in the class the making of the sails would fall to their share. These objects would next be placed in the school museum, and it may safely be claimed that the afternoon selected for such a reading lesson, thus co-ordinated, would find all seats filled, few dull, and assuredly fewer uninterested listeners.

The chairman called attention to the meeting of the International Congress of Educators in the afternoon, and at 12.35 P. M. the session adjourned.

### THIRD SESSION.

The third session of the Department was called to order on Thursday, February 26th, at 9.30 A. M., Hon. John Hancock presiding.

The CHAIRMAN announced as first in order the following paper by Dr. W. T. HARRIS:

#### MORAL EDUCATION IN THE COMMON SCHOOLS.

The separation of Church and State is an acknowledged principle in our national government, and its interpretation from generation to generation eliminates with more and more of strictness whatever ceremonies and observances of a religious character still remain attached to secular customs and usages.

Inasmuch as religion, in its definition of what is to be regarded as divine, at the same time furnishes the ultimate and supreme ground of

all obligation, it stands in the closest of relations to morality, which we may define as that system of duties or obligations which govern the relation of man to himself as individual, and as race or social whole.

To the thinking observer, nothing can be more obvious than the fact that the institutions of society are created and sustained by the moral activity of man. The moral training of the young is essential to the preservation of civilization. The so-called fabric of society is woven out of moral distinctions and observances. The network of habits and usages which make social combination possible, which enable men to live together as a community, constitutes an ethical system.

In that ethical system only is spiritual life possible. Without such a system even the lowest stage of society, that of the mere savage, could not exist. In proportion to the completeness of development of its ethical system, a community rises from barbarism.

It is quite clear that so deep a change in the principle of human government as the separation of Church and State involves the most important consequences to the ethical life of a people. All thoughtful people, therefore, look with solicitude on the institutions of an educational character that are founded among us, in order to discover what means, if any, can remain for moral education, after its ecclesiastical foundation has been removed.

It happens quite naturally that the best people in the community struggle to retain the ecclesiastical forms and ceremonies in the secular. They find themselves unable to discriminate between the provinces of morality and religion. With them education in morality means education in performing religious rites.

This religious view certainly does not harmonize with the political convictions of our people. From year to year we see the religious rites and ceremonies set aside in the legislature, the town meeting, the public assembly, the school. If retained, they become empty forms with no appreciable effect.

In this sad state of affairs it becomes important to consider all other means of cultivating the ethical sense, and especially to discover how it is that institutions may be emancipated from the direct control of the Church.

Without entering into this question in its details, at the present time, we may remark that the history of Christian civilization shows us a continuous spectacle of the development of institutions into independence. It is a sort of training or nurture of institutions by the Church into a degree of maturity, in which they come to be able to live and thrive without the support of mere ecclesiastical authority.

But an institution attains its majority only when it has become thoroughly grounded on some fundamental divine principle. The State, for instance, is organized on the principle of justice—the return of each man's deed to himself. On such principle the State may be



conducted without fear of collision with the Church or other institutions.

The school, too, has certain divine principles which it has borrowed from the Church through long centuries of tutelage, and may perhaps be conducted by itself without Church authority and yet be a positive auxiliary to the Church and the cause of religion. Let us study these characteristics.

The school proposes at first this object—to implant in the pupil a knowledge of man and nature; in short, to initiate him into the realm of truth.

Certainly Truth is divine, and religion itself is chiefly busied with discovering and interpreting the divine First Principle of the universe and His personal relations to men. In so far, therefore, as truth—real truth, in harmony with the personality of God, and not spurious truth—is taught in the school, it is a positive auxiliary to the Church and to religion.

But the intellectual pursuit of truth in the school is conditioned upon a deeper principle. Order is the first law, even of Heaven. The government of human beings in a community is a training for them in the forms of social life. The school must strictly enforce a code of laws. The so-called discipline of the school is its primordial condition, and is itself a training in habits essential to life in a social whole, and hence is itself moral training. Let us study the relation of school discipline to the development of moral character, and compare its code of duties with the ethical code as a whole.

First, let us take an ideal survey of the whole field, and see what is desirable, before we examine the results of the school as actually furnished.

One may distinguish moral duties or habits which ought to be taught to youth into three classes: (a) Mechanical virtues, in which the youth exercises a minimum of moral choice and obeys an external rule prescribed for him. In this, the lowest species of moral discipline, the youth learns self-denial and self-control, and not much else. (b) Social duties, those which govern the relation of man to man and which are the properly called "moral" duties. In this form of moral discipline the youth learns to obey principle rather than the immediate will of another or a mechanical prescription. (c) Religious duties, or those based on the relation to God as revealed in religion. In these the youth learns the ultimate grounds of obligation, and gains both a practical principle for the conduct of life, and a theoretic principle on which to base his view of the world. In his religious doctrine man formulates his theory of the origin and destiny of nature and the human race, and at the same time defines his eternal vocation, his fundamental duties. The mere statement of this obvious fact is sufficient to indicate the rank and importance of the religious part of the moral duties.

Turning now to the school, let us take an inventory of its means and

appliances for moral education in the line of these several divisions. Let us remember, too, that morality consists in *practice* rather than in *theory*, and that the school can teach morality only when it trains the will into ethical habits, and not when it stops short with inculcating a correct theoretical view of right and wrong, useful as such view may be.

(I) In the school we note, first, the moral effect of the requirement of implicit obedience, a requirement necessary within the school for its successful administration. The discipline in obedience in its strict form, such as it is found in the school-room, has four other applications which remain valid under all conditions of society: (a) Obedience toward parents; (b) toward employers, overseers, and supervisors, as regards the details of work; (c) toward the Government in its legally constituted authority, civil or military; (d) toward the divine will, howsoever revealed.

In each of these four forms there is, and always remains, a sphere of greater or less interest, within which implicit obedience is one's duty. In the three first-named this duty is not absolute, but limited, the sphere continually growing narrower with the growth of the individual in wisdom and self-directive power. In the fourth form of obedience (to the divine will) the individual comes more and more to a personal insight into the necessity of the divine law as revealed in Scripture, in nature, and especially in human life, and he becomes, through this, emancipated relatively from the direct personal control of man, even of the wisest and best, and becomes rather a law unto himself. He outgrows mere mechanical obedience, and arrives at a truly moral will, in which the law is written on the heart.

Obedience, as a habit, to what is prescribed by an authority is obviously a training that fits one for religion, even if religion has no direct part in such training. Hence the school, even when perfectly secular, in securing implicit obedience, is in so far an auxiliary of the Church.

The pillars on which school education rests are behavior and scholarship. Deportment, or behavior, comes first as the *sine qua non*. The first requisite of the school is order; each pupil must be taught to conform his behavior to the general standard, and repress all that interferes with the function of the school. In the outset, therefore, a whole family of virtues are taught the pupil, and taught him so thoroughly that they become fixed in his character. In the mechanical duties habit is everything and theory little or nothing. The pupil is taught:

(a) Punctuality; he must be at school in time; sleep, business, play, indisposition, all must give way to the duty of obedience to this external requirement—to observe the particular moment of time and conform to it.

Punctuality does not end with getting to school, but while in school it is of equal importance. Combination cannot be achieved without it. The pupil must have his lessons ready at the appointed time, must rise

from his seat at the tap of the bell, move to line, return; in short, he must go through all the class evolutions with this observance of rhythm.

(b) Regularity is the next discipline. Regularity is punctuality reduced to a system. Conformity to the requirements of time in a particular instance is punctuality; made general, it becomes regularity.

Combination in school rests on those two virtues. They are the most elementary of the moral code—its alphabet, in short. This age is often called the age of productive industry, the era of emancipation of man from the drudgery of slavery to his natural wants of food, clothing, and shelter. This emancipation is effected by machinery. Machinery has quadrupled the efficiency of human industry within the past half century. There is one general training needed to prepare the generation of men who are to act as directors of machinery and managers of the business that depends upon it. This training is in the habits of punctuality and regularity. Only by obedience to these abstract external laws of time and place may we achieve social combination complete enough to free us from thralldom to our physical wants and necessities.

(c) Silence is the third of these semi mechanical duties. It is the basis for the culture of internality or reflection, the soil in which thought grows. The pupil is therefore taught habits of silence, to restrain his natural animal impulse to prate and chatter. All ascent above his animal nature arises through this ability to hold back the mind from utterance of the immediate impulse. The first impression must be corrected by the second. Combination and generalization are required to reach deep and wide truths, and those depend upon this habit of silence.

Thus silence in the school-room has a twofold significance: It is necessary in order that there may be no distraction of the attention of others from their work; secondly, it is a direct discipline in the art of combining the diffused and feeble efforts of the pupil himself.

These mechanical duties constitute an elementary training in morals, without which it is exceedingly difficult to build any superstructure of moral character whatever. Moral education therefore must begin in merely mechanical obedience, and develop gradually out of this stage towards that of individual responsibility.

(II) The higher order of moral duties falls into two classes, those that relate to the individual himself, and those that relate to his fellows.

(a) *Duties to self.* These are—

(1) *Physical*, and concern cleanliness, neatness in personal clothing, temperance and moderation in animal appetites and passions. The school can and does teach cleanliness and neatness, but it has less power over the pupil in regard to temperance. It can teach him self-control and self-sacrifice in those disciplines already named, punctuality, regularity, and silence, and in so far it may free him from thralldom to

the body in other respects. It can and does labor efficiently against obscenity and profanity.

(2) *Self-culture*. This duty belongs especially to the school. All of its lessons contribute to the pupil's self-culture. By its discipline it gives him control over himself and ability to combine with his fellow men; by its instruction it gives him knowledge of the world of nature and man. This duty corresponds nearly to the one named prudence in ancient ethical systems. The Christian Fathers discuss four cardinal virtues,—temperance, prudence, fortitude, and justice. Prudence places the individual above and beyond his present moment, as it were, letting him stand over himself, watching and directing himself. Man is a twofold being, having a particular, special self, and a general nature, his ideal self, the possibility of perfection. Self-culture stands for the theoretical or intellectual side of this cardinal virtue of prudence, while industry is its practical side.

(3) *Industry*. This virtue means devotion to one's calling or business. Each one owes it to himself to have some business and to be industrious. The good school does not tolerate idleness. It has the most efficient means of securing industry from its pupils. Each one has a definite task scrupulously adjusted to his capacity, and he will be held responsible for its performance. Is there any better training yet devised to educate youth into industry and its concomitants of sincerity, earnestness, simplicity, perseverance, patience, faithfulness, and reliability, than the school method of requiring work in definite amounts, at definite times, and of an approved quality? The pupil has provided for him a business or vocation. By industry and self-sacrifice the pupil is initiated into a third of the cardinal virtues, fortitude.

(b) *Duties to others*.

Duties to self rest on the consciousness of a higher nature in the individual, and of the duty of bringing out and realizing this higher nature. Duties to others recognize this higher ideal nature as something general, and hence as also the true inward self of our fellow men. This ideal of man we are conscious that we realize only very imperfectly, and yet it is the fact that we have the possibility of realizing a higher ideal in ourselves that gives us our value above animals and plants. In our fellow men we see revelations of this ideal nature that we have not yet realized ourselves. Each one possesses some special gift or quality that helps us know ourselves. The experience of each man is a contribution toward our self-knowledge, and vicariously aids us without our being obliged to pay for it in the pain and suffering that the original experience cost. Inasmuch as our ideal can be realized only through this aid from our fellow men, the virtues that enable us to combine with others and form institutions, precede in importance the mechanical virtues. There are three classes of duties toward others:

(1) *Courtesy*, including all forms of politeness, good breeding, urbanity,

decorum, modesty, respect for public opinion, liberality, magnanimity, etc., described under various names by Aristotle and others after him. The essence of this virtue consists in the resolution to see in others only the ideal of humanity, and to ignore any and all defects that may be apparent.

Courtesy in many of its forms is readily taught in school. Its teaching is often marred by the manner of the teacher, which may be sour and surly, or petulant and fault-finding. The importance of this virtue, both to its possessor and to all his fellows, demands a more careful attention on the part of school managers to secure its presence in the school-room.

(2) *Justice*. This is recognized as the chief in the family of secular virtues. It has several forms or species, as, for example, (a) honesty, the fair dealing with others, respect for their rights of person and property and reputation; (b) truth-telling, honesty itself being truth-acting. Such names as integrity, uprightness, righteousness, express further distinctions that belong to this staunch virtue.

Justice, like courtesy in the fact that it looks upon the ideal of the individual, is unlike courtesy in the fact that it looks upon the deed of the individual in a very strict and business like way, and measures its defects by the high standard. According to the principle of justice, each one receives in proportion to his deeds, and not in proportion to his possibilities, wishes, or unrealized aspirations. All individuals are ideally equal in the essence of their humanity; but justice will return upon each the equivalent of his deed only. If it is a crime, justice returns it upon the doer by a limitation of his personal freedom or property.

The school is perhaps more effective in teaching the forms of justice than in teaching those of courtesy. Truth-telling especially receives the full emphasis of all the power of school discipline. Every lesson is an exercise in digging out and closely defining the truth, in extending the realm of clearness and certainty further into the region of ignorance and guesswork. How careful the pupil is compelled to be with his statements and with his previous preparation!

Justice in discovering the exact performance of each pupil, and in giving him recognition for it, may give place to injustice in case of carelessness on the part of the teacher. Such carelessness may suffer the weeds of lying and deceit to grow up, and it may allow the guilty pupil to gather the fruits of honesty and truth, and thus it may offer a premium for fraud. The school may thus furnish an immoral education, notwithstanding its great opportunities to inculcate this noble virtue of honesty.

The private individual must not be permitted to return the evil deed upon the doer, for that would be revenge; hence a new crime. All possibility of self-interest must be sifted out before justice can be done to the criminal. Hence we have another virtue—

(3) *Respect for law*, which, as the only means of protecting the innocent and punishing the guilty, is the complement of justice. It looks upon the ideal as realized, not in an individual man, but in an institution represented in the person of an executive officer who is supported with legislative and judicial powers.

The school, when governed by an arbitrary and tyrannical teacher, is a fearfully demoralizing influence in a community. The law-abiding virtue is weakened, and a whole troop of lesser virtues take their flight and give admittance to passions and appetites. But, on the other hand, the teacher may teach respect for law very thoroughly. In this matter a great change has been wrought in the methods of discipline in later years. Corporal punishment has been very largely disused. It is clear that with frequent and severe corporal punishment it is next to impossible to retain genuine respect for law. Only the very rare teacher can succeed in this. Punishment through the sense of honor has therefore superseded for the most part in our best schools the use of the rod. It is now easy to find the school admirably disciplined, and its pupils enthusiastic and law-abiding, when governed entirely without the use of corporal punishment.

The school possesses very great advantages over the family in this matter of teaching respect for law. The parent is too near the child, too personal, to teach him this lesson.

At this point we approach the province of

(III) Religious duties. Higher than the properly moral duties, or at least higher than the secular or cardinal virtues, are certain ones which are called "celestial" virtues by the theologians. These are faith, hope, and charity, and their special modifications.

The question may arise whether any instruction in these duties can be given which is not sectarian. An affirmative answer will have to show only that the essential scope of these virtues has a secular meaning, and that the secular meaning is more fundamental than in the cases of the so-called cardinal virtues.

(1) Faith in a theologic sense means the true knowledge of the first principle of the universe. Everybody presupposes some theory or view of the world, its origin and destiny, in all his practical and theoretical dealing with it. Christendom assumes a personal Creator, of divine-human nature, who admits man to grace in such a way that he is not destroyed by the results of his essential imperfection, but is redeemed in some special way. The Buddhist and Brahmin think that fortitude and imperfection are utterly incompatible with the divine being, and hence that the things of the world cannot be permitted to have real existence. They exist only in our fancy. Here is no grace, no redemption. Nature is not a real existence to such a theory, and hence there can be no natural science.

In Christian countries the prevailing institutions and confessions of faith recognize this belief in a divine-human God of grace, and their

people more or less cultivate science. Some persons theoretically deny this belief, but cling to science, which is itself based on the deep-lying assumption that the world is a manifestation of Reason. Such skeptics have not yet measured the consequences of their theories, and for our purposes may be said to belong to the Faith, inasmuch as the reality of a finite world presupposes a personal God whose essential attribute is grace. The agnostic, too, is strenuous in acknowledging the practical importance of the code of moral duties.

The prevailing view of the world in Christian countries is very properly called Faith, inasmuch as it is not a view pieced together from the experience of the senses, nor a product of individual reflection unaided by the deep intuitions of the spiritual seers of the race.

Faith is a secular virtue as well as a theological virtue; and whoever teaches another view of the world, that is to say, he who teaches that man is not immortal and that nature does not reveal the divine Reason, teaches a doctrine subversive of faith in this peculiar sense, and also subversive of man's life in all that makes it worth living.

(2) Hope, the second theological virtue, is the practical side of faith. Faith is not properly the belief in any theory of the world, but in the particular theory of the world that Christianity teaches. So Hope is not a mere anticipation of some future event, but the firm expectation that the destiny of the world is in accordance with the scheme of faith, no matter how much any present appearances may be against it. Thus the individual acts upon this conviction. It is the basis of the highest practical doing in this world. A teacher may show faith and hope in the views of the world which he evinces in his dealings with his school, in his teaching of history, in his comments on the reading lessons, in his treatment of the aspirations of his pupils. Although none of these things may be consciously traced to their source by the pupils, yet their instinct will discover the genuine faith and hope. Nothing is so difficult to conceal as one's conviction in regard to the origin and destiny of the world and of man.

(3) Finally, Charity is the highest of these virtues, in the sense that it is the concrete embodiment and application of that view of the world which Faith and Hope establish.

The world is made and governed by divine grace, and that grace will triumph in the world. Hence, says the individual, "Let me be filled with this principle, and hold within myself this divine feeling of grace toward all fellow creatures." Charity is therefore not almsgiving, but a devotion to others. "Sell all thou hast, and follow me." Faith perceives the principle; hope believes in it where it is not yet visible; charity sets it up in the soul and lives it. There might be conceived a faith or insight into this principle of divine grace, and a hope that should trust it where not seen, and still there be in the possessor of the faith and hope a lack of charity. In that case the individual would ac-

knowledge the principle everywhere, but would not admit it to himself. With charity all other virtues are implied, even justice.

While courtesy acts toward men as if they were ideally perfect and had no defects, while justice holds each man responsible for the perfect accordance of his deed with his ideally perfect nature and makes no allowance for immaturity, charity sees both the ideal perfection and the real imperfection, and does not condemn, but offers to help, the other, and is willing and glad to sacrifice itself and assist the imperfect to struggle toward perfection.

The highest virtue, charity, has, of all the virtues, the largest family of synonyms: humility, considerateness, heroism, gratitude, friendliness and various shades of love in the family (parental, filial, fraternal, and conjugal), sympathy, pity, benevolence, kindness, toleration, patriotism, generosity, public-spirit, philanthropy, beneficence, concord, harmony, peaceableness, tenderness, forgiveness, mercy, grace, long-suffering, etc., etc.

The typical form of this virtue, as it may be cultivated in school, is known under the name of kindness. A spirit of true kindness, if it can be made to pervade a school, would be the highest fountain of virtue. That such a spirit can exist in a school as an emanation from a teacher, we know from many a saintly example that has walked in the faith of the Great Teacher.

From the definition of this principle it is easy to deduce a verdict against all those systems of rivalry and emulation in school which stimulate ambition beyond the limits of generous competition to the point of selfishness. Selfishness is the root of mortal sin, as theologians tell us, and the lowest type of it is cold, unfeeling pride, while envy is the type next to it.

Returning to our first question, we repeat, In a state which has no established Church, and in a system of public schools that is not permitted to be under the control of sects or denominations, what shall be the fate of dogmatic instruction in morals, especially instruction in that part of morals which rests upon the celestial virtues? Of course, the problem is still a simple one in parochial schools and denominational schools. But it is not proper for us to ignore the dangers incurred even in strictly parochial schools. The more strict the denominational control, the less likely is there to pervade the school that spirit of tolerance and charity toward others which is the acknowledged deepest taproot of the virtues.

Were the community, however, generous in its confessions of faith, religious instruction could still properly remain in school. The movement of American society is not, however, in that direction, and it is quite likely that the Church must see formal religious instruction, even to the ceremony of reading the Bible, leave the common schools altogether. But a formal reading of the Bible "without note or comment," or a formal prayer on opening school, is surely not religious or moral



instruction in any such efficient sense as to warrant any Christian man or woman in sitting down in content and claiming a religious hold on the popular education. Such a delusive content is indeed too prevalent. There never was a time when the need was greater for a widespread evangelical movement to begin, that shall make real once more the faith that is well-nigh become a mere formula.

A Robert Raikes, now and here, to give new vitality to the Sunday-school movement, a concerted series of movements like that of Dr. Vincent, are needed.

It is not the undoing of the separation of Church and State, even in the common schools, nor the struggle to maintain a frigid and bloodless "non-sectarian" (so-called) religion in our schools, that is to succeed or to do any good. It is for the Churches to rouse from danger, and proselyte by new means and appliances, as well adapted to the present day as the Sunday-school movement was seventy years ago.

It is for the teachers, not to claim the right to introduce formal religious ceremonies, but to make all their teaching glow with a genuine faith, hope, and charity, so that pupils will catch from them their view of the world as the only one that satisfies the heart and the intellect and the will.

Let us note the fact that in the mechanical virtues, so important to making good citizens, the training in the schools is already admirable. Human freedom is realized, not by the unaided effort of the individual, but by his concerted or combined effort in organized institutions like the state and civil society. Those mechanical virtues make possible the help of the individual in this combination, and fit him for the modern world now bent on the conquest of nature.

The social virtues, justice, politeness, and obedience to law, may be equally well provided for, although in fact they are not successfully taught in every school.

The celestial virtues can be taught by teachers inspired by those virtues, and by none others. The empty profession of such virtues without the devotion of the life to them, is likely in the school, even more than elsewhere, to produce the well-known practical result of altruism.

Finally, let us call up the main conclusions, and reduce them to their briefest expression.

1. Moral education is a training in habits, and not an inculcation of mere theoretical views.

2. Mechanical disciplines are indispensable as an elementary basis of moral character.

3. Lax discipline in a school saps the moral character of the pupil. It allows him to work merely as he pleases, and he never can re-enforce his feeble will by regularity, punctuality, and systematic industry. He grows up in habits of whispering and other species of intermeddling with his fellow pupils, neither doing what is reasonable himself nor allowing others to do it. Never having subdued himself, he never will subdue

the world of chaos or any part of it as his life work, but will have to be subdued by external constraint on the part of his fellow men.

4. Too strict discipline, on the other hand, undermines moral character by emphasizing too much the mechanical duties, and especially the phase of obedience to authority, and it leaves the pupil in a state of perennial minority. He does not assimilate the law of duty and make it his own. The law is not written on his heart, but is written on lips only. He fears it, but does not love it. The tyrant teacher produces hypocrisy and deceit in his pupils. All manner of fraud germinates in attempts to cover up shortcomings from the eye of the teacher.

Even where there is simple implicit obedience in the place of fraud and the like, there is no independence and strength of character developed.

5. The best help one can give his fellows is that which enables them to help themselves. The best school is that which makes the pupils able to teach themselves. The best instruction in morality makes the pupil a law unto himself.

Hence strictness, which is indispensable, must be tempered by such devices as cause the pupil to love to obey the law for the law's sake.

The committee on nominations then made the following report, which was adopted unanimously:

President—Hon. WARREN EASTON, State Superintendent of Public Instruction of Louisiana.

Vice-President—Hon. T. B. STOCKWELL, State Superintendent of Education of Rhode Island.

Secretary—Hon. D. B. JOHNSON, Superintendent of Schools of Columbia, S. C.

These officers were declared elected for the ensuing year.

Col. W. P. JOHNSTON, President of Tulane University, then read the following paper:

#### ON THE RELATION OF THE UNIVERSITY TO THE COMMON SCHOOL.

*Gentlemen of the Department*—The topic you have assigned me for discussion is one of great moment in our educational system. To present the question fully would require more time than your patience or the limitations of the occasion would readily allow; but there are some obvious points which occur to me, that may do somewhat toward placing the subject in its true light before this audience.

You will be told, and truly told, that universities may exist where there are no common schools, and that the light comes from above; but to have preceded them even, and to have made them possible, is some relation at least. But whether the common schools are the intellectual offspring of the universities, as is the case in all other countries, or, as some may claim in newer communities, the universities are the product and flower of the common schools, they deal in both cases with the de-

velopment of the citizen, the one beginning and the other finishing his education; the one lays the foundation, the other sets the capstone of the edifice.

What is a university? It is an institution representing the best learning and highest teaching-power of the community in which it exists. The universities in the Middle Ages, with their *trivium* and their *quadrivium*, taught the best of what was then known; and now, though they fall so far short of their full scope and ideal, they are still the citadels of science, the strongholds of culture and high thought. They constitute that Capitoline Hill from which the standards of the Eternal City are carried down by its panoplied legionaries for service or strife. If the common school is the starting point and the university the close of education, they certainly have a connection and relation. Let us consider what this is.

Education is integral. In whatever terms defined, it is a preparation of a younger generation by an older for the work of life. Some of it is carried on in the streets; this is unconscious education. Some in the shop or office; this is special. The last of all is the education of the home, which combines all these. What is then left for the school-room? Intellectual training is a comparatively small part of the whole. It has monopolized the term "education" to the exclusion of other influences, because while the others are more or less implicit or indirect, school education is avowedly and aggressively informing, instructively educational in its purpose and methods. It is the preparation for life, so far as it can be given by formal didactic methods.

Where education shall begin, and how far it shall proceed, and by what agencies and studies it must be carried on, will depend on many circumstances in the condition of the community and of the individual. But with each individual mind that enters on this formative process, the progress is, while it lasts, continuous. We differentiate time by day and night, by the seasons, by years, and by cycles, but time itself flows on past our landmarks like a great river. So a human life in its individuality, its continuity, its development, flows on past the landmarks we would set up for it. It is one. It has its dawn, its matin hour, its noon, its prime, its evening, its gloaming, its final shadows, and its curtailed darkness in death; but it is day till the night comes. It is one. So we differentiate the long day of educational preparation which is closed only by the nightfall of death. We mark it off into spaces. We assign this to the nursery, and that to the kindergarten, and still other spaces to more advanced education, and the last of all to the work of life. But, still, it is essentially one process, the development of the man.

We must remember that all the agencies we employ in this process, common school, high school, college, and university, are but successive mansions in our Father's house, even as the vestibule, the antechamber, and the audience hall lead us to the foot of the great throne, from which is the effluence of all light and knowledge.

The relation of the university to the common schools is through the high school and the college. It is but a higher link in the golden chain that depends from above. It represents the highest phase of formal school education. If any higher is yet to be discovered, it will still belong to the university. The common school, in its different strata, represents the lowest, and likewise the broadest, phase of popular education. Between them are the high school and the college. I take the liberty of quoting from a report which, though printed some eighteen months ago, has not been published.

The educational system of any people, to be complete, must constitute a finished and homogeneous structure. It should be a pyramid with the common schools at its base, and the university at its apex. Such is the much admired German system, which is consistent with itself and complete in all its parts. Whether, then, our university owes its existence to legislative wisdom or private munificence, intended as it is to perform an important part in the public education of the State, it should recognize fully its relations to every other part of the educational system, and seek to bring each and all into that harmony which will insure improvement. It is both good policy and wise administration to plant the university on the popular affections and interests, and to aid public instruction wherever it can be safely done. Of course, the fundamental principle of such a policy is to make the beneficence of our work as real, expansive, and manifest, as human fallibility will permit.

In the first report I made as the President of the Louisiana State University, in December, 1880, I set forth the mutual interdependence of all the parts of our educational system and the urgent need of help in securing its blessings to our population. The following was my language:

On the free-school system of education rests the hope of the development, if not of the preservation, of our material interests and of our liberties in the United States. This is especially true of the South, and in no State has it greater significance than in Louisiana. The control of the most sacred rights of property, of the subtlest questions of morals and law, of the most delicate functions of polity, and of the fundamentals of civilization itself, are now, perforce, intrusted to the masses, largely made up of ignorant freedmen. It behooves the State, as the conservator of society, to use every power and energy to enlighten this dense and dangerous darkness. It should extend to its colored citizens the benefits of education, and lead them to a higher and purer plane of intelligence. But it should remember that it must depend chiefly upon the white race, with its immemorial right of leadership, for its ability to keep pace in the march of civilization with happier and more favored commonwealths. It should not withhold nor stint its hand in giving, to equip these of its sons for the struggle of life. To this end, common schools should invite the humblest of its citizens to learn those elements of knowledge which should be the general heritage of freemen. Higher schools should receive generous State aid, so that those willing to make sacrifices should not be without the opportunity of advancing along the rugged path of knowledge; and, crowning the public school system as a cap-sheaf, the most fruitful gift of this benignant harvest of learning, should be the university. A part of that system and its culmination, the university should open its doors freely to all who aspire to the higher education. It ought not to usurp the functions of the primary school or of the high school, but should reserve its energies for those who have patiently undergone their preliminary training. These it should foster with the most sedulous care, and the university should be the nursery of the teachers of our public schools. From its walls yearly should go forth men fully equipped by training, gen-

eral information, and special instruction in the best methods of the normal school, which has its greatest efficiency as a branch in a university. These men should constitute that army of schoolmasters who are to vanquish ignorance in Louisiana.

A king of Sparta, when asked with reference to its walls, pointed to his soldiers and replied, "The city is well fortified which hath a wall of men instead of brick." So in the great edifice of popular education, every human soul in the community should be built into the solid structure, in its place, at base or at summit.

But if the university and the common schools represent successive phases of a man's development, they should not do the same work. One deals with the multitude, with a mighty host, the levy *en masse*, who go out to fight the battle of life. These have but a brief time for disciplined drill. In it they can learn but a few things well; but if these are learned very well, as they may be, they are a great help in the life of the learner; they are sufficient for his purposes as a private in the grand army. And as in a truly constituted army every private may carry a marshal's baton in his knapsack, so in a free country every citizen, with this start, has his chance, if ability, courage, and good fortune are with him. But though the high school and the college afford the training that fits men to be officers in this army, neither they nor the university can make generals of them, even though it had a power to commission as such.

"A prince can mak a belted knight,  
A marquis, duke, and a' that;  
But an honest man's aboon his might,  
Gnid faith he mauna fa' that!"

The king who creates a peer cannot make him a gentleman. The school cannot make a scholar, because it does not furnish brains to its pupils.

The university creates the *élite* corps of culture, the engineers of thought. I would not have the approaches to it along a narrow declivity, but, with its wide gates thrown open to every quarter of the heavens, it should welcome every comer whose faculties and powers are trained for service on the field of life. The university fits him for still more difficult achievements.

The common school, then, gives the elementary education. The secondary schools should begin the work of differentiation in courses of study, which branch out, as you rise in the scale through high school and college to the university, where the work becomes special and professional. The common school gives the general education, the secondary schools the higher education, and the university the highest of all.

But the university has still another function, whatever may be its restriction in a highly specialized system, like the Prussian. Here it has much work to do which may be called supplementary work, which is

not done and cannot be done by primary or secondary schools, for lack of means or other sufficient cause. Permit me to quote myself again:

If education has been correctly defined, and the university represents its highest phase, the question naturally arises, "Where does this phase commence?" In a highly organized society, the whole work of education may be regularly distributed to the primary school, the high school, the college, and the university, with the aid of professional, technical, and other special schools. But in America, and especially in the South, we must do what we can, not what we would. The university is, without exception, obliged to perform the duties of the college, and generally of the high school also. There can be no objection to this, if such an institution grasps the whole problem in its entirety, and yet recognizes the essential difference between the spirit and methods of its lower and higher departments. A university may begin where its circumstances and the condition of its people require, so only that it shall not close its work without offering to its students those chartered rights to liberal knowledge, that emancipation of thought, which is the true key-note of academic freedom and university life. That this is not the idea of the German university, I admit. That idea involves a complete severance of the gymnasium, or college, from the university. But forms and ideas must yield to actual conditions. And, much as it would shock a German university professor to tell him so, I am sure that for the teacher himself it is a higher discipline to be able and compelled to teach in both the university and the college, than in either alone. If a higher discipline, then a higher man is the outcome; and, though the direct results may be less obvious, the indirect evolution of all concerned should be larger.

Now let me illustrate from our work here. If you will pardon me, I will quote from the report already cited as made to my Board, as to one of the functions of a university:

A university should combine in its work three objects: the higher education of the young, the extension of the area of original research, investigation, and discovery, and the elevation of the public tone and culture. This last is done, in part, unconsciously and without any direct effort.

[The speaker then showed how it was effected through the influence of the faculty and alumni, and through the influence of a free public library, offering and opening its benefits to all.]

This is true also of art galleries and museums. The museum is the workshop of the scientist and the kindergarten of the people. It teaches natural science without a master.

The most direct method of reaching the popular mind, however, is through popular lectures. Conducted by able men, they awaken the spirit of inquiry in many breasts, and diffuse important information. This is said to be a difficult community to reach by this method. But if free, and guaranteed by the university, and on subjects interesting to the community, it will after a while become the habit, and perhaps the fashion, to attend them. This university is doing what it can to raise the popular intelligence by free lectures on physiology and hygiene, and by free systematic instruction in drawing to teachers, and in night classes for the benefit of mechanics and others.

There is just one other point I wish to allude to in a paper which professes to touch the surface of the subject merely. It is the reiterated demand of this or that educator for a university or a college to adopt

his standard of scholastic orthodoxy. You shall follow this method or that method, or issue only this degree or that degree, and for such and such courses of study; otherwise you are schismatic, heretical, out of the ring. This is all nonsense. Who shall fix the standards? Certainly not those who are changing color as fast as the forest leaves when the frost comes. Education in America, in the world, is growing. It is feeling the full consciousness of its own expanding power. It has burst its shackles. It feels its strength. The great danger now is, that in the consciousness of new-found powers it may waste its energies in wrong directions, that it may forget the wisdom of the past. But while so much is tentative, while new problems are presented daily for our solution, we must beware of a slavish adoption of models. To do a thing merely because it has been done somewhere else, is the worst reason that can be assigned, unless we can show that the situations are exactly the same. You may make your coat of the same material as another man's, because he commends its texture, but you will have it cut to fit yourself, and not by his pattern. So we must adapt our educational institutions in each particular case to our own wants, and not another's.

Solon made not the best code, but the best code for the Athenians. In arranging our schools, of whatever grade, we have to diagnose the case, as the doctors say. All the circumstances must be studied. We must do the best we can, not the best we would. In striving after ideals, it is not well to forget that we are of the earth, earthy. If we have a university, or a system of private high schools, and no common schools, it is well to regard the former in framing the latter. If the reverse is the case, we must build on the public schools. In either case we are bound to regard the social culture and the educational condition of the people for whom we legislate. In a word, we should use a little common sense. And we need not be discouraged in either common school or university organization and work, if we fall far short of our hopes and plans and ideals. Experience teaches that such is the common lot; and, if we are more fortunate, a wise humility will lead us to suspect that it is due more to luck than management; or, to express the thought more truly and exactly, that Providence has favored us beyond our deserts. For, "Man proposes, but God disposes."

In a word, then, I may say, that a direct relation exists between the university and the common schools, as successive phases of educational development, through the secondary schools and colleges, and that the relation should be recognized in the organization and development of each; and, moreover, that where circumstances require it, the university should do all necessary supplementary work within its power.

Hon. D. L. KIEHLE, State Superintendent of Public Instruction for Minnesota, said: The theories announced here I cannot stop to consider. I will add, however, that our law requires that high schools receiving State aid shall receive non-residents to the high school upon a satisfactory examination, so that these schools become free schools

for the use of the neighborhood. Professor Payne, of Ann Arbor, visited us, and gave a course of lectures at the University, and became acquainted with our work there, and he approved it as very superior.

The promises are excellent. I desire to have it known what attention we are giving to this matter. You can think about it from time to time, and in the future we shall know more about it than at present, but our confidence is continually growing. I will also say that the normal schools have passed a rule that in the case of students coming from high schools their certificates from the high-school boards shall be accepted in lieu of an examination.

The Chairman stated that Wisconsin had also adopted a similar rule.

Mr. ROTE asked whether any particular number of pupils was required.

Mr. KIEHLE replied that every school should have a minimum of twenty.

Dr. HARRIS. I suppose, Mr. Chairman, by the report from Harvard alluded to, that Harvard proposes to throw open its doors and allow persons not fitted in Latin and Greek to be admitted to certain university courses preparatory to a degree, in case they are sufficiently qualified in other things. During the move in that direction some years ago, instead of requiring less preparation in Latin and Greek, we secured more. It seems to me that it is the desire of the Faculty that it shall be on a healthy basis, and not on an artificial basis. In Harvard there is certainly more desire for Latin and Greek than there used to be, and to enter Harvard College one has to be better posted in those languages than he used to be to graduate. The study of these languages is much more scientific. Of course we hear of those who are against these studies. The sentiment of the community is not to be judged by them. It seems to me that the best way is to stimulate a desire to go into the college. I had some talk with a high-school teacher, and he made the following remark: "The trouble is that our graduates do not go to colleges or universities, nor do they leave the community when they leave the high school. Personal influence of teachers can double the number of pupils going to colleges, and it is their business to do it. You know I do not believe entirely in a college course of study, but if the mountain is not coming to Mahomet, Mahomet should go to the mountain."

The CHAIRMAN. As presiding officer of this section of the session, I have determined that I will not admit any exercises during the session until our programme was exhausted. "The Status of Education in the South" has been transferred to the International Congress, and will be discussed to-night in Dr. Bicknell's paper and such others as may have been designated. The programme of the Superintendents' Association is now closed. At the request of several gentlemen, I have consented



to hear from Mr. Angell, but will warn him that we can give him only a very limited time.

Mr. ANGELL then read the following paper :

THE IMPORTANCE OF TEACHING KINDNESS TO ANIMALS, AND THE AMERICAN "BANDS OF MERCY."

*Mr. President, Ladies, and Gentlemen*—I have your kind invitation to occupy fifteen minutes in behalf of the innumerable millions of God's lower creatures, who have no power in any language we can understand to speak for themselves—the beasts of the field, the birds of the air, the cattle on a thousand hills.

I have no time to tell you about the hundreds of thousands that annually die on our cars and steamboats in transportation; how their flesh, with that of animals taken from cars and steamboats almost dead, are sold in our markets; and of the effects on public health of eating those meats.

I have no time to tell you of the cruel methods by which millions of animals are annually slaughtered; and how every animal can be killed without fore-knowledge, and almost without pain, and ought to be; and of the effects of this cruelty also on those who eat their meat.

I have no time to tell you how, over a large part of this country, calves are taken from their mothers when too young to eat hay, and kept four to six days before they are killed without any nourishment whatever, and during this time are bled, in some instances several times, to make their flesh whiter, more delicate, and more dangerous to eat.

I have no time to tell you how in some parts of our country sheep are sheared in cold weather, and left standing in cold yards, without fleeces, several days before they are killed.

I have no time to tell you how milch cows are ill treated, and the effects on the milk and its products, making it sometimes as poisonous as the milk of the ill-treated human mother.

I have no time to tell you of the importance of our insect-eating birds to agriculture; that we could not live on the earth without them; and that they are decreasing in this country, while insects are increasing.

I have no time to tell you how our old and injured domestic animals can be killed in the most merciful ways, and are so killed where we have societies to do it.

I have no time to tell you of cock fights, and dog fights, and bull fights, and their influence wherever they are practiced.

I have no time to tell you of the useless unrestricted vivisection which has been practiced so largely in this country many years; how one man has taken already the lives of more than three thousand animals in his useless experiments; how these animals are kept in suffering sometimes days, and sometimes weeks. Dr. Henry J. Bigelow, Harvard University professor of surgery, told me some time since that from all this

animal torture and destruction *not one useful fact* has thus far, to his knowledge, been discovered in America.

I have not time to speak of the ten thousand wrongs that are inflicted on man's useful servant, the horse, and his Southern cousin, the mule.

If you stay long in this city you will see enough of them to make your hearts sad with pity.

I have not time to talk to you about the immortality of animals believed in by more than half the human race, and in that half such men as Agassiz, who was a firm believer in the immortality of animals.

If I had an hour instead of fifteen minutes, I could tell you about all these, and many other things which I think you would never forget.

A few days since I had the pleasure of addressing one of the large educational institutions of this city, and at the close of my address a gentleman rose in the audience and said that some ten years ago he was a student at Dartmouth College when I had the pleasure of putting this information before some four hundred of them in the college chapel; and though he had never hardly thought of the subject before, he carried from his whole college course, when he graduated, no stronger or more durable impression than that of our duty to God's lower creatures. He is now a superintendent of the public schools of one of our most important cities, and I believe a member of this convention.

The wonderful growth of societies for the prevention of cruelty to animals is a subject with which probably some of you are familiar; how they have stretched out their protecting arms, not only in this country, but in Europe, Asia, Africa, and many islands of various oceans, numbering among their members many of the noblest, and best, and most illustrious of the world's citizens. In England the Royal Society is under the patronage of the Queen, and its president a member of the Queen's Privy Council.

The first audience I had the pleasure of addressing there some years ago was presided over by one of the most learned men in England, the Lord Bishop of Gloucester and Bristol, and the gentleman who moved the vote of thanks was Field Marshal Sir John Burgoyne, very near the head of the British army; the second was at the house of the Baroness Burdett Coutts, probably, next to the Queen, the most highly respected woman in England.

In France, Germany, and elsewhere, wherever I have traveled in Europe, I have found the same. One German society numbers among its members twenty-three generals and over two hundred officers of the German army.

In my own State of Massachusetts I think that no charitable society of the State has on its roll of officers and members more distinguished and influential names than the Massachusetts Society for the Prevention of Cruelty to Animals. I think that no society in the State is better known or more popular.

But, in the limited period allotted me, *one thing* I do have time to tell

you; and that is, that we long ago found that the *great* remedy for all these wrongs lies, not in laws and prosecuting officers, but in the public and private schools; that a thousand cases of cruelty can be prevented by kind words and humane education, for every one that can be prevented by prosecution; and that if we were ever going to accomplish anything of permanent value for the protection of those whom our societies were organized to protect, it must be through the kind assistance of the teachers in our public and private schools.

We found another important fact—that when children were taught to be kind to animals, to spare in spring time the mother bird with its nest full of young, to pat the horses, and play with the dogs, and speak kindly to all harmless living creatures, they became more kind not only to animals, *but also to each other.*

If there were more time, I should be very glad to give you the experience of European teachers proving what I state.

Out of two thousand convicts inquired of in American prisons, only twelve had any pet animal during childhood.

Out of nearly seven thousand children carefully taught kindness to animals through a series of years, in an English school, not one has even been charged with a criminal offense in any court.

To many of you it will be no new thing when I state that crime has grown in this country, for many years, far beyond our growth of population.

If there were more time I would give you statistics.

And it is becoming a great question how long our present form of government, and the proper protection of property and life, can be maintained with this constant growth of crime over population, and how we are to stop it.

Not more than one-half the people of this country, and in some States not more than a quarter, attend any church, or their children any Sunday-school. The churches cannot reach *them*.

Science is making wonderful progress. A Nihilist lecturer recently stated to a large audience in Tremont Temple, Boston, that there were about four hundred schools in Europe (he did not say how many in America) whose only object was to teach the use of explosives, and that two ounces of an explosive he then had, placed at the entrance of Tremont Temple, would destroy the lives of every person in that building!

We want no French revolutions here, with barricades, and guillotines, and the streets red with blood; and we think the best way to avoid such thing is through widespread merciful and humane education in our schools.

How can you *better* reach the Nihilistic father or mother, who never enters the door of a church, or uses the name of the Supreme Being except in blasphemy, than through his or her child in our public schools? And how can you better reach the heart of the child than by teaching

it kindness to the weakest and most defenseless of God's creatures, with such other merciful teachings as may be easily added ?

For this very purpose was founded, in Boston, on the 28th of July, 1882, the "American Band of Mercy," whose badge I wear.

Among its earliest members were the Governor of Massachusetts, the mayor of Boston, the chief justice of our commonwealth and other judges; also the Roman Catholic archbishop of Boston, who caused a branch to be established in his cathedral, with about 1,500 members, and gave permission to establish them in all the Sunday and parochial schools of his diocese.

The leading editors of our religious and educational papers, and several hundreds of clergymen of all denominations, both Protestant and Roman Catholic, also joined.

It has now about four thousand seven hundred branches, reaching from the Gulf of St. Lawrence to the Gulf of Mexico, and from the Atlantic to the Pacific coast, and numbering over three hundred thousand members.

They are in Sunday-schools of all denominations, Protestant and Roman Catholic, and in week-day schools of all grades, from the primary to the university.

Their badge is a five-pointed star, on which are the mottoes, "Glory to God," "Peace on earth," "Good will to all," and on the five points of the star, "Kindness to all harmless living creatures." On a recent public occasion the President of the United States, who belongs to a Buffalo branch, wore this badge while reviewing some ten thousand children. Their cards of membership have a beautiful picture of the signing of the pledge.

Their object is to encourage in every possible way *brave, generous, noble, and merciful* deeds; to protect not only the lower races, but also every suffering human being that needs and deserves protection.

For this purpose they aim to use the best literature of the world,—songs, poems, pictures, and stories which will promote these objects; and, by public "Band of Mercy" concerts and meetings, to reach all outside whom they can influence.

Their methods of organization are so simple that a boy or girl can organize.

Their meetings occupy various lengths of time, from an hour to ten minutes once a month or once a week—sometimes more often; sometimes separately, and sometimes as part of school or Sunday-school exercises.

*They cost nothing*, for they require only the simple pledge, "I will *try* to be kind to all *harmless* living creatures, and *try* to protect them from cruel usage."

To be sure, they have membership books for registry of names of members for those bands that want them; beautiful imitation gold and silver badge pins for those who want them; ribbon badges and cards

of membership for those who want them; some hundred thousand of these badges and cards have been sent out over the country, and they cost but a few cents each.

But they are not necessary. All that is required is the simple pledge, "I will *try* to be kind to all *harmless* living creatures, and *try* to protect them from cruel usage."

The parent Band of the Massachusetts Society sends to each Band formed from it, without cost, (1) Full information; (2) ten interesting lessons on kindness, full of anecdote and instruction; and (3) a copy for one year of its monthly paper, "*Our Dumb Animals*," filled with stories, songs, and instruction, encouraging kindness both to animals and human beings. It sends also to each Band specimens of Band of Mercy hymns and songs, adapted to popular music and suitable for school and Sunday-school exercises. They are already sung from the Atlantic to the Pacific. All these it sends without cost.

To every *teacher* who forms a Band of twenty or more, it sends in addition its beautiful badge pin without cost.

I have spoken of distinguished educators, statesmen, governors, judges, the President of the United States, and other distinguished persons who have joined the Bands of Mercy.

Why did they join? To make themselves more merciful? Because they thought they needed it? Probably not, but because they wanted to give the weight of their influence to lessen pain and suffering in the world; to aid in carrying an education of mercy into all our schools; to aid in hastening the day,

"When Peace shall over all the earth  
Its ancient splendors fling,  
And the whole world give back the song  
That now the angels sing."

But will the Bands last?

We think the man, or woman, or boy, or girl, who once takes the pledge, will never forget it—not in fifty years. If the pledge is repeated once a month, or once a week, we think the impression will be still stronger. If followed by proper reading and instruction once a month, or once a week, we think it will be stronger still.

I can give instances in which a single talk on kindness to animals has produced wonderful results.

President Hayes told me at Washington some years ago, that a single talk he once heard on the subject when at school in Massachusetts he had never forgotten, and so he put in his annual message what I wrote for him in regard to the cruel transportation of animals on our railroads.

Seven to eight millions of animals in the great Chicago stock yards are now annually protected from cruelty, largely through the influence of one man, whose teacher fifty years ago, away up in the mountains

of New Hampshire, put into his little boyish hand some verses on kindness to animals.

Will the Bands last?

We want everybody's influence to help us make them last as long as the world lasts and cruelty. We want to baptize them once, and then if they fall off baptize them again; and so keep baptizing them to the end of time, or cruelty.

In behalf of all whom I represent, and for the good of our own race and our common country, I pray you help us to form and baptize these Bands of Mercy in all your schools.

The CHAIRMAN: Before we adjourn, I have a request from a State superintendent to present to this Association Johnson's Encyclopædia. I can speak of it in the highest terms, but particularly of the philosophical portion of it, by that most eminent of our thinkers, Dr. Harris.

Mr. NEWELL then announced that Mr. Packard's paper would be read at the afternoon session of the International Congress of Educators.

Gen. EATON: I may add that Mr. Packard's paper will show you the climate of the schools as scientifically regulated.

The CHAIRMAN: The business of this section of the National Association is now concluded, and therefore we are ready to adjourn until the meeting called by the executive committee of this section. I therefore declare this Department of the National Association adjourned *sine die*.

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**EDUCATION DAYS AT THE NEW ORLEANS EXPOSITION.**

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## LETTER.

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DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,  
Washington, D. C., August 1, 1885.

*Dear Sir*—A pleasing feature of the recent World's Exposition at New Orleans was the celebration of days set apart in honor of States, societies, classes of men, or notable events. The early months of the Exposition passed away without any public gathering within its grounds to do honor to the Educational Department, or to recognize the wisdom of the management in determining upon its existence and promoting its organization and successful continuance. The custom of presenting collective exhibits to the officers of the Exposition had not been followed. Many regretted that the instructive lessons of the Department had not been brought by these means into greater notice; and, upon the suggestion of those who entertained this belief, the acting Director-General selected May 12 as "Education Day."

The programme was arranged so as to have the exercises of an international, as well as national, character. Gentlemen from widely distant localities and countries were then examining the educational exhibits. Their large experience in educational fields enabled them to judge correctly the merits and usefulness of the displays which they had under observation. The examination had proceeded so far as to permit them to speak of the exhibits, or to present other topics suggested by the peculiarities of different systems of education.

The time proved to be propitious, and the enthusiasm of the audience that listened to the addresses was more than was expected. A desire that these addresses should be printed was expressed, and I have the honor to transmit them to you for your consideration. They are broad in spirit, varied in character, rich in information, encouraging in tone, and representative of many differing yet allied methods of education.

Near the close of the Exposition, at another reunion of the friends of education, William O. Rogers, Esq., who has long been a foremost man in the South, and ably filled the position of superintendent of the city schools of New Orleans, made a most appropriate address, full of thoughts derived from his experiences with the Exposition. It may well be counted as the New Orleans contribution to Education Day, though delivered on a later occasion.

On the 14th of May Colored Education Day was celebrated. Eminent men addressed a large audience on a subject of great moment to the country. I submit these able addresses as worthy of your attention.

Very respectfully, your obedient servant,

LYNDON A. SMITH,  
*Representative of Bureau of Education,  
W. I. & C. O. Exposition.*

HON. JOHN EATON,  
*Commissioner of Education.*

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ADDRESSES DELIVERED ON EDUCATION DAY, MAY 12, 1885.

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PRESIDING OFFICER.

HON. J. W. HOYT, *ex-Governor of Wyoming.*

VICE-PRESIDENTS.

COL. WM. PRESTON JOHNSTON, *President of Tulane University, New Orleans.*

WILLIAM H. GARDINER, Esq., *Chief Clerk of U. S. Bureau of Education.*

JOHN G. PARHAM, Esq., *President of School Board, New Orleans.*

BROTHER MATTHEW, *of Christian Brothers' College.*

MARSHAL.

A. E. BUCKLEY, Esq., *Superintendent of Indiana Educational Exhibit.*

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ADDRESS OF EX-GOVERNOR J. W. HOYT, OF WYOMING.

*Officers of the World's Industrial and Cotton Centennial Exposition, Ladies and Gentlemen*—As the chairman of this day's ceremonies in observance of Education Day, I have much pleasure in tendering grateful acknowledgments to the official board of this great Exposition for the fitting recognition they have given to the important cause this meeting represents. They have not only granted liberal space in these palaces of industry for the multitude of objects embraced in the various exhibits, individual, municipal, State, and national, but they have also made provision for the careful inspection and comparison of these exhibits, with a view to suitable recognition of them, and to an official report that shall make the knowledge thus gained by those, the common property of all who may be interested in it throughout the world. Last of all, they have designated this day as the appointed time when the lessons of the educational exhibit may be publicly referred to, and when the noble cause it represents may be publicly honored. For these evidences of intelligent and just, nay generous appreciation, I thank them in the name of educators and the friends of education everywhere.

That there was propriety in the handsome recognition thus accorded them is manifest, since education is a world-wide interest. Other interests, however important, are of necessity more or less local and partial. The mighty machinery, the cunning inventions, the beautiful and manifold products of mechanical skill, the great collective exhibits of our

own country and of foreign lands, so attractively displayed in these vast buildings,—all these relate to partial aims and interests, whereas education is an interest underlying and embracing every other. Who shall define its boundaries, or measure the vital importance of its relationships?

More than this, education is also the *primary* interest of man, since it means human development and perfectionment, which last constitutes the true end of being.

We are wont to honor material things and to glorify material power. Wealth, dominion,—such are the common aims of human ambition. But what are these, rightly considered, if not *means* only? The innumerable contrivances of man's ingenuity, and his mastery over the forces of nature,—what are they but vantage ground for the grander achievements of intellectual enlargement and spiritual exaltation?

I said human development was the great work of life, using thus the word human in its broadest significance. But to this grand conception the world has come steadily, because of false notions of prerogative and privilege. Nevertheless extraordinary progress has been made during the last half century—a progress so marked that we find in ourselves amazement at the past mingling with glad hopes for the greater future; and not alone in this happy land; there is progress of liberal ideas among civilized nations everywhere. Our ideas concerning the limitation of class, race, and sex, are rapidly changing from the narrow to the broader view. In the long past education was for the few; to-day it is for the many; on the morrow it will be for all. We already stand in the dawn of that blessed day when none, not even the weakest and lowliest, shall be left to grope in darkness; when all shall rejoice in the sunlight of intelligence.

In yonder galleries of the Government Building, and wherever else the schools are found represented, will be found abundant grounds for these high hopes. To them, Mr. Director-General, I point with confidence and gladness. There you will find evidence that the old distinctions are passing away; that the once lightly honored pursuits are taking their place among the professions; that useful labor, of whatever sort, is honored as never before; that there is a growing appreciation of the necessity for fitting the worker for his work by giving him the best equipment that science and general intelligence can furnish; that the newer views of woman's powers, and of her consequent rights to better and the best possible facilities for education, are fast gaining ground in all parts of the world; that the old prejudices against color, because of its long association with conditions of inferiority and subordination, are giving place to just views of the importance of utilizing the forces of the colored population, as of every other, by securing to them the best available opportunities for gaining the knowledge and skill requisite to the varied pursuits they may be fitted to follow; that civilized communities in all countries are moved in these latter days to efforts

for cultivating in children everywhere a taste for the beautiful in nature and art; that moral culture in the schools is coming to be considered a needed security, as well for free institutions as for the individual soul. For these great ends the noble army of teachers must earnestly and ever strive. The final result of their labors will be the highest happiness of the individual, the peace of the nations, the brotherhood of the races, the dignity and glory of humanity.

ADDRESS OF DIRECTOR-GENERAL BURKE.

*Ladies and Gentlemen*—Only some half hour ago did I expect to be able to give myself the pleasure of joining with you in the celebration of to-day. I say pleasure, for it would have been a sincere pleasure to me, not only to have borne testimony to the high appreciation entertained by the Board of Management of the success achieved in this department, but to have borne testimony to their great appreciation of the effect of this work of education upon the people, not only of the city, but of the South and of the whole country. Down at the bottom of all of our plans, and among the very first plans that were cherished by the Board of Management, was the idea of organizing an educational exhibit, which would not only represent the feeble effort of the South in that direction, but which would represent the effort of all the States and also of foreign countries, and which would be for the benefit of the South, inasmuch as it would show them the progress and the advancement made by other sections of our common country and by other countries. We knew that we of the South had nothing to boast of compared with our more fortunate neighbors of the North and East, and it was from our desire for improvement, and from our desire for learning, that we determined to make this department. We had hoped that we would gather to this standard the educators of the country; we had hoped, indeed, to bring here the prominent educators of all parts of the world. That we have not been able to do so has been due entirely to the very short time allowed for the preparation of exhibits, etc., a time dating only from July, 1884; and the brevity of the time allowed for these preparations makes us of the Board of Management feel all the more deeply indebted to those representatives of foreign countries who have honored us by their presence here, and on behalf of the management I extend my sincere thanks, not only to the representatives of foreign countries, but to the countries who have sent them. [Applause.]

To the gentleman who has presided over that department, who has labored so zealously, so industriously, so effectively, not only throughout this country, but throughout foreign lands, the people of the United States owe a debt which they will be long in repaying. I will not undertake to say how many thousand miles this gentleman has traveled, how many weary days and nights he has spent in carrying out this matter.

I know his heart was in the work from the very commencement. To the able gentlemen who have assisted him we also return our most cordial thanks. We extend to them all, not alone the thanks of the management, but the thanks of the people of the whole South, on behalf of that section of our country (I say it without any sectional feeling) which is to be the chief beneficiary of this great work; for it is idle to deny that, from the very commencement of this Exposition, the present condition of the people of these southern States, and the means by which they could be raised to the level of their more fortunate neighbors, obtained full recognition. For the weary twenty years that have passed away since the late unpleasantness, the people of the section in which we live have been engaged in a continual struggle with this great question.

And why is it they have not made the progress that other communities, differently situated, have made? It is not because they have not the same interest in the welfare of their children as is entertained by the people of other and more fortunate sections. No; it was solely because of the difference of the conditions that surrounded them. The \$400,000,000 of indebtedness piled upon the people of the South since the war has compelled the people, in the maintenance of their honor and their credit, to rob their children of education. The taxation suffered by the southern States and cities to maintain their governments has been so great that it has been impossible to do those things for the education of the mass of the children that they would have desired.

How is it in our own city? It requires \$1,000,000 of the alimony of the city to provide for the honor and the credit of the city. I do not say that this ought not to be so, because it would be a poor system of education that inculcated upon the children of the city, or upon the children of the South, that they should disregard their legal obligations. I mention the matter merely in explanation of the fact that the people of the South have not made that progress in education that would have been made had it not been for the great expense of carrying on their governments. But in this State, as in others in the South, these conditions have to a large extent passed away. The cry that goes up from Iowa of a school-house upon every hilltop is re-echoed throughout the South. We will have a school-house in every valley. [Applause.] And what is the effect of this display upon the people? We know that it will bear speedy fruit. It will no longer be a reflection on our fair State that the teachers of our children must go for half the year unpaid.

I regret that I cannot speak on behalf of the progress made in education by the South during the last ten years, but I know it has been great, and I know of the abiding interest the people of the South feel in the question of the education of their children; and I know that in the future the people who have engaged in this work, whether from France, Mexico, Japan, or Honduras, when they have witnessed the

great results to be produced throughout the State and throughout the South, will feel proud that they have played a part in this extraordinary display. I regret on behalf of the Board of Management that we have not been able to hold up their hands more in the work they have been engaged in. But for the circumstances that have surrounded us it would have been a pleasure and a pride to us to have done so. But the honor and the credit of the success they have achieved is all the greater, and therefore they have our heartfelt thanks.

ADDRESS OF HON. J. GEORGE HODGINS, LL. D.,

*Deputy Minister of Education, Ontario, Canada.*

I feel honored at being permitted to take part in the proceedings of to-day. I have had for many years a more or less intimate knowledge of the progress of education in various States of this great Republic. But my experience during the last few weeks, as an educational juror, has impressed me very deeply with the fact that great and substantial advance has been made in every direction since the Centennial Exhibition of 1876.

I have been requested to represent Canada on this occasion, which I do with pleasure. As a subject of Her Majesty the Queen in that Dominion, I desire briefly to refer, first, to the state of education in our dear old mother land of England. Having recently visited that country, I can speak from personal knowledge. And I am glad to say that since the passage of what may be called the "Charter" (Education) Act of 1871, great and very gratifying progress has been made. The number of pupils attending school in England has immensely increased, and the parliamentary grants and local rates have, in the aggregate, been somewhat munificent. The general tendency of public sentiment in England is in favor of still greater efficiency in the various departments of popular education, and also of its further expansion to meet the needs of all classes of the community. Some difficult and trying questions, too, in the educational problem have been practically solved, particularly those relating to local school rates, the inherent right of children to education in the schools or elsewhere, and the more difficult one of religious instruction. At all events, in the near future these questions will cease to be subjects of such bitter contention as heretofore amongst the educators of England.

What I say of England is also largely true of the sister kingdoms of Ireland and Scotland. For fifty years a national system of education has been in efficient operation in Ireland, while the schools of Scotland have long been, especially of late years, famous for their numbers and excellence.

As to the Dominion of Canada, which I have the honor to represent on this occasion, I may say that there are in that Dominion seven Provinces, not including Newfoundland nor the vast Territories in the

North-west, now unhappily in a partial state of insurrection on the part of the half-breeds and Indians. The brave and enthusiastic volunteers who have so nobly responded to the call of duty and gone out from each of the Provinces, will no doubt soon restore peace and harmony in the disturbed districts north of your Territory of Montana.

I may here give a brief statement (so far as I can) of the condition of education in these Provinces:

Provinces.	No. of schools.	No. of pupils.	Expenditure.
Ontario .....	5,362	464,369	\$2,106,429
Quebec .....	5,039	245,225	(not reported)
Nova Scotia .....	1,943	98,307	612,989
New Brunswick .....	1,447	66,775	(not reported)
Prince Edward Island .....	484	21,843	142,319
Manitoba .....	.....	(no report)	.....
British Columbia .....	58	2,603	60,756

I would just mention one or two things which have struck me very forcibly while acting here in my capacity as an educational juror.

No one can visit the French educational exhibit without being profoundly impressed with its wonderful extent and completeness. The exhibit, too, under the direction of my friend, the Commissioner from Japan, Mr. Hattori, was to me a complete and most gratifying surprise. Not that I did not expect an advance even upon the excellent educational exhibit from Japan which was seen at the Centennial Exhibition of 1876; but I was scarcely prepared for the very complete and most admirable exhibit in the various departments of education from that wonderfully progressive country, including examples of work from the primary school up to the university, which Mr. Hattori so fully and so courteously explained to the jurors.

In speaking of the French educational exhibit, I cannot too strongly emphasize our estimate of its completeness and of its great practical value. The variety and extent of the multitudinous appliances for work of the schools and colleges was the subject of constant remark and commendation. The French seem to have excelled themselves in the beauty and finish, as well as excellence, of chart and model, map, and varied illustration of the subjects which go to make up the curriculum of study in each of the primary, intermediate, and higher schools of France. To our most courteous friend, M. Buisson, we were all indebted for a most satisfactory explanation of the many points of interest in the great exhibit from France.

There were one or two features in the French and Japanese exhibits which are of special interest,—in the French, for instance, the great variety of examples of industrial work from schools of all kinds. This is an entirely new feature, and quite a new departure in the schools of France. Within the last few years industrial education has been made compulsory in that country. The effect of it has been remarkable, as



the extent and variety of the work of the pupils exhibited abundantly testify. Time will not further allow a reference to other features of this remarkable exhibit. Those present can see and judge for themselves.

In the Japanese exhibit the inventive skill of the nation is admirably illustrated in the extent and variety of their educational appliances. In the kindergarten they are unequaled. Their collection is unique. In elementary science, simplicity and cheapness of illustration are combined in a remarkable degree; while in the appliances for higher education in the college and university they have in some things surpassed even France herself.

I shall not be doing justice to other parts of the great exhibit if I did not refer to the very extensive and admirable collection of the Christian Brothers, under the direction of our excellent friend, Brother Maurelian, President of the College of Memphis. That exhibit is one of the most interesting in the Exposition. Its educational appliances are admirable, while the benevolent and truly Christian work done by the "Catholic Protectory" was a surprise and a gratification to myself and to other members of the jury.

Then the work exhibited by the Freedman's Aid Society of the Methodist Episcopal Church was most interesting. It gave to those of us from foreign countries a vivid practical insight into the self-denying labors of that great organization for the education of the colored race in thirteen of the southern States. The exhibit of the American Missionary Society was also interesting and valuable, while the extensive exhibit in one of the galleries of various colored schools in several States was both unique and instructive.

I shall now for a few minutes briefly refer to two or three questions to which educators in the future will have to give heed. We have not reached our present proud position in the matter of popular education without a great struggle and without passing through many a conflict. Others may loom up in the distance, which may, or may not, be as formidable in their character as those we have had to deal with, but yet they may be no less inimical to the cause which we have at heart.

In the first place, the objection is frequently urged that we are educating the people overmuch, and thereby unfitting them for the practical and homely duties of life. This is but the old cry, dating back many centuries, in a new form, that we are disturbing the social relations of the various classes in the community, that we are bringing these classes too near together, and that the necessary distinctions between the artisan and the professional man, the employed and the employer, are being almost obliterated; in fact, that the tendency of this over-education is to make "Jack as good as his master", and that thus we seek to overturn the very foundations of society.

The simple answer to all this is, that we are but endeavoring to reach a higher plane of intelligence, to equalize it for those classes which

were hitherto kept in ignorance, often designedly so; that the age and our country demand that this ignorance should be removed; that the general enlightenment of any community or people is a real substantial boon conferred upon that community or people; that in this general enlightenment of the age, the relations between employers and employed will adjust themselves; and that educated labor is more valuable and less expensive to the employer than unskilled and uneducated labor.

Another objection is, that in certain other classes, which afterward live, as it is said, by their wits, we merely develop their mental powers, and thus make them clever in the ways of wickedness and dishonesty. It is true that hitherto national systems of education did not pretend to do more than give an intellectual, and, as far as possible, a moral training. Of late years, however, the force of the objection made has been felt, and France and England and some other countries have sought to practically meet it. Within the last three or four years it has been decreed in France, and is now the law of the land, that all education in primary and intermediate schools must include in it industrial training also, and that thus a practical direction shall be given to the intelligence acquired at school. The result can be seen in the extensive school industrial exhibits from France. England is addressing herself (as Germany has done for many years) to this great educational reform, and in many of the exhibits here I am glad to see that the subject is receiving practical attention in several States.

The third and only other objection to which I shall have time to refer comes from an unexpected quarter, from a distinguished authority on educational subjects, Herbert Spencer. In a series of articles published in the *Contemporary Review* last year, Mr. Spencer, under the head of the "Coming Slavery", discusses, among other things, the evil of admitting the principle that education should be directed by the State. He says: "Legislators who, in 1833, voted £20,000 (\$100,000) a year to aid in building school-houses, never supposed that the step they then took would lead to forced contributions, local and general, now amounting to £6,000,000 (\$30,000,000); they did not intend to establish the principle that A should be made responsible for educating B's offspring," etc. He further illustrates the point which he wishes to make against State systems of education.

It is difficult in a brief address like this to offer anything like a reply to so distinguished an authority as Herbert Spencer, especially as he is in fact discussing the broader principle of allowing government to absorb so many things under its control, such as railroads, telegraphs, care for the poor, etc. All I can say is, that the tendency in the present day is to a division of labor; and if in free countries, like yours and ours, the people (with a view to efficiency and economy) decide that the government should control and direct these things, who can reasonably object to its doing so?

Among the mottoes which adorn the display of the United States

Bureau of Education, I notice one which speaks of education as the basis and safeguard of republican institutions. True; but no less so is it the basis and safeguard of good government in monarchical countries also. No monopoly can be rightly claimed by any system of government in the matter of education, or in the blessings which it confers.

One of the great features of the exhibition is the display of the provision made for the education of the colored race, and the result of the experiment now being made toward that end is shown. As a British Canadian I greatly rejoice at what I have witnessed in this direction. The various southern States and the Freedman's Aid Societies from the North,—Methodist, Congregational, Presbyterian, Baptist, and Roman Catholic, vie with each other in this great and benevolent work. I am rejoiced to know from the Director-General of this Exposition that as soon as the burden of war debts is removed from these States they will put forth their best efforts to educate and uplift the colored race.

I cannot close without a reference to the great work being accomplished each year by that distinguished man who presides over the Bureau of Education at Washington. I refer to General Eaton. His successive Reports are mines of educational wealth. They have aroused and stimulated educational workers everywhere. Their fullness and comprehensiveness have been a marvel. They have been eagerly welcomed everywhere, and not least so in Canada, where they are highly prized as invaluable storehouses of information and of the practical details of educational labor all over the world. I hope that he may long be spared to carry on the good work in which he has been so ably and so successfully engaged.

ADDRESS OF MONS. B. BUISSON,

*Educational Commissioner from France.*

It is an honor, but a dangerous honor, ladies and gentlemen, that the Board of Management have conferred upon me, in asking me to take an active part in these ceremonies. No doubt, since we are here in Louisiana, in a State which has been several times French, and which has even yet not ceased to be a little French at heart, I would not be addressing you in a strange tongue were I to speak to you in my native language; but there are in this large assemblage many visitors from various points of America, and so, to insure being understood by all, I crave permission for a few moments to murder your beautiful English language.

Once previously, several months ago, when the French section was inaugurated, the one-half in the Main Building, the other half in the Government Building, I had the honor of expressing before the Director-General the cordial sentiments, which time has tended rather to increase than otherwise, that I have entertained for all who have made pleasant here my position as commissioner.

I am happy to have the opportunity of reiterating here to-day my most cordial thanks to the chief of the Education Department, to Gen.

John Eaton, of Washington, and to his esteemed colleague, Mr. Lyndon A. Smith, who have been the organizers of this branch of the World's Fair. It is to the Bureau of Education that France is particularly indebted for the honor of having been called upon to co-operate in this grand civilizing work, of which we have seen so complete a success, and which will ever remain a bright spot, not only in the annals of Louisiana and the southern States, but in the history of America itself and in the peaceful progress of mankind. [Applause.]

I do not forget that General Eaton has done the Minister of Public Instruction in France the honor of taking to him personally in Paris itself the flattering invitation to display here at your universal Exposition the whole of the exhibit made at the Health and Educational Exposition of London.

The French republic hastened to respond to the invitation of America because she is always happy to stretch forth her hand to her sister republic across the ocean, because she has no reason to blush for her schools, and because she is conscious of having actually accomplished in her schools during the last seven or eight years a great work, a work almost Herculean in its character, a work worthy of being shown to the world [applause]; and, finally, because in accomplishing this work she has not preceded, but in many points has followed, the example of her original, her brilliant, and her powerful sister of the United States.

You do us honor, ladies and gentlemen, when you come to visit the different rooms of our French educational exhibit, to be a little jealous of some things we have displayed there; but I must tell you that many of the principal reforms of which you are so good as to approve as first results, have been elaborated from certain elements and germs which we have found in some of your own States, as exemplified at your grand and memorable Centennial Exposition at Philadelphia.

Thus it is that exhibitions and nations are tributary one to the other. We were therefore, in a sense, acquitting ourselves of a debt of gratitude in bringing to you here in New Orleans exemplifications of the scholastic systems which your country had actually inspired to us. Yes, I say it with pleasure, that our legislators, when they had succeeded in re-establishing and consolidating the republic, felt a noble ardor to realize in France what had always been the first article in the republican programme—a truly national system of public education, perfectly free as far as affects what may be regarded as necessary to all, and entirely of such a character as to make free men, expert and intelligent workmen, and, above all, citizens devoted to their country; then the example of America was the first offered to them, and the system of education of your country was fully explained to the government of France in a voluminous report made on the Philadelphia Exposition by our commissioners, who had been sent there for that purpose, and who were filled with a sincere admiration for the grand scholastic institutions of New England. To one other republic also we have been somewhat in-

debted, and I must not overlook the fact; it is the little republic of Switzerland.

I will not occupy your time by sketching even briefly the principal features of the reforms of which I have spoken to you. They may be expressed in a word. They have founded a real scheme of popular instruction. We possessed in France great resources for the instruction of what are still called in Europe the middle and the upper classes—excellent lyceums, colleges, and universities. But the instruction of the children of the people, that grand majority that becomes the electoral body, although well developed in a few large towns, was, on the whole, far from sufficient. To make it complete, there were necessary thousands more schools, thousands more teachers, many millions more money.

Let me say at once, in honor of republican institutions and republican customs, that the Parliament of the French republic dared to demand, and was enabled to obtain, but a few years after our terrible disasters, those great sacrifices which the monarchical government had never wished, or had never been able, to make on behalf of public education, even in times of prosperity.

In seven years the number of schools has been increased by more than 7,000, the number of teachers has risen from 110,000 to nearly 138,000, and the number of normal schools has been more than doubled. Of these we have now more than 150, of which 66 are for female teachers; 570 new higher primary and professional schools have also been originated. In fact, the part played by the state in primary education has grown to an amazing extent. Instead of the 9,000,000 francs expended by the empire on primary education, the republic spends 94,000,000, and during the last seven or eight years more than 300,000,000 francs have been lent or given to the local boards for the building of schools, the need of which was evident.

You see, gentlemen, we have accomplished reforms after the manner of the French, according to our habits of inexorable logic, following the spirit of our "centralizing" republic. In this case, however, centralization, while it certainly has its faults, has also shown, I think, that it has its good qualities. Instead of waiting until all the different departments of France had in turn imposed upon themselves the necessary sacrifices, Parliament came to their aid, and we were able to satisfy that impatience which, I admit, had somewhat of childishness possibly in its composition, but which you also will admit was generous in its desire to see realized at once all that experience and intelligence had shown just and capable of realization.

If time permitted, I would add a few words concerning the spirit which has presided over the recasting of our educational system, and I would take pleasure in showing you how we have striven to draw advantages from that centralization of which I have spoken to you, in supplying the whole country at the same time with equally perfect systems and instruments of education. To bring about this achievement

a grand elective council has been originated, which has been named the Higher Council of Public Education.

From its discussions has come forth a system of education at once enlarged and simplified, instructive and attractive, for it does not omit even music and singing; healthiest, for it takes care of the body as well as the mind, and includes gymnastic and manual exercises; more practical, for it teaches drawing, which is the key of all industrial and mechanical professions; and more moral and patriotic, finally, because it is founded on love of country.

After mentioning the progress accomplished in secondary and higher instruction, M. Buisson, in concluding, invited the educators of America to attend the Paris Exposition of 1889, in which education will also occupy a large place, and the object of which will be the celebration of the anniversary of the *Revolution Française*.

ADDRESS OF MR. ICHIZO HATTORI,  
*Educational Commissioner from Japan.*

Japan is an old nation, whose history goes back over two thousand five hundred years; but, on the other hand, she may be considered in a very new condition. She is new in regard to her intercourse with other nations, and the start she has taken in the course of occidental civilization. I take this opportunity to state briefly how Japan has thrown away her old system of education and has adopted the new.

From the fourth century education has made gradual progress in the country. In the year 668 A. D. the first university was established in her capital, where classics, law, history, literature, mathematics, medicine, and astronomy were taught. Similar institutions soon sprang up in different provinces, which were cherished by the Government.

The aim of these institutions was not directed toward the diffusion of knowledge among the people at large, but merely to the education of persons to be employed in the public service. However, it exerted a good influence on the morals and manners of the people, and helped to train up virtuous men and women.

The period of six hundred years, from the eleventh to the sixteenth century, was the dark age of Japan, and civil war prevented the educational system from being kept in such a flourishing condition as before. As many of you know, we had once an extensive intercourse with Europe in the sixteenth and seventeenth centuries. Several Japanese of high rank made visits to Europe and observed what was doing there, but we cannot find any trace of changes produced on general education in Japan by this intercourse.

When perfect peace was restored, in the first part of the seventeenth century, the Government gave a fresh impulse to education, and the eighteenth century and first half of the nineteenth century may be considered the most flourishing periods of the old education of Japan.

During this peaceful time of two hundred and fifty years Japan closed her doors against foreigners, but fortunately she did not close them entirely; and while the education under the old system was carried on with full energy, European knowledge was very slowly, but surely, being introduced by some remarkable men. This is one of the most interesting parts of Japan's history. Men traveled from one end of the country to the other to meet some Holland traders at Nagasaki, in order to obtain from them some knowledge of Europe by the awkward means of gestures, or through incompetent interpreters. Whenever they procured a book on any subject of Europe, they gathered together around it like so many ants on sweet cake, and night and day they labored on it till they made out its meaning.

Their diligence, their perseverance, their suffering, were sometimes well repaid by the high reputations they obtained by their publications; but, alas! too often they were rewarded by imprisonment, or banishment to some isolated island.

One generation passed away, but another generation followed its example, until at last they succeeded in their great aim to spread European knowledge to some extent among the people, and prepared them for the event which was surely to come soon. When the Government of the United States sent Commodore Perry to Japan, and the treaty was signed between the two nations, the desire of the people to know of European sciences and arts became so strong that, despite the prohibition by the Government to go abroad, several dangerous attempts were made to escape to America or Europe, to obtain knowledge of the western nations; and when the famous work of Fukuzawa on "Conditions of Western Nations" was first published, it was sold by many hundred thousand copies in a few months, and it was in this very work we first got the idea of the European system of education.

Important events followed in rapid succession. The great political revolution of 1868 was accomplished, and New Japan started with promise and energy. The old system of education was cast aside, and a new law of education was issued in the year 1870.

Hundreds of young students were sent abroad year after year, while many officials were also commissioned to study the educational systems of America and Europe. In this manner we have revolutionized entirely our system of education.

At present all educational affairs throughout the Empire are under the control of the Minister of Education, who is also a member of the Cabinet.

All wards or villages have their school committees, and they have to establish elementary schools efficient to give education to the children of school age, which is from six to fourteen.

The school attendance is *compulsory*, at least for the first three years' course of elementary schools, and parents and guardians are held responsible for their children's attendance. The courses of study of ele.

mentary, high, and normal schools are constituted according to the standard outlines issued by the Department of Education, with modifications in accordance with local conditions; officers of the Educational Department from time to time examine into the actual condition of educational affairs, and no school, either private or public, can close its doors against these inspections.

We have already built about 30,000 elementary schools, 173 high schools, and 76 normal schools.

While we are encouraging general education with the view to secure the safety and prosperity of the nation, we have not been slow in establishing institutions for professional training and improving the university. There are now in Japan 1,219 professional schools, besides those high institutions under direct control of the Government, such as the University of Tokio, the Imperial College of Engineering, the School of Forestry, and many others.

If a student wishes to enter the University of Tokio, he has to pass through first the eight or six years in an elementary school, and six years in a high school. When he comes to the university, there are provided the departments of law, science, medicine, and literature.

The department of science is subdivided into: 1, course of mathematics; 2, course of physics; 3, course of chemistry; 4, course of biology; 5, course of astronomy; 6, course of engineering; 7, course of geology; 8, course of mining and metallurgy.

The department of literature is divided into: 1, course of philosophy; 2, course of political science and political economy; 3, course of Japanese and Chinese literature; 4, course of Koto Koshu Kua.

Each one of these courses requires four years' study, except the course of medicine, where the study of five years is required.

From these several government institutions *alone*, and without counting provincial and private institutions, we are sending every year over 2,000 graduates into the field of activity.

Japan is fully awake to the importance of education, and we find, among 8,200 new books published in the year 1882, 2,000 of them on educational subjects.

Now, Mr. Director-General, on behalf of the New Japan of eighteen years old, started in 1868, I respectfully invite you all to inspect some of her enterprise in the field of education. Thank you for the kind invitation extended to Japan to bring her goods and the evidences of her progress to this great Exposition.

#### ADDRESS OF J. R. DOBYNS, ESQ.,

*Superintendent of the Mississippi Institution for the Education of the Deaf and Dumb.*

It is an unexpected pleasure I enjoy to-day in responding to an invitation to speak a few words to this intelligent assemblage, gathered, as you are, from the four quarters of the globe, upon the great and interesting subject of deaf-mute education.



Standing as the representative of over thirty thousand deaf-mutes of the United States and Canada, I feel a just pride in their recognition on so important an occasion, and they, too, will be gratified when the news goes out that a feeble effort has been made in their behalf to-day.

I have listened to the gentlemen from France and Japan with very great interest, and am sure we all feel complimented that their system of education is in any manner modeled after our own. In regard to deaf-mute instruction, we are, in some measure, indebted to France for the model upon which it is based; and I am happy to say that Japan has taken hold of the subject, and with the growing desire of her people for knowledge, deaf-mute institutions will soon rise as monuments to their humanity and as evidences of their liberality.

While the great forces of civilization have been at work, the mighty arm of education has reached out and rescued the deaf-mute from the darkness of ignorance and lifted him into the glorious light of knowledge.

As late as the year 1815, there was not, in the broad limits of this continent, a single school for deaf-mutes, but I am happy to state, Mr. Chairman, that these institutions now number about one hundred, and are educating over eight thousand pupils.

There is not a State in our Union but what has its school for the education of the deaf and dumb. The Rev. Thomas Hopkins Gallaudet planted the first seed in American soil in 1816, when he founded the American Asylum at Hartford; while he has ceased from his labors, his works do follow him.

There are hundreds of thousands of dollars appropriated annually by our legislatures for the education of these children, and our national Government has provided most liberally for their higher education. Evidences of their knowledge and skill as authors, artists, and mechanics, are to be seen in these buildings, and they ought surely to be congratulated upon their handsome and varied display, and it will afford me pleasure, as their commissioner, to show you their exhibit.

Mr. Chairman, the sign language is purely a philosophical language; that is, we have a reason for everything in it. It is the *only* universal language. I have the advantage of my distinguished friends from France and Japan, for I can not only converse with deaf-mutes from the different States in my own country, but, when I meet an educated deaf-mute, whether he be from France or Germany or England or Japan, or whatever country, I can speak to him in his vernacular.

Many noble men and women are devoting their lives to the amelioration of these people, and striving to improve the means of instruction; and the day has come, when the man or woman who would successfully teach the deaf and dumb must be alive to the work.

We are not only teaching them to read and write and think, but we are successfully preparing them for useful citizenship by giving them a thorough knowledge of some art or trade.

There is not a profession or trade in our country but what has a deaf-mute representative. The minister, the lawyer, the author, and the teacher, are to be found among them.

When we look over the broad field of education we are exceedingly gratified at the progress in this department. But this good work has gone one step farther, and the dumb have been made to speak.

Prof. A. Graham Bell has invented a system of "vocal physiology," by a knowledge of which many deaf-mutes are enabled to articulate, and thereby to gain a surprising command over spoken language.

While I think a certain class of deaf-mutes can and will be wonderfully benefited by this system of instruction, I cannot appreciate the possibilities claimed by Professor Bell and his followers. I cannot persuade myself that it is the only proper mode of instruction. But whatever may be said for the superiority of the different systems, we are all making our best endeavor and will hail with joy any advancement in our work.

I have with me to-day about forty deaf-mutes of Mississippi, who are indeed feasting their minds on this wonderful Exposition, and in two days have gained a knowledge of the world that they could not have acquired in months and years of study.

If Major Burke is present, I desire to thank him, in their name, for the kindness he has shown them in granting them the privileges of the Exposition free of charge. This experience will be a bright spot in their memory. In responding to this call, I did not expect to explain or develop the great plan of deaf-mute instruction, but I wanted to claim that it was a factor in the great problem of education, and that this people have been brought to appreciate whence they came and whither they are going.

ADDRESS OF BROTHER MAURELIAN,  
*Of the Christian Brothers' Schools.*

I feel highly honored in being called upon to represent Catholic education in the United States, and with it, the Society of the Christian Brothers, of which I have the privilege of being a member. The cordiality with which the Brothers were greeted by the Bureau of Education and the managers of the Exposition, when about to exhibit in the Educational Department, can never be forgotten. I likewise deem it a duty to note the pleasure afforded me by the visits of very many distinguished educators from all parts of the country, who have unreservedly given assurance of their gratification that the Brothers have taken part in the educational exhibit.

Intimately connected with the work of the Brothers in the United States is the history of their founder, the organization of their society, and the results attained by them during the past two centuries.

To France belongs the glory of having given us the venerable Jean Baptiste de la Salle and his order, the Brothers of the Christian Schools,

popularly known in England and America as Christian Brothers. This remarkable man was born at Rheims, April 30, 1651. He was descended from one of the most ancient and most noble families of France, and was a near relative of the great explorers of the Mississippi valley, La Salle and the distinguished Father Marquette. Although Jean Baptiste de la Salle was afforded every facility for the enjoyment of the pleasures and honors of this life, yet, at the early age of seventeen he renounced all future worldly prospects for the purpose of devoting himself to God's holy service. In due time he was ordained priest, received the degree of doctor of divinity, and devoted himself with all the energy of his soul to the good of his neighbor.

The great aim of his life was to provide for the Christian education of youth, for which purpose he spared no effort, and, after distributing his patrimony among the poor, he at once labored with all his might in behalf of those grades which, at that time, were neglected in his own dear country. On June 29, 1680, the venerable founder formally organized his society. He personally taught school at Rheims, Marseilles, Paris, and Grenoble, and died a most consoling death on Good Friday, April 7, 1719, after having had the consolation of seeing his order established on a firm basis. To this saintly founder of the Brothers does the world owe the simultaneous and mutual simultaneous methods of instruction, which he originated and substituted for the individual method, in use up to that date. Under this, his new system, he established thirty-three primary schools; a reformatory; two boarding schools, into which he introduced object lessons, and whose programme of studies was more than a century ahead of modern establishments of higher instruction, and for which it might still serve as a model; two schools of technology; Sunday and evening schools having special courses for the study of mercantile and industrial pursuits; four normal schools for lay teachers; and a scholasticate, or normal school, for his own disciples. It is a fact of history that the first normal school ever founded was that established by the Abbé De la Salle at Rheims, in 1683; and while France enjoys the glory of having had the first normal school ever established in the world, and of having had normal schools more than fifty years before any other country, it owes this glory to the founder of the Brothers. A modern author, commenting on the work accomplished by the venerable founder of the Brothers, says: "All conversant with the state of education in the seventeenth century will appreciate the daring and genius of the man who not only conceived, but who actually achieved so much. At his bidding the whole modern educational system leaped into existence." In addition to the kinds of schools mentioned as having been founded by De la Salle during his lifetime, the Brothers have under their control orphanages, intermediate, agricultural, military, and art schools, academies, commercial schools, and colleges.

To realize the magnitude of the work accomplished by this great and

holy man, we have but to reflect that the general outlines of his methods of instruction and of his graded schools, with their salient features, have been adopted by every civilized country, and that his society at this time numbers about twelve thousand trained teachers, who have a complete system of their own for the religious, moral, mental, physical, industrial, art, and agricultural instruction and training of boys and young men. The society has normal manuals and complete appliances, invented and adopted by the Brothers, for instruction in all branches of literature, science, and art. Its schools are to be found in all parts of the world.

Of the society and its methods of instruction much appreciative testimony could be cited; but I shall content myself with a few brief extracts; I quote Dr. Barnard, who, treating of public instruction in France, asserts that "the most systematic, efficient, and widely disseminated order of the Christian Brothers was so wisely organized in 1680 as to survive all the mutations of civil government since that time." Mons. De Bonald, in his "Theory of Social Order," writes: "The venerable De la Salle is a hero in the eyes of the political world, and his institute is a master-piece of wisdom and of knowledge of men." A committee in a recent report to the English Parliament wrote: "Had we known the system of the Christian Brothers, Lancasterian methods would never have been tolerated in our schools."

In reference to education in the United States, as well as elsewhere, I request your indulgence for a few moments longer to consider the dignity or status of the educator.

Our Divine Lord gives us his appreciation of children in these words: "Suffer little children to come unto me and forbid them not, for of such is the Kingdom of Heaven;" and Richter, evidently impressed by the foregoing words, beautifully exclaims, "I love God and little children!" Here we have embodied the idea of whatever is purest and best in Heaven and on earth. Were I to ask parents this question, "Have you anything on earth that you value more than your children?" I feel convinced that all true parents would unhesitatingly assert that they regard their children as their most precious jewels. Their acts prove this, for if a child is unfortunate in health or otherwise, parents at once sacrifice rest, comfort, money, property—in fact, everything—to restore the child's health or to relieve its distress. If children are treasures of such inestimable value, and if parents are so deeply concerned for their bodily welfare, it should challenge their solicitude to exercise the most scrupulous care for the superior and more precious part of their children—I mean their spiritual and moral welfare. The child has a soul, an intellect, a mind, a heart, affections, a high sense of the moral, a desire to learn, and all these faculties require the most careful guarding, direction, and cultivation. A child in the hands of an incompetent person can in a short time acquire knowledge of moral

wrong that should never enter its mind, and for the blotting out of which true parents would willingly sacrifice a fortune.

It therefore behooves statesmen, educators, and parents to insist that the best, the purest, and the most skillful men and women be secured to deal with so important a matter as the education of youth.

Concerning the dignity of the educator or the Christian professor, St. John Chrysostom most happily remarks, "There is no painter, there is no sculptor nor artist, be he who he may, that can be compared with the man who knows how to form the minds and hearts of youth. This is a work far surpassing the finest creations of human art—to reproduce in souls the living image of Jesus Christ."

On the subject of securing none but the ablest and the best for educating youth, the distinguished Whitelaw Reid was inspired to say: "There is no place in the public service where bad work, inefficient work, is more to be deplored than in the education of children. If laws are badly made, you can repeal them; if courts do not rule justly, you can turn out the judges; if your rulers steal your money, you can send them to Blackwell's Island; but if the schools are ill-managed, if the children are led astray, or even not led aright, you are poisoning the life-blood of the community. You might as well economize by mixing chalk and water with the milk for your baby as economize by getting ignorant people to open the gates of knowledge for your children, or unfit people to mold their character at the most impressible age."

An eminent European statesman has said, "Whatever you desire to have in your nation you must introduce through your schools." If, therefore, we desire to have a nation great and prosperous, free from corruption, we must insist on fostering a high standard of morality in our schools, and this standard of morality must have God's holy law for its basis. It is in this way only that we can create in youth that lasting sense of responsibility to God for their actions, which will train them to self-control and to making a right use of knowledge.

In conclusion, I invite attention to the fact that in a few years the young men and boys, and the young women and girls, whom we are now educating, will take their places in the world to control all its great interests, whether in Church or State, commerce or the professions, arts or industries, society and family, and it devolves upon educators on this great day to emphasize the importance of the moral in education, that by the acquirement of every religious, moral, and social virtue, the rising generation may be fully prepared for such serious responsibilities.

#### ADDRESS OF LE ROY D. BROWN,

*State Commissioner of Common Schools for Ohio.*

In compliance with the invitation of the committee of arrangements for Education Day, I am here to address you briefly on one of the most important subjects connected with education in any country. Representing the great State of Ohio as her chief school officer, and also rep-

representing that large body of professional men known as school superintendents, it seems appropriate that I should speak of the executive side of public school work in the United States.

Evidence is not lacking to show that our fathers, in founding this nation, adhered to the doctrine that the education of the people should be fostered, encouraged, and *directed*, by the State. Thomas Jefferson, whose enduring and brightening fame rests in part upon his efforts in behalf of education, advocated a system of public instruction for Virginia which included elementary schools, academies, colleges, and even the university. The educational system developed by Jefferson, like all practical systems of public education, gave due prominence to school supervision.

The conditions of society in America during Jefferson's life were too crude for the fruitage of his noble work in behalf of free schools to be made manifest while he lived. But in the ordinance of 1787, and in the constitutions of the new States which were admitted into the Union, the influence of the advocates of public instruction is clearly seen. Nor was this influence confined to the new States. Still, it was full fifty years after the famous Ordinance had gone into effect, before any State in the Union had anything like a thorough and comprehensive system of common schools.

In 1837 HORACE MANN was appointed secretary of the Massachusetts State Board of Education. His appointment to this office marks an era in the history of education in the United States. He was the *first* man who was employed as a *specialist* to supervise the public schools of a State. He was the *first* great school executive officer that America produced. His annual reports, containing the records of his remarkable labors, are the very gospel of the "new education," and are found in the libraries of every country.

But Horace Mann's light did not shine for Massachusetts alone, nor were its rays limited to New England and the Middle States. Here, at this World's Exposition, in the school exhibits of Ohio, Indiana, Illinois, and a score of States besides, may you see the results of educational systems shaped after the model formed by the immortal secretary of the Massachusetts Board of Education. I need not say that the educators of the present, as well as of the past generation in America, have been imbued with the spirit of Horace Mann. Philbrick of Boston, Hancock of Cincinnati, Rickoff of Cleveland, Pickard of Chicago, Harris of Saint Louis, and the distinguished gentleman, to-day present, who for more than a quarter of a century superintended the public schools of New Orleans, were all in some sense disciples of Horace Mann, and showed to the world the great value of placing strong men empowered with large authority at the head of systems of schools.

Since the days of Horace Mann, school superintendents have been noted for the spirit of self-sacrifice which has pervaded their work. As I speak this afternoon, the Superintendent of Public Instruction for

Louisiana is laboring like a true missionary to establish a system of teachers' institutes throughout the State. Those who know the advantages which such institutes afford in the direction of the professional training of teachers will not fail to commend the zeal of Superintendent Easton at Opelousas, New Iberia, and other places in the Evangeline country. In a letter just received from South Carolina, I learn that State Superintendent Coward is to be occupied with this same institute work during the hot months of next July and August. Time would fail me were I to attempt to cite the numerous examples of school superintendents who have been willing to sacrifice themselves that the cause of education might prosper.

Superintendent Philbrick has recently told us that in Germany they say: As is the teacher, so is the school. In Holland they say: As is the inspection, so is the school. In the United States, I think, the history of education convincingly proves that *as is the supervision, so is the school*. What we need in this country, therefore, is a better supervision of the public schools, supervision like that of France, and like that of Japan, in which large powers are granted to competent men, who are held responsible for the thorough inspection of every public school in the land.

Let us strive, then, to magnify the office of those who direct the work of teachers. Let us as educators and as citizens urge that *education*, which is universally admitted to be the foundation of all our Nation's greatness, be exalted at Washington by the creation of a *Department of Education*, whose chief shall be a member of the cabinet. The great good which the Bureau of Education has accomplished under Commissioner Eaton and his predecessor would be more than doubled were education conceded the position in our national government that its importance demands.

I trust, Mr. President, that this day's work may tell for good toward the cause of education, not only in America, but also in every country.

ADDRESS OF LYNDON A. SMITH, ESQ.,

*Of the United States Bureau of Education.*

It seems appropriate for one who has had the immediate supervision of the Department of Education to speak of the beneficial results attendant upon its existence. They commenced long before the giant engines set in motion the miles of shafting and the multitude of machines that announced the opening of another World's Exposition. In a myriad school-rooms, from Minnesota to Florida, from Maine to Oregon, the minds of children and youth turned more intently to their tasks as they realized that their examinations and exercises were to be shown to crowds of visitors in a distant city. The interest in their duties increased and accelerated the development of mind for which the school is maintained. Not only did the mind of the pupil grasp more earnestly his daily lessons, but it stretched out from its narrow and familiar sur-

roundings to another and a dissimilar place. Our country is great and wide, and it is well for the child even to have his thoughts and sympathies extended to places distant in miles, but near in common interests and common dangers. The need of patriotism is as great as ever, and that grand sentiment is nourished by every tie that binds together in thought, in sympathy, and in interest the citizens of our spacious country.

The value of the Exposition is most realized, and its advantages best gained, by those who visit and examine its wealth of display in agriculture, in commerce, in manufactures, in art, in education. The inspection of the last-mentioned display has not been forgotten by numerous classes of visitors. Especially has the collection of school work and educational material attracted attention from the progressive citizen, the professional educator, and the student of human affairs, as they affect the welfare of the State and the progress of civilization. There are many things in an educational display attractive to the ordinary observer. The work of some child of his acquaintance lies concealed in a bound volume or is spread on the wall. The memory of his own school days is quickened by the likeness and unlikeness of the text-books and furniture of to-day to ruder ones that once bore the marks of his thumb and his knife. The drawings, the collections of natural science, and the classes in operation invite his attention by their novelty and usefulness. The drawing that composes a large part of the exhibit of any series of schools has specimens attractive to every eye. The displays of art receive admiration and commendation from those not yet interested materially in the system of education they represent or the results they represent. Not less works of art are the combined effects of the marvelously systematic and orderly appointments of the Christian Brothers' exhibit, and the artistic effects produced by the arrangement of form and color in the admirable display of France.

The scientific collections have been visited by great numbers of persons.

The discovery of common natural objects in a systematic collection tends to increase a person's respect for them as he meets them day by day, and draws his attention to them, whether they be rocks, flowers, trees, birds, or other animate or inanimate things. The casual observation of animals is not eminently an intellectual occupation, but it may be a first insight into the animal world. It is a step, only, from the still menagerie of a museum to the wild and unrestrained denizens of the forest and the swamp and the lake. Such a habit in any child or adult is a lump of leaven to raise up from degrading or selfish thoughts, and to neutralize or replace desire for debasing indulgence or trifling amusement. All grades of museums, from those collected by the industry of almost baby hands to those of the veterans of world-wide tours



and life-long efforts, have been examined and yielded their benefits to the passing visitor.

Actual school operations, kitchen garden, kindergarten, and manual training, have been noticed by people of all ages and circumstances. We cannot watch the seeds sown in their minds as they watch these forms of mental and physical development, yet we cannot doubt but they sometimes fall on good ground, to bring forth fruit a hundred fold. The experiments in physics (especially in electricity) and the performances in gymnastics which have been shown, have been suggestive to those that have seen them of the wonderful powers that surround them or lie dormant within their own bodies.

The immediate purpose of the educational exhibits was to furnish opportunities to teachers and educators to study methods and systems of instruction. The systems of our country differ both among themselves and from those of foreign countries. Those familiar with the principles of each system are anxious to know the workings of its schools and find them illustrated in the collections of school work and appliances. If these systems were to be studied merely to discover how the best educational results could come from the vast expenditures of money for education (\$90,000,000 in 1882-'83) it would be most profitable. When they are considered in view of their influence on society and on progress they assume greater importance. Not only the systems of instructions adopted by legislatures and educational authorities, but the methods used by individual teachers are shown in the volumes of examination papers, the reports of work being done, the specimens of drawing, the articles made by boys or girls where the industries have made their presence felt in the schoolroom. Teachers are not alike, and they excel in different qualities. Their excellences appear in the results of their work with the scholars. Only educators dull of comprehension can fail to find in examination of these exhibits their own defects painfully reflected in other's work, and methods of teaching unthought of before. The exhibits of normal schools are rich in these suggestions. The methods by which persons are prepared for the teacher's profession are outlined in them. That profession has to deal, not with values, but with lives. We admire the skill of the electrician who transforms that subtle fluid harmlessly into power and light. A more subtle influence pervades the child than that which fills yonder wires, and the teacher may make it yield a light more beautiful than at evening shines from these globes, or end in darkness most deplorable. The means and instrumentalities used by the most discerning and taught by them to the multitude of teachers now passing out of our normal schools, are amply illustrated in the Department of Education.

The student of political and social science is mostly richly rewarded for his time spent among the educational exhibits. They indicate the ability of the political bodies they represent to govern themselves, to restrain violence, to extend a cordial welcome to new citizens and new

industries, to grow rich in material wealth and productive power, to increase in character and influence. No State neglectful of its educational interests can hope to prosper. It may have fertile soil, but its harvests will be meager without intelligent husbandmen. Its mineral resources may be unlimited, but they will not avail in ignorant hands. It is the increase in intelligence, the multiplication of school-houses, that convert the natural resources of a country into the means of life and comfort.

Two other points, noticeable to all examining closely the Department of Education, are, the moral atmosphere of the school-room and the tendency to teach a child that which he is to know and to do in after life. The exhibits contain industrial features, specimens of carpentry and iron work and sewing. These do not illustrate what skill an apt mechanic may acquire. They do not show intricate design and perfect finish. But they do show that youth may learn to use the implements of industry with intelligence, and cultivate the hand and the head together. We need and are to have more skillful laborers, and a generation more proud of labor and less ashamed of its requirements.

The moral tone of our education is shown in the character of the compositions, and the mottoes of the books of school work. The reading-books in use contain selections possessing not only literary excellence, but an elevating moral tone. The contents of geographies and histories are strengthening to children in many ways. The ideas that pervade the school-room are proven by the testimony of a multitude of exhibits, which taken alone might not be convincing, but which corroborate each other to such an extent that their evidence cannot be doubted. The teacher has an ambition to lead children forward, not backward. No parent need feel that our schools are likely to build other than good characters in their children, so far as they build any. If they are not all that could be desired in the cultivation of character, they are vastly superior to the ordinary surroundings of childhood and are full of safeguards against moral injury.

#### ADDRESS OF WM. O. ROGERS, ESQ.

*Delivered, May 30, 1885, at a meeting of educational exhibitors,<sup>1</sup> W. I. & C. C. Exposition.*

One of the side lights of the great Exposition to the people of New Orleans has been found in the great number of intelligent and agreeable persons which it has brought to our city during the past winter. Some of the great educational associations of the country have assembled

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<sup>1</sup> This meeting was called for the purpose of passing resolutions relative to the management of the educational department of the Exposition. The resolutions adopted were as follows:

*Whereas*, We, the representatives of different departments of public education in the United States and foreign countries, have been associated most profitably during the World's Exposition at New Orleans, La., in showing the recent progress and present facilities of public education of every grade, and now, at its close, wish to

in convention. It is not necessary to enumerate all of them, but to refer only to the International Congress of Educators, the Department of Superintendence of the National Educational Association, the National and State Medical Associations and various press associations, the convocation of Jewish rabbis and the like. There has been a steady stream of distinguished men from our sister States and from the enlightened nations of Europe and Asia. The commissioners in charge of the various exhibits, in many instances, have been men distinguished for learning and of high social positions in their own countries. They have been ably assisted by men selected for their peculiar fitness for the position. The intercourse of our people with men whom we had known only by fame, or who had made themselves respected by their talents and esteemed for their personal worth, has been an agreeable feature of the past season. I do not know how many hearts have been stolen from our Southern land by the eloquent whispering of the north wind among the stately pines and the bearded live oaks during the continuance of the Exposition, but I do know that many pleasant friendships have been formed; that many agreeable memories will remain, giving a larger and fuller appreciation of the enjoyments of refined social intercourse. We shall think long and pleasantly of the many good, kind-hearted, clear-headed, learned men who have come and gone, or are about to go, with the great Exposition.

Nor can I, as a citizen of Louisiana, fail to be grateful for the fact of the Exposition. A profound sorrow is felt by all, young and old, rich and poor, at the thought that a life so brief may soon pass out into darkness and silence. Already the sound of the hammer may be heard in the work of removal, and the echo falls upon our hearts as when one hears the sod fall for the first time upon the coffin of a friend. It is

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express our appreciation of the hearty co-operation of the Bureau of Education at Washington, D. C., in furtherance of these interests: Therefore,

*Resolved*, That hereby we commend the plan devised by Gen. Eaton, United States Commissioner of Education, in providing means to represent at this Exposition the various phases of education, at home and abroad, as wise and very successful in giving all governments, States, and institutions of superior education, the fullest liberty and opportunity to present their respective methods of educational work in their own way, so far as consistent with a needful unity, to serve an intelligent purpose for comparative study in the minds of teachers and educators generally.

*Resolved*, That our most cordial thanks are due to Prof. Lyndon A. Smith, Gen. Eaton's official representative here, for his untiring attention and discreet supervision, uniformly given in the discharge of the difficult and delicate duties assigned him, and we very gratefully acknowledge that no small part of our success and pleasure has been due to his effort and zeal in our behalf.

*Resolved*, That these resolutions be printed in the city papers, and copies of the same be sent to all exhibitors connected with the educational department of the Exposition.

WM. W. PAYNE, *of Minnesota*,  
R. C. HITCHCOCK, *of Louisiana*,  
LE ROY D. BROWN, *of Ohio*,  
*Committee on resolutions.*

difficult to realize that we shall in a few hours or days cease to look upon these rich and varied treasures, the resources of great States and countries and the products of a skill and industry which dignify humanity everywhere.

Our only consolation is the hope that we have not been insensible to the lessons of the Exposition while it lasted, and that we shall be able to profit by those lessons after it has ceased to exist. In that special branch of the Exposition with which we who are here assembled have most to do, there has been much to excite our admiration and to provoke our most earnest investigation. In the extent and variety of material; in the carefully prepared tracings of progress through all lines of school instruction; in the presentation of results actually acquired and the indications of possibilities yet to be attained, the educational exhibit is, unless I greatly err, the largest, fullest, best devised, and best prepared exhibit ever found in any of the great expositions. Much of this result is unquestionably due to the foresight and energy of the Commissioner of Education, and to the cheerful co-operation extended to him by the political and educational authorities of our own and foreign countries. We are also assembled here to testify, as with one voice, to the patience, discretion, and good sense of our esteemed friend who, as representative of the Bureau during the absence of General Eaton, has so wisely performed the difficult, and, at times, delicate task intrusted to his care.

If, indeed, this grand school-house of the nation is closed as a thing of the past, we who have been permitted to study within its walls have the grave responsibility which is always attached to golden opportunity. I believe that notwithstanding the embarrassments under which the Exposition has labored; notwithstanding exceptional difficulties of an execrably bad season, when we treated our friends to chilling winds and mud-lined streets, and desolate gardens, instead of genial zephyrs, clean crossings, and blooming flowers; notwithstanding an attendance at times almost meager; notwithstanding all these things, I believe the Exposition was wisely planned, and that it has accomplished an immense influence for good. Thousands upon thousands of earnest, intelligent persons have come here from far and near, with pencil and notebook, in earnest, thoughtful study. They have taken their lessons with them, and the school-houses of the world and the world must beat more bravely for the fresh inspiration.

In the early days, when Truth and Fiction were strangely blended, the story goes that in Rome there stood, where two ways meet, a lofty pedestal, upon which was an image of brass. The right arm of the statue pointed to the ground and on the extended forefinger were engraved the words, "*Strike here.*" No man could tell the meaning of those words. Children played and grew in years around the base of that monument. Some curious persons, rougher in their ways, would beat the hollow finger and form, and then move on again. One day a

thoughtful clerk, gazing earnestly on the image, suddenly noted how the shadow fell from the forefinger on the cross-roads, and there came to him a flash of divine light. Silently and secretly he marked the spot, and at night, with pickaxe and spade, began to remove the soil. He was rewarded by finding a stairway which led to a subterranean cave. There he beheld beauty and riches which I may not take your time to describe, and only when he was recreant to the spirit which presided over that gorgeous scene the darkness closed upon him and he well nigh perished. The motto which, I think, could have been properly inscribed upon the tower of this grand building is the simple yet mystical phrase, "Strike here." Those who have wisely availed themselves of the opportunities here presented may mingle some satisfaction with regret at the close of the Exposition.

## ADDRESSES DELIVERED ON COLORED EDUCATION DAY, MAY 14, 1885.

### ADDRESS OF REV. T. R. MARKHAM, D. D.

No view, however expanded, and no words, however heightened, can overpass the bounds or exaggerate the praise of a true and proper education, just, consistent, and honest in its aims, judicious, earnest, and thorough in its plan. And when in the end proposed and the plan pursued there is a right harmony in the relations and a conscientious fidelity in the execution, there is also a sweetness in the pursuit and a joy in the attainment, which, in certain stages in its progress and certain points in its development, is so repaying and refreshing that the toiling learner, enamored of his work and its gains, catches the enthusiasm of the great Syracusan, who, when he had solved a famous problem, running through the streets of his city exclaimed: "*Eureka! eureka!* I have found it! I have found it!" And Milton's words are familiar, who likens the ascending path of a noble and virtuous education to "a hillside, laborious indeed at the first ascent, but else so smooth, so green, so full of goodly prospects and melodious sounds on every side, that the harp of Orpheus was not more charming."

And Bacon calls the inquiry of truth, which is the love-making or wooing of it, the knowledge of truth, which is the presence of it, and the belief of truth, which is the enjoying it, the sovereign good of human nature.

For truth, all truth, truth as to matter, truth as to mind, truth as to the universe, truth as to man, and truth as to God, is the food of the soul, and its attainment the aim of a right education.

But education in its parts, relations, and co-ordinations, and in its aspects, general and technical, will be presented to you by two renowned students—one an experienced educator, and both accomplished thinkers.

I shall, therefore, offer only the application of education in one of its concrete forms, and in a connection possessing interest to those to whom I speak.

For the application of education, the use to which it is set, the end it suberves,—these are vital points in estimating its value. Used by knaves and fiends, it becomes an instrument of evil, a destructive force; used by loving hearts in doing good, it becomes an agent of blessing, angel-like, scattering healing with its wings.

You, as a people, are a peculiar people in this land, as much so as the

Jew in the lands in which he lives. This thought especially impressed me as I sat here "Louisiana Day," listening to a representative of your race who spoke for his people so well, so earnestly, that he gained our close and interested attention.

Accepting his views as embodying your convictions and aims, I shall offer some thoughts based on his statements.

In speaking of his race he used a word which impressed me as giving you your right and your classifying name. I think it was Senator Bruce, of Mississippi, who represented that State in the upper House of the United States Congress, and who now holds a government office in Washington City, who said that he preferred the word *negro* as applied to his people, because it was defining and distinctive, while the phrase *colored people* was indefinite and vague, indicating and including a number of different races and peoples. The frankness and manliness of that brave and independent utterance was sustained by Rev. Mr. Albert, a printed copy of whose address I hold in my hand, and from which I read. Speaking of the "Colored Department's Day," he terms it the "American Negroes' Day," and mentions the "negroes' extraordinary attendance on that and the opening day of the Exposition." Walking through your department in the Government Building, the impression there received prepared me to appreciate his statements as to your "increase in education, character, and wealth," the exhibits giving evidence of your "thrift, industry and intelligence," and of your "aptitude in the arts and sciences, as well as in profitable and useful inventions, and showing the improvement the brother in black has made since the war."

His statistics were also striking and suggestive—"7,000,000 negroes owning 5,000,000 acres of southern soil, with nearly 1,000,000 children; furnishing nearly 16,000 teachers, and about 15,000 students in high schools; publishing over 80 newspapers; producing annually 1,000,000 more bales of cotton since than before the war; with savings of \$56,000,000 in the fraudulent Freedman's Bank, and an assessment of \$100,000,000 of taxable property—figures gathered not by black, but by white men." Well might he add, "Is not this marked and rapid progress in a race which the publisher of these figures said did not own itself twenty-three years ago?" Facts like these prove the possession of a growing power and influence.

And at this point I enter on my application. What shall be done with this gathered treasure, these resources, these attainments? To care for and transmit all this to worthy successors, careful trustees, and wise stewards, your children, the generation after you, must receive mental, moral, and religious training. But is this all? Is there no higher aim, no broader and wiser use of all this?

Friends, we are not reservoirs, but fountains; we are not pools, but running, dispensing, and distributing along all our lines of influence. Education, like every other gift, bestowment, attainment, is a trust, a stewardship. Education, like religion, which, alas! is too often made

the means of self-indulgence and self-congratulation—"thauking God we are not as other men"—education, like religion, is a grace to be used, an influence to be exerted, a power to be applied.

And is there no career before you? no manifest mission? no broad and blessed use of this trust and these talents committed to your stewardship? no outlook? no horizon with an inviting land and a beckoning field?

Let the answer come from an impressive parallel. I have likened you to the Jew, in that, here, you dwell a peculiar people. There is also a period in his history marked and suggestive in its resemblance to yours. He spent 400 years in a house of bondage. It pleased an all-wise Providence to place him there, but a family, a tribe, that he might become a nation, and grow to be such beside the first people of his day—the people foremost in knowledge, in science, in art. Israel expanded under the influence of this civilization, and when they went forth, their leader, Moses, went before them skilled in all the learning of the Egyptians. Taught thus by those who held them in bondage, they went forth on their mission, the preservation and perpetuation of the unity and the worship of the one God, the one only, the living and the true.

And now for the resemblance. Speaking for you, to us, Mr. Albert says: "Except in so far as our condition has been modified by our former relations of slaves and masters, freedmen and freemen, we have ever shared a common destiny. Our ancestors came here almost contemporaneously with your ancestors. Now, here we are, bound to this country and this State by all that is most dear to man. Here are our homes, our altars, and the graves of our fathers \* \* \* and, for weal or woe, the American negro has come to stay."

To which I add, if God means you shall stay, in God's name stay, aye! and prosper in all that is good and right and true.

But remember that through these centuries you, too, have grown into your proportions under the influence of the foremost civilization of your day, side by side with the first people of your time and of your generations in this land. To attest this, hear that great German statesman whose renown to-day fills the world. Three days since, May 11th, as the telegraph told us, when in the Reichstag a deputy said that English and American manufacturers were far beyond those of Germany, Bismarck answered that England was centuries in advance of Germany in civilization.

Yes, and the training of this civilization has placed you where you are to-day. Under the nurture and admonition of this English-speaking people, this Anglo-Saxon race, you have developed, attained, and achieved what of progress and possession is yours to-day.

And now is there no sphere, no work, no mission outside yourselves, where your training in this mental, moral, and material civilization may be put to practical and beneficial use; one that appeals especially



to you? I think that when you hear me you will agree with me that there is.

Here is this matchless Exposition, a microcosm, a world in miniature, with its wondrous showing of the products of sea and earth and sky, and its amazing exhibitions of the works of human industry and skill. Here the continents have come together, and the islands. But one place is vacant, one record is blank. Day before yesterday was "Education Day," when from one vast continent, covering seventy degrees of latitude and longitude, a land larger than Europe; five thousand miles long, and in its wider portion nearly as broad; a land unlimited in capabilities and possibilities,—not one teacher appeared, not one map, one book, one chart; no work of art, no school of science; not a system shown, not a treatise read.

Now understand me, I am entering on no discussion and pronouncing no opinion on perplexing questions or vexing problems of deportation, expatriation, or colonization. I say but this, that land is the home of your ancestors. Into its darkness, from the days of Mungo Park, that adventurous Scotchman, who, at the close of the last century, became a pioneer explorer, Frenchmen, Germans, Portuguese, Englishmen, and Americans have penetrated, one after another, and laid their lives on the altar of sacrifice.

You are now on their vantage ground. You are the inheritors of their civilization. It is your time, your turn, your day, and your opportunity; the day when from the ranks of these 1,000,000 school children, these 16,000 teachers, these 15,000 advanced students, and from these hundred million dollars of tax lists and these 5,000,000 acre owners, shall come forth the Peabodys and the Tulanes of your race, and the men like Livingstone and Moffat, who shall render service and lay down life for those who dwell in this thick darkness.

Friends, I am making no holiday talk, offering no oration to while away an hour. I am speaking with earnestness my convictions, and laying these upon your consciences and affections. And I appeal to you, preachers, who are the leaders of your people, to impress upon them this obligation that is theirs—a clear, a grave, a present responsibility, that cannot be shifted to other shoulders or left to other hands. And if you answer as you should, if through your offered resources and your consecrated and representative men and women, with the Christlike spirit and the Christlike love, shall come forth from the ranks of your two million church members missionaries to be sent by you to bear to your ancestral kindred across the sea the benefits and blessings of that civilization, physical and material, mental, moral, and spiritual, that has blessed and elevated you, it will be an application of your education, a use of your attainments and advancements, that will approve and exalt you among men and get for you the commendation and benediction of God.

And if thus true to your day and time you do this, looking through

the years we may forecast a day when, in another land and perhaps under a warmer sky, there shall arise another temple of the industries and arts, beneath whose arches, beside the other favored nations, a new banner shall be unfurled, bearing upon its folds the names of nations now dwelling in the darkness, but then living in the light in a land through your instrumentality "redeemed, regenerated, and disen-thralled."

ADDRESS OF REV. B. M. PALMER, D. D.

I speak with the greater pleasure to this assemblage because it is not, in my judgment, a mere holiday occasion; it is not gathered here for the gratification of a sentiment. There lies in this assemblage, and in this occasion, a purpose so grand and so earnest that it will require years of patient thought and labor to accomplish it hereafter. The problem presented for solution here, my friends, is that of the elevation of an entire people to as high an intellectual and moral plane as can possibly be achieved. You have done me the honor to ask for the utterance of my thoughts on this occasion, and I will take the liberty of speaking with entire frankness all that is in my heart, for I do not know how I can in any other way contribute to the solution of this grand problem.

Let me say at the very outset that I recognize very heartily both the distinction and the instinct of race. Of course, as a Christian man, I believe in the unity of the Christian family, all springing from one original stock, for it is written in the Sacred Book, "God has made of one blood all the nations of the earth." But I believe just as firmly that it is the policy of Almighty God to divide this family up into distinct and separate members for His own beneficent ends. When the great bow was placed in the heavens as the sign of that covenant that God made with man after the Flood, that He would never again destroy the earth with a universal deluge, it had become necessary, in accordance with the principles upon which God's government is founded and organized, that He should put a restraint upon the license and wickedness of man, so that he should not rise to that extravagant height which had brought upon the earth the catastrophe of the Deluge. Hence, it has become a matter of history that He broke the unity of human speech, and stamped upon the peoples of the earth those characteristic marks by which the great families or groups of nations have ever since been distinguished. So much for the distinction of race.

I said that I believed also in the instinct of race. I believe the instinct of race springs from that principle of self-respect which is proper to every man, and which is placed in the human breast as the basis of whatever of good may be developed there; and planted thus in the individual, it widens out into the family when the individual becomes constituted so that the respect and affection which a man properly entertains for himself is developed into that domestic affection which binds together the members of a household; broadening out from that until it

spreads over the world, and becomes what we call patriotism; widening out still, in broader circles, until it overtakes the universe and is recognized in the cause of philanthropy. Now, this instinct of self-respect and self-appreciation, which I hold to be indispensable as the basis of individual and personal character, extends to every race of men that exists. When, therefore, it became apparent in your history, when you were some twenty years ago suddenly thrust to the front to make the most of your own resources, it was perfectly natural that there should be developed in your bosoms, as in mine, and as in that of every honest and true man, the instinct of race.

It was right that you should create those associations among yourselves which should develop and occupy the social element of your people. It was perfectly right and altogether in accordance with the principles of the highest reasoning that you should be gathered in your own schools, and that you should be taught by teachers well instructed of your own race; that you should be gathered in your own churches, and taught by pastors well instructed of your own race. I say again, and with renewed emphasis, that I recognize distinctly, not only the distinction, but the instinct of race.

And now, my friends, permit me to add, as the climax of this thought, that as a race you are put this day upon an elevated platform before all the nations of mankind. Here, in connection with this Exposition, you touch the highest civilization upon earth. You behold with your eyes the products of every part of this great continent. Not only so, but you behold the products which represent the education, and the civilization, and the thought of the more ancient nations of the earth. It was a wonderful history, that of the means by which four million of people—at that time, twenty years ago—by that high Providence which rules over nations as well as over men, were brought out from that state of dependence upon the will of other men and made to develop before all mankind upon a platform as elevated as our own Rocky Mountains, or as the mountains upon the eastern shore of our continent, to work out before the nations of the earth your own history and distinction. I congratulate you upon that event. Providence has brought you as a people and as a race, and put you upon this exalted platform to work out your own history and career. I say, from the depths of my breast, a hearty “amen” to it all.

But now mark. If you are to be a historic people, you must make yourselves worthy of a history, for it is a law of nature in all of her departments that everything must grow from its own roots. There are parasitic plants that climb about the trees upon which they live, and that sometimes even put forth little flowers of their own, but they have no root of their own, and therefore no strength and no glory. It is an ordinance of Him who has made nature and man, and it is as true of races as of plants, that everything must grow from its own root. And I am here to-day in accordance with your own wishes to emphasize that

thought. You are to be in history just as you are worthy to be, neither more nor less, and I am here to exhort you all, so that your roots may take hold in time. Now, to recur again to the analogy of the plant: there must be a living seed, and that living seed must stand in direct relation to the soil, and when put into the earth it must be strengthened and warmed and refreshed and nourished until it bursts its shell and the hidden life goes forth into the plant; and as soon as it emerges from the soil it must shoot out its leaves, the lungs of the plants, through which it breathes the pure air of heaven, and be painted as to its colors by that highest of all artists, the sun, which God has placed in the zenith of the heavens.

Just so with man. He must have capacities. There must be within him the qualities of courage and patience and hopefulness. There must be those mental and moral traits that give life to the seed that produces corn in harvest time; and there must be time for all this, and there must be the proper surroundings, and the proper agencies at work. Now I come to the point which is submitted for our consideration in the programme of this occasion. What are to be the agencies by which you are to rise to a historic position among the nations of the earth? For here I have to say that you shall have what all other nations have had, just that place in history that you make for yourselves.

When you develop the qualities that are in you, and form a character upon which that history is to be built, unquestionably, according to the appointment of Him who rules the universe, you will have your own orbit described for you. For as there are orbits in which the planets move, orbits in which the solar systems themselves move, all sweeping around that great common center, which for aught we know may be the abode of the Almighty, so there are orbits provided for men and for races and for nations just according to their own fitness. I point again to the responsibility that lies upon you, and I take the full share of responsibility upon myself.

We are here on this occasion standing side by side, white men and black men. We have known each other through the centuries that are past. We white men were born and brought up in the arms of nurses that came of your race. If there are any two classes who should be perfectly friendly one to the other, who should rejoice in their mutual advancement and prosperity, they are the Southern whites and the negroes of America. Now as to that which we call character, the basis of all history, how very remarkable it is that even the nations that belong to the same race yet differ in the characteristics they develop. Look upon the map of Europe. There you find England and France and Germany and Spain and Italy—all of them of the Caucasian stock, all of them bearing the impress of the race to which they belong, yet with individual distinctions by which they are perfectly separated one from the other. You cannot confound the Englishman with the Frenchman, the Frenchman with the German, nor the German with the Italian

or the Spaniard. What are the causes that combine to produce those minute differences that exist between nations of the same stock? I, perhaps, am not competent to indicate. At any rate this is not the place to discuss the subject.

It is the same with regard to the nations of the East. The Arabian and the Persian, for example, came from the same stock; so did the Chinese and the Japanese; and yet, though they have traits in common that have descended to them, they are distinct from each other in the traits they have developed. Hence, as has been suggested by the speakers who have preceded me, there is to be a type of character, perhaps a type of civilization, that is to be peculiarly your own. A type of civilization that shall produce new qualities even. What are the agencies that are to be brought into operation to effect this? I reduce them to three. They are: First, the home; second, the church; third, the school. I say home, because it is the primary state, the first society, out of which all states and societies spring. Home! Knit together by the bonds of chaste affection in which children shall be taught the law of obedience to authority, and in the exercise of that obedience, all their faculties, intellectual and moral, shall be trained. If it were not for the despotism of the family—I say despotism; it is a strong word, but not too strong—I do not believe that men would be capable of subjection under any form of government in the world. Then there is the church. Streams do not rise higher than their sources. Tell me the religion of a people, and I shall know the people themselves. Not until the religious character of a man or of a nation is developed does he become capable of subjection to human law; until then he is entirely useless to the society around him.

But it is more appropriate on the present occasion, seeing the character of the object that has called us together, that I should dwell upon the third and last of the agencies to which I have referred, namely, the schools. Through the generosity of friends at a distance your people have been wonderfully well supplied with the higher class of schools. I have sometimes thought that perhaps there had been a mistake in putting so much of that liberality in that direction, and not a little more lower down in the scale of literary development. However that may be, it so happens that through all this southern country, from the Gulf up to the border of the northern States, you are everywhere provided to a good degree with the institutions that impart a high education.

But besides these institutions there are the technical schools, that have been so eloquently referred to by my friend, Colonel Johnston. These furnish a supplementary education, as it were, an education that should everywhere be encouraged. Such schools bring your young people into intimate connection with those requirements and those pursuits of life in which many of them will have to earn their bread. Let me say, in closing, that in all your efforts to advance yourselves,

whether socially or educationally, you have the very heartiest sympathy and co-operation of all wise and thoughtful men upon the face of the earth.

ADDRESS OF REV. A. E. P. ALBERT, D. D.

*Mr. President and Fellow-citizens*—In the spirit of our lamented President Garfield, I bow in reverence before the school-children of to-day, because no one knows what undeveloped possibilities are wrapped up in their tiny suits. Among them are those who are to be the future masters in oratory, in music, and in arts; those who are to be the inventors, scientists, scholars, professional and business men; the mechanics, farmers, manufacturers, law-makers, judges, and rulers of this nation. They are the heirs apparent in the line of succession, to whom we must soon turn over the sovereignty and destiny of the Republic. Upon their present training depends whether they shall bless the world with their greatness, or curse it with their wickedness.

Divine Providence, as well as human economy, commits to us the sacred charge of preparing these coming millions for the active responsibilities of life.

Primarily, this burden rests upon the parents of the present. And well might it rest there, because, for weal or woe, "the hand that rocks the cradle rules the world." How solemn the charge! how vast the responsibilities!—so sacred, that had I the voice of a trumpet, and the power of an archangel, I would go up and down the earth, awakening with thundering blasts the parents of this nation to the sacredness and solemnity of their charge. Infidelity, with its withering curses; vice and immorality, with their seething mass of pollution; intemperance, the hydra-headed, bloody monster, whose stony heart, blinded eyes, and listless ears, unaffected by the poverty, misery, and crimes which it produces, and the hundred thousand drunkards' graves which it digs annually,—are threatening the very foundation of the home, and calling loudly for the interposition of parental training and influence to stay the coming destruction.

Secondarily, this responsibility rests upon the States and the nation, whose welfare is vitally involved.

The monarchical powers of Europe find it to their advantage to aid the cause of public education from their national treasuries, and, with Edmund Burke, they believe it to be the "cheap defense of nations." The British Parliament expended for public education in 1882, in England and Wales, \$13,749,315; in Scotland, \$1,736,160; in Ireland, \$2,677,080, besides the local revenues for educational purposes. Prussia, during the same year, spent \$11,458,856; Russia, \$9,000,000; Austria, \$8,800,000; Italy, \$6,000,000; Belgium, with a population of only 5,403,006, spent for education during the same year 20,000,000 francs. The French Republic, wiser if not better for her dearly bought experience with the Prussians,—that an educated soldiery is superior to an illiterate one, spent in 1881-'82, \$22,-

717,880. These sums, be it remembered, are simply supplementary to the millions raised and expended from endowments and local taxation for the cause of education. And, in order to further the cause, not only are these millions of dollars spent annually, but Prussia, France, Italy, Austria, and even Japan, and many other countries, have adopted compulsory systems of education.

The purpose of the American Union, based upon universal suffrage, and where every man is a sovereign, is "to establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity." The question of importance to a government thus constituted, is, by what methods can these purposes be best fulfilled? Since experience has demonstrated that no republic can live and prosper amid the rank and noxious growth of vice and ignorance, we answer, unquestionably by promoting universal education. The strength and stability of republics do not consist in floating batteries, swarming battalions, and terror-striking guillotines and gibbets, but in the virtue and intelligence of their citizens. And this education, to produce the greatest blessing, must be sanctified by the holy influence of the pulpits of the land. Vice is the twin sister of ignorance. They constitute the greatest danger menacing our free institutions. Universal suffrage, not unlike the useful benefits of steam, electricity, and the chemical forces, is a blessing fraught with the direst consequences, if exercised by an ignorant and vicious people. The nation needs to be fully aroused to the enormity of the evil which, above all others, endangers her life and happiness. Intelligence is necessary to the proper exercise of the elective franchise, and to-day, as in the days of the fathers of the republic, "we must educate or we must perish." "Self-preservation is the first law of nature," to nations as well as to individuals; hence the imperative duty of the national government in this her vital interest.

It is not to be assumed, however, that intelligence is but a mere synonym for honesty, integrity, and patriotism, and that it transforms every one into an Aristides, a Leonidas, or an Horatius. Nay, one may possess the eloquence of a Demosthenes or Cicero, the polish of a Pericles, a Livy, or a Tacitus, and yet be a Judas, a Benedict Arnold, or an Aaron Burr. Education, however, increases the value and self-respect of every citizen; hence its tendency to decrease pauperism and crime, the two greatest burdens on a State. In these the State, and not the national, government is vitally involved; but every citizen of the State is a co-ordinate king of the Republic, upon whom rests the mighty fabric of our national institutions, and by whom its questions of policy must be decided. This the voter must express by his ballot.

But how can the illiterate voter so express himself intelligently, honestly, and effectively? This he cannot do without that intelligence which enhances the moral senses, and that is capable of baffling corruption. In this the national life is at stake. A dreadful pall of ignorance,

breeding death and destruction, overhangs the Republic! Over 2,000,000 voters, or one in every five of the voters in the United States, are unable to read the ballots which they cast. The great storm center is in the sixteen southern States, where the 7,000,000 colored people are chiefly to be found. From 40 to 55 per cent. of the voters of that section are unable to read their ballots. Eighty per cent. of the colored and 30 per cent. of the white population of the South are illiterate. The South, with only one-third of the population, has three-fourths of the illiteracy of the nation, and fully a third of her voters are illiterate. But the most alarming aspect here presented is that the cloud of ignorance is becoming denser. The ten years preceding the taking of the census of 1880 show an increase of 187,671 illiterates in the South. The work of education is not keeping pace with the increase of our population, to say nothing of removing the vast cloud of ignorance which hangs over multitudes of our older masses; 16,337 white, and 86,555 colored voters, or nearly half of our voting population in Louisiana, cannot read their ballots. There are more illiterate voters in South Carolina than there are voters able to read their ballots, while in Kentucky there are more white than colored illiterates. South Carolina has five times as many illiterate voters as New York, with her millions of inhabitants and all her foreign population; while Georgia, which has nearly the same population as Iowa, has nine times as many illiterate voters, and twice as many, without counting her colored illiterates. These figures show that not only the colored, but that the white people, too, of the South, are sadly wrapped up in the abject bondage of ignorance. But how else can it be, when the States of New York and Michigan alone have a larger income for public schools than the whole South combined?

The census shows further that the States suffering the most from illiteracy are those most financially disabled to provide the necessary means to educate the masses. Is not this fact an eloquent appeal for national aid for public education in such States? Can the national government guarantee for the future a republican form of government to such States, while she indifferently allows the increasing growth of the poisonous upas which threatens her own existence, and against which such States are helpless? Not only in the South is this great danger, but the great cities of the country also furnish cause for alarm. Fifty-seven per cent. of the children of school age in Chicago are not in school; eighty-two per cent. of those of Wilmington, N. C., are not enrolled in school; while in thirty-four cities fifty per cent. and upward are out of school. The growing political influence of our cities gives significant importance to such fearful figures. The salvation of the Union against internal ruin and foreign invasion is in the idea of universal education, by national aid, as a safeguard around universal suffrage. The ignorant masses easily become the pliant tools and the turbulent rabble of schemers and designing politicians.

They are the ready converts to socialism, communism, and every



other *ism* destructive of the ends for which the government was founded. The menacing clouds call for vigorous efforts to wipe away the curse, before, like a mighty cyclone, it sweeps the nation and her liberties from the face of the earth. The evil is national and calls for national remedies. The panacea is universal education, or national ruin follows. However statesmen might differ upon States rights principles involved, they are all agreed as to the dire necessity which calls for national aid, and as to the duty of the Government to provide it. The voice of the people, which is the voice of God, is that statesmen should settle their differences forthwith, that the aid, which all have agreed is needful and reasonable, may be made available. The evil to be eradicated is a tremendous one. To remove it every agency should immediately be put to work. The home and the pulpit, the State and the nation,—they are all threatened; they all should defend. Our colored population, freed amid shot and shell, fire and smoke, rivers of blood and millions of treasure, is intensely interested in this matter.

The negro craves education. He wants to learn to make himself intelligent and more valuable, as a man and a citizen, in every sphere of usefulness. Twenty-two years ago he entered the race of life, bound up in the densest ignorance. Nearly every man's hand then was against him. Having demonstrated his ability to acquire elementary, classical, and professional education quite as readily as any other race, his value as a producer no less than a consumer, and his political importance, he has now succeeded in arousing the sober reflection of his fellow-citizens; and to-day all classes recognize the obligation of his preparation for the duties and privileges of citizenship. Public opinion, based upon substantial facts, declares that the progress made in education amid the hindrances encountered, has been most flattering.

The educational exhibits—examination papers, drawings, and so on—from every State and Territory in the Union, prove conclusively, from actual results, the ability of the race. Already we can point with pride to a growing and distinguished class of scholars—authors, college professors, teachers, lawyers, physicians, and clergymen—many of whom were born under the yoke of slavery, besides the vast numbers who have become intelligent business men, mechanics, farmers, and more valuable and reliable laborers, and better citizens. These are but the first fruits of a grand harvest. We can now discover a promising silver lining to the thick and murky cloud of ignorance which still overcasts our sky.

The census of 1880 shows that there are 4,601,207 colored persons ten years of age and over in this country, and that of this number 3,220,878, or 70 per cent., cannot write.

Over half of the illiterate voting population of the nation are colored, although we form but one-eighth of the population. The increase of school population among the whites in the South during the year 1880-'81 was 54,639, while the increase of enrollment was only 19,203,

but little more than one-third what it ought to have been. Among the negroes the comparison is still more unsatisfactory. Our increase in school population was 125,930, while the increase in enrollment was only 17,663—that is to say, that but little over one-seventh of the increase of our youths in the South were enrolled during that year. Educate a man's head, hands, and heart, and he learns his duties and privileges of his citizenship, and he becomes better and more valuable. The negro is a man, therefore education ameliorates his condition and enhances his material and moral worth.

To accomplish these results for our people, 18,000 public schools, with 1,000,000 scholars and 17,000 colored teachers, beside a number of white teachers, are now in successful operation. The religious denominations, too, are at work. The Methodist, Baptist, Congregational, and other Northern denominations have dotted the South everywhere with their high schools, colleges, and universities, as so many central fires, to prepare teachers, ministers, physicians, artisans, and leaders for the race, and to lighten up this Southland. The Methodist Episcopal Church alone has disbursed over \$1,500,000, over \$500,000 of which has been invested in permanent school property, toward our higher education since the war, beside the multiplied thousands of dollars expended through her church extension, missionary, and other benevolent agencies. Her freedmen's aid institutions have taught over 100,000 pupils, and these in turn have instructed 1,000,000 children, and still the work goes on increasing every year. The Baptist Church, through her Home Missionary Society, has spent over \$1,000,000, over \$400,000 of which is in permanent property. The American Missionary Society, with her twenty chartered and normal institutions and thirty-five other schools, 350 teachers, and 9,000 scholars, is quite abreast of either of these denominations in this divine mission.

The Presbyterians, Unitarians, Friends, Episcopalians, and some of the churches of the South, are more or less engaged in the good work. These churches have expended over \$25,000,000 for negro education since Lincoln's proclamation. Their continued efforts and interest, and the incessant labors of such philanthropists as Chamberlain, Gen. Fisk, Dr. Rust, Dr. Braden, and our own Bishop Mallalieu in this city, Drs. Streiby and Roy, Drs. Morehouse and Haygood, and the charitable remembrance of such noble Christian-hearted benefactors as John F. Slater, Mrs. Valeria G. Stone, and many others whose names are household treasures among us, all inspire us with encouragement for the future. The presence here of these students from our public schools, from the Southern, Straight, Leland, and New Orleans Universities, together with their overworked and underpaid teachers and faithful presidents, all mark the coming dawn.

The presence among us to-day of such men as the Rev. Dr. Palmer, the scholarly and eminent divine, whose superior qualifications place him at the head of the Southern clergy; of Col. William Preston John-

ston, the distinguished university president; Rev. Dr. Thos. B. Markham, the popular pastor and one of the most influential Southern divines; the generous temper manifested by Director-General Burke and by the other managers of this Exposition; and the encouragement afforded us by the recognized leaders and formulators of Southern public opinion—all point to a better and brighter day for the future intelligence and well-being of our people. Education is the consummate flower of modern civilization, which gives fragrance to the condition of all races and nations. Let us cultivate it. It is the great center around which our national life and happiness revolve. Under its influence, fostered by charitable, State, and national aid, the night of darkness shall soon pass away. Ignorance, vices, and race prejudices shall perish, and the sunshine of intelligence shall penetrate the darkest nook, the bonds of brotherhood shall be strengthened, and the blessings of our free institutions, founded upon universal suffrage and protected by universal education, shall here be enjoyed by every race alike, and shall be handed down to our children's children unimpaired.

ADDRESS OF COL. WILLIAM PRESTON JOHNSTON.

I am here by invitation, to-day, to address you on the subject of industrial education in its bearings on the colored people. I presume I am invited in view of the fact that I am known to favor industrial education in all its aspects, in every race, class, and condition, and because I am myself a teacher. But it may not be known to you, though I recall the incident with pleasure, that the very first teaching I ever did was in giving lessons in reading and ciphering to a colored man. He was a very large and a very black man, indeed, and I was a very small boy, but we were the best of friends. He was a cornfield hand, not one of our own servants, but a neighbor's, and he used to walk several miles on Saturday nights or Sundays, to say his lessons. He was only a moderately apt scholar, and I was not a very skillful teacher, but what I lacked in experience I made up in zeal. We had a great deal of talk outside our lessons, and I hope we were both the better for it. You will pardon this little reminiscence, but I offer it to show that I have, in my humble way, been from the first anxious to impart to my colored friends the best treasure I ever had, my share of knowledge. And I wish to say right here, before I begin to discuss the subject matter in hand, that if I know my own heart, no one can feel a sincerer or deeper interest than I do in the welfare, happiness, and progress of the colored people, with whom I have been brought up, and have been associated, in so many ways, all my life. The friendship I have toward your people is honest and genuine, and I am always glad to lend you a helping hand or a word of cheer when needed. It is prompted solely by this feeling that I am here now. But I may well add that I am touched by

this mark of your confidence in inviting me to confer and advise with you on this important occasion.

Before we talk about how we are to educate a man, we ought to decide what we are aiming at. To educate him is nothing more nor less than to train him, or break him, into his work in life. You all know what is meant when we talk of training, or breaking, a horse. It may be to haul a dray, to draw a carriage, to run a race, or to take his paces under the saddle. We train him for what he has got to do, however, and not to dance hornpipes or play trick-mule in a circus. Now, just so, educating a man is training or breaking him in for his work in life, and not to make a show merely.

But a man's work is a good deal more difficult than a horse's. He has to work like a horse, it is true; but a horse has somebody to think for him, and the man has to do his own thinking, if he is a man. Moreover a horse's morals consist in obeying the bit and curb of a master mind; but a man, no matter how abject, has affections and a conscience, and these must be kept sound and healthy, or the man becomes a nuisance to himself and all the world.

Now a great philosopher, as Mr. Herbert Spencer is called, informs us that "knowledge immediately conducive to self-preservation is of primary importance." In plainer language, the first thing we have to learn is to keep out of the fire—to take care of ourselves. Fortunately, nature and the rude experience of most barbarous races help toward this most important knowledge of all, though it leaves much for even the most civilized to learn, and more for them to act upon. We see this illustrated here in New Orleans, where we do not clean our streets and back yards, though Azrael, the angel of death, is on the wing, holding aloft the vial of pestilence with broken seal and filled to the brim.

As self-preservation is the first law of nature—that is to say, in the material world—we ought to learn in our very infancy all the laws and rules to keep in health and good working order the machine we call our body; and to this end we must be prepared, or educated, to provide for it the food and clothing and dwelling place that are necessary for its comfort and well being. It is not necessary or desirable that the body should become the servant of the clothes it wears, or of the food it consumes. Health, not luxury, should be our aim. But a man is badly educated who does not easily win bread and secure comfort for himself and his family; and this, not through cunning arts, but by honest toil. In training a man, we must train him first to make his own living, and next to make a good living for his family. If we can do this with the great majority of men, the problem of education is nearly solved.

A very large proportion of the people of the world must make their living by the sweat of the brow, by the labor of the hand. Only a small number are needed for the professions, for managing that share of the world's business in which the hands do not perform the greatest part, though not the best part of the work. There is only one physi-

cian for 115 families, and that is too many; there is only one lawyer for 156 families; and, taking all the professions together, their members include only one man out of every 220 of the entire population. There are men evidently fitted by nature for professional life, and it is a great pity when any such should be debarred from it, or kept out of it; but they are exceptional men. The real trouble is that the wrong men get into it, and the business of the world is badly done.

There is a mistake, too, in believing that professions necessarily confer greater rewards in wealth, honor, or happiness, than industrial pursuits. The intellectual life confers a happiness of its own, a peace which the world cannot give, but it is not the sort of happiness that most men are seeking.

Now, if there should be a rush to any profession, or indeed a very small addition to its percentage, the supply would be greater than the demand; many would be left unemployed in it, and poverty and suffering would follow. This is not so with the hand-workers. You cannot have too much corn, for the world is your market.

But I will be told that you can have too many carpenters, or iron-workers, or shoemakers. I confess this would be true under the old system of education, though not under the new.

But this is a large question, and one which I am not dealing with to-day. On some other occasion I may attempt to show how I think labor may protect itself from the oppressions of monopoly, and reconcile justice, progress, and happiness, by the equable and equitable conditions of peace, instead of making hostility, or at best armed neutrality, the basis of the social and economic life.

Suffice it now to say, that if a man must be taught, as was the case in old times, to do a few things by rule of thumb, so that he would know those things and nothing else, then, as soon as an invention came along which showed a shorter, easier, and cheaper way of doing those few things, he would be left high and dry on a shelf, to lift up his idle hands to heaven in prayer and starve.

But such is not the case now under our new system of training, though I admit that it was under the old apprenticeship system. We do not make a carpenter, or a turner, or a blacksmith, or a foundryman of him, but a mechanic. We teach him principles, and how to apply them; tools and how to use them. When one set of tools fails to provide a competence he turns his hand to another that will, for he has a mastery of all.

Our modern education manages these things better than the old method did. We put brains into the fingers. We find out the best way to do a thing, and the reason why it is the best way. Then in teaching a man how to do it we teach his fingers to do the job, not like a dumb, blind piece of machinery. But we say: "Come, ears, listen while I tell you; come, eyes, look upon this work, not with a dazed, uncertain stare, but keenly; come, tongue, tell me *how* to do this; and

last of all, come, O thou captain of the host, Boss Brains, understand this work, what it is for, how it is done, why it is carried out in this particular way and not in another." And when Boss Brains takes charge of a piece of business, my friends, it is well done. When you find the mark of that master mechanic on it you may be satisfied.

Now, one thing about this new, or modern, education. What would you think of a schoolmaster who would take up a book and read it glibly, and then turn to a little beginner and say, "Now, my boy, you have heard me read, take this book; and here is a spelling-book, too, with the alphabet in it, and lots of nice words; you just learn your letters, and spell these words all out, and then after you practice reading you will get to be a nice reader like me." Would you blame the boy for saying, "Master, I do not know how to do all this"? A sensible schoolmaster would first teach the boy the words which make up the sentences, and *how* he must use all his faculties to learn, before he put him to read by himself.

Nine numerals and a cipher, or zero, make up all the signs needed for the vast numeration and complicated calculations in arithmetic. So handicraft has its alphabet and its master-words. Its has its digits and numerals. There are a few typical forms, as they are called, in wood or iron, a few shapes into which the carpenter saws and planes his wood, which, put together, make up all the vast variety we see in joinery, carpenter's work, or cabinet-making.

He does not call these A, B, C, D, X, Y, Z. He calls them square, flat, dovetail, mortice, tenon, etc., etc. When a man learns to make these typical forms perfectly well, and how to put them together, he can get anything he wants in wood by arranging them properly. The little schoolboy takes D, O, G, and finds it spells dog; but when he arranges the same letters differently they spell God. So the worker in wood, who is properly taught, soon begins to spell new words in wood; and I have seen a lad spell *box* with pieces of plank, after a few lessons. And so he goes on, with the teacher showing him every step, spelling harder and harder things in wood, till he can spell *bureau* without help, and, may be, *house*; and I expect that some of our boys will one of these days be able to spell *World's Exposition*.

The same happens in teaching iron-working. The student has to learn the typical forms, or letters, for iron. And these are as different from the wood alphabet as Greek is from Latin, or German from English. He has to work with different tools, too; and these must be learned. But by this time he has been taught to think, and, though the iron is harder than wood, the thinking has become easier. So much for the alphabet and syllables and words of hand-work; so much for the digits and ciphers.

This short and easy way I have of explaining hand-work will make you understand what we are trying to do in the Tulane Manual Training School. But you will understand it better, if you will go any day, ex-

cept Sunday, between three and five o'clock, to the Government Building at the Exposition, and see the teachers and the boys, not saying, but doing, their lessons.

You will see there, too, another teacher instructing the same classes in drawing. I want every boy in the South, white and black, taught how to draw. I do not wish this done as an accomplishment. Heaven forbid that I should advise any large class of my countrymen to quit the serious business of life to learn pretty things. We do not want *dudes* of any complexion. But to know how to draw is to be able to tell with your fingers and pencil to another man's eyes what you cannot tell with your tongue to his ears. Hence it is another language, which talks things instead of words, just as handicraft thinks in things instead of in words. It is hard to be a first-rate mechanic without being able to draw and read drawings, for thus only can you best arrive at what is wanted.

I remember the time when the shoemakers used a tape to measure the foot for a shoe; but, afterward, some genius caught the bright idea of making you put your foot flat down, and then drawing its outline on paper. After that any fool knew the shape of the sole better than a wise man could before by half a dozen measurements; and, ever since then, shoes have been easier to wear.

Now iron-working and wood-working are not the only arts, and it would be very desirable if others were taken up and taught on the same general ideas that I have described. I am quite aware that other trades are taught, but what I wish to see is the same scientific method applied in them, as now in the manual training in wood and in iron. I wish to see the elementary principles sought out by able men, the alphabet of the art invented, or formulated rather, and principles taught. I wish Boss Brains in every shop.

Before the trustees of the Slater Fund had made their plans, one of their number did me the honor to consult me as to how it should be employed, and he heartily approved my emphatic recommendation that it should go to the industrial education of the colored people. It was a matter of sincere gratification with me when I saw that this disposition was made of it.

And here I may say that your white brethren rejoice with you that wealthy and generous men at the North have been moved to bestow such large donations for the exclusive education of our colored people, amounting, it is said, to \$15,000,000. We know that what helps you helps us, though the gifts for the exclusive use of the white youth amount only to two or three millions, and we cannot feel otherwise than grateful when good fortune befalls you.

So, too, I am sure our colored friends are pleased to see the good which is being done by the splendid donation of Mr. Paul Tulane for the exclusive use of the white youth of Louisiana, who need it so much. They will, in fact, themselves indirectly profit by it, for whatever raises

the general level of education, and gives a broader, more tolerant, and more Christian aspect to our civilization, will benefit them.

Now, my friends, I have no wish to deter any young persons from availing themselves of the best education they can get in any occupation for which they feel they have a special call or vocation. But you must recollect that the man who spends his youth in preparing for a learned profession for which he has no fitness, is after that not good for much of anything. A gentleman once met Beau Brummell's body servant coming down stairs with a clothes basket full of white cravats rumpled by the beau in trying to tie one to suit himself. "Why, what are those?" asked the astonished visitor. "Those," replied the valet, "are our *failures*." I fear that, under ordinary systems of college education, the danger will be that we may have a basket full of failures as useless as rumpled cravats for each one perfect success.

I believe in the transcendent power of wise words, words which express well great thoughts; but talk without good thinking behind the fine language is worse than the chatter of monkeys. It is what the newspaper men call in expressive, but not very elegant, slang, "rot." And so of the education which teaches this art of twaddle and bosh. We are now wanting men who will *do* things, rather than those others who merely talk about doing things. Without derogating at all from those persons who honestly and conscientiously take up the business of teaching or preaching, for instance, I can say that I believe the workers, the handicraftsmen, will soon outstrip the ablest of those in wealth and social importance. The reason is plain enough. The former have only religion and knowledge to offer, articles held very cheap in the market; the latter have something to sell which everybody wants—skilled labor.

Now, my friends, I have said to you that education was a preparation for life, a training or breaking in of the man for the work he has to do. What is true of an individual is likewise true of a race or nation. Every great nation now in the world has had an education not unlike that of a man. It has risen by slow and painful steps from ignorance and barbarism, yea, from the depths of savagery, to the high plane of modern civilization, on which it is now living with its destiny for better or worse, according to the way it has profited by its advantages. Take, for example, the most powerful, humane, and orderly of European nations, the British people. When Disraeli was taunted by an Englishman as a Jew, he retorted truly and wittily: "When your ancestors were hunting the wild boar in the marshes and forests of Germany, mine were princes and poets in Israel."

Some of you may remember the story which led to the conversion of the Anglo-Saxons, who were the forefathers of the modern English, to Christianity by St. Augustine. Pope Gregory saw some beautiful Saxons, or Angles—which is only another name for the Saxons—for sale in Rome; and when told that they were Angles, he said, "No; they are not Angles, but angels, and like the cherubim." These poor children



had probably been sold by their own parents, which was not unusual. The Anglo-Saxon has risen from a savage hunter and child-dealer to a man armed and equipped with all the infinite possibilities of civilization. But in reaching this high estate he passed under the yoke of the Norman. He went to school, so to speak, to one of the best and hardest schoolmasters the world has ever known, the brilliant, energetic, organizing Norman. He endured servitude, or to call things by their right names, slavery, for centuries—for a period longer than the African has endured it in America, with the grand and beneficent result that we see. Other nations have had a similar experience. Is it not plain, then, that, in the Providence of God, a nation, like a man, must learn to serve before it is fit to command; must learn to submit the lawless, individual will, to the authority of law exercised for the good of all? Subordination is necessary to order. The tribes and races which cannot submit to the authority of superior intelligence, perish, as we have seen so many Indian tribes vanish from the earth. The docile races survive, and grow, and wax great, as we have seen the African on the soil of America, and in the house of bondage.

Some foolish people will make it a reproach to you that your race has endured slavery. It is no shame to you. On the contrary, it should be your pride that you were not a wild race, but a domestic one, which could learn and become civilized.

The colored race has had a tutelage of two centuries on this continent. There are those who will tell you that this servitude tended to encourage every servile vice, and to crush every manly aspiration. This is not true. It is just neither to master nor to servant. The direct contrary is true. And the answer to the charge that the bondage of the colored race was unnecessarily harsh or repressive, in its larger aspects, is to be found in their tremendous progress. Real progress is inconsistent with bad government.

It would be the part neither of a philosopher nor a historian to picture slavery as an Arcadian pastoral. There was enough of sin and sorrow and suffering in it to touch any heart; but some of the wisest of men find human life, in all its aspects, a profound tragedy; and Solomon, the wisest and most prosperous of kings, declared that all is "vanity and vexation of spirit." When Christ comes to reign on earth you will see the millenium, but not till then.

What I now want to call your attention to is this: The colored race in the South has been at school for two centuries. Have they learned anything? Has their progress been real? The answer to this can be fully made only by a comparison of their condition when they left the shores of Africa and their condition to-day. This comparison I cannot on this occasion undertake to make at length; but when we remember the naked captive sold on the Guinea coast by the slave-hunter of his own race for a string of beads—the poor trembling heathen, ignorant of all that concerned himself here or hereafter, and compare him with

the men and women that I see here present, well may we exclaim, with the Psalmist:

He brought them out of darkness, and out of the shadow of death, and brake their bands in sunder. O, that men would therefore praise the Lord for His goodness, and declare the wonders that He doeth for the children of men.

What do I see before me and around me to-day? Not a people who refused to be taught, but a teachable people. Not Ishmaelites, with their hands against every man's hand, but a people like unto the children of Israel, who, while they served their task-masters, possessed themselves of all the learning of Egypt. What is the result? Take this audience as an example.

I see before me a well-clad, well-behaved, intelligent Christian community, with the light of intelligence in their countenances and the flame of moral purpose warming and brightening their hearts. I say, is there any art, or trade, or calling, in the great workshop of civilization, in which the colored man cannot be found? No. You have been at school, and you are now entering on the manhood of your powers. I wish you God-speed.

The great problem before us that must be solved is what you are to do next. After the war, too many of you, like boys just out of school, believed life one long holiday and acted accordingly. I am not blaming these for what was so natural; but much time has been wasted, and there has been a good deal of headache and heartache in consequence. Twenty odd years have passed, and if there is to be any serious life in the great future for the colored race on this continent, it must now receive a new and stronger and final impulse. What direction shall this impulse take? I speak for myself, it is true, and there may be many who will differ with me, but I believe that I speak also for the best part of the white people of the South. The hope of the colored race and of the South, of which they are a part, lies in their education.

But education is a broad term, and we must determine what sort of an education it shall be. I have said all my life that books make only a small part of education. Coleridge said that "he did not believe in ghosts, because he had seen too many." Perhaps a like reason may make me doubt the power of mere book learning to civilize and humanize and Christianize a people. The book cannot tell any more than the man who made it. And there must be a man behind every book to make it a real, living power for good. But books do give a handy way of getting at the truth, when you know how to use them, and reading and writing and study in books do help people to think. So does drawing. So does talk, if it is of the right sort. So does a man's trade. So does a woman's sewing and cooking and setting her house in order. All these things require thought. All of it is hard thinking to begin with, and easy after it has been practiced. And all good thought and all good work go to improve the mind and conduct of people, and make them better. And that is what education is for.

The colored people, when the war closed, knew a great deal which the rising generation has not learned. Industries have been forgotten which ought to have been kept up and improved. New industries have been started, which would help you if you would learn them. If you do not know it yet, you will soon discover that the wealth and position of the next generation of men will be measured by the amount of labor in this; the skill, intelligence and industry of parents will determine where their children are to stand. What do I advise, then? That you avail yourselves of every opportunity to make yourselves intelligent and skillful in those arts which pay—which pay in health, wealth, and happiness. Agriculture claims more than one-seventh of our population—nearly one-half of the workers. I believe it the best of all occupations in the long run. But it needs brains, just like all others, and I advise the colored man who follows it to put brains into it.

But the people I see around me to-night are not country people, but town folk. I do not advise them to turn farmers. I advise them each to stick to his own trade or business, and try to learn all about it—its in's and its out's, what is in it and the outcome of it. Try to do your own work honestly and better than anybody else, and you will succeed; and if anybody can teach you anything about it which you do not know, learn by all means. As for the children, teach them their A, B, C's; teach them to read, write, and cipher, and as much more as they will learn; but, first of all, and above all, teach them to work, to use their eyes, to use their fingers in honest industry, to make their own living, so that they may be neither idlers nor paupers, nor beggars nor thieves, but independent, useful, God-fearing citizens. Fingers busy with steady work do no harm; brains busy with innocent thought help us toward heaven. Work is not a curse; it is not only the bread-winner, but a balm for sorrow, and one of the rungs of that ladder on which Jacob saw the angels ascending and descending.

The great world does not ask or care what the colored people are talking about, but what they are doing. The questions in which it concerns itself are: "What is the cotton crop?" "What is the sugar crop?" "Do the colored people read books?" "How many thousand shoes do they wear?" "How much soap do they buy?" "What houses do they live in?" etc. Newspaper articles do not really answer these questions. Trade columns to some extent do. But the best answer is a colored man in decent clothes, in a good house, with his family at church on Sunday, and with good humor in his face and sunlight in his heart.

I do not profess to have the spirit of prophecy. But a great future seems opening in Africa; light is shining into the dark continent. Every European nation is laying an iron hand on some portion of that silent and unknown country. Millions of dark-skinned men swarm its valleys and mountain sides and plains; and now, as its gates are thrown open to the world, greed of gain and lust of power will compete with Christian zeal for a footing there. In this great movement of civilized

thought and action toward those tropical shores, I believe that our colored people will play the most useful and prominent part. I am not talking of any exodus, or dreaming the opium dreams of the philanthropists; but I mean that, as a practical question, as merchants, as engineers, as teachers, preachers, missionaries, as leaders in every arena of thought and action, our educated colored people, trained in mind and eye and hand and heart, and accustomed to a hot climate, will be found among the most useful and successful pioneers in that great and unexplored field. They will carry with them the blessings of modern progress to their ancestral land, and sit down in the high places of the states and nations which will soon crystallize from this new-born civilization. And they will serve, too, as golden links between the colored people in America,—between all the citizens of the United States, indeed, and the rising star of the Southern hemisphere.

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