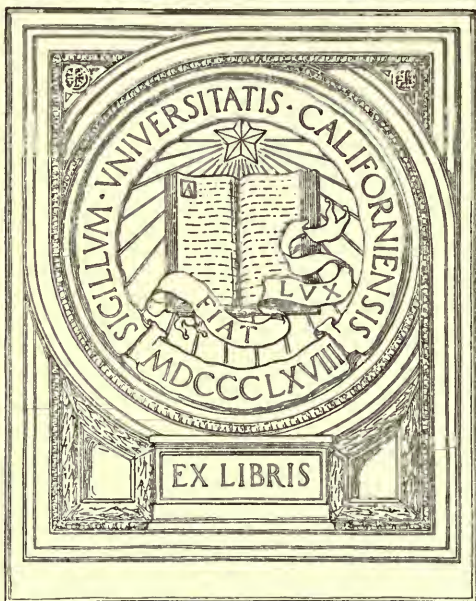


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FESTIVAL HALL.

Every Exposition there is one particular feature, architectural or decorative, upon which the exploitation; as well also the permanency of the reputation of the Fair depends. At Philadelphia, 1876, it was Memorial Hall and Sunken Gardens; at Chicago, 1893, it was the Court of Honor and McMonnies' Fountain; at St. Louis, 1904, the supreme glorifying picture was Festival Hall, Colonnade of States, and Grand Basin. As Expositions are international demonstrations of progress in all branches of human strivings, the expectation was realized that the most beautiful focalized feature at St. Louis surpassed in grace, extent, originality, and decorative magnificence anything heretofore attempted at any World's Fair.



LOUISIANA AND THE FAIR.

AN EXPOSITION OF THE WORLD
ITS PEOPLE AND THEIR
ACHIEVEMENTS.

J. W. BUEL, Ph. D.
EDITOR.

WORLD'S PROGRESS PUBLISHING CO.
SAINT LOUIS.



TO VINU
AMORLIAD

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INTRODUCTION.

VOL. VIII.

By HOWARD J. ROGERS, Chief of the Department of Education and
Director of the Congresses of the Louisiana
Purchase Exposition.



THE plan avowed at the beginning and emphasized throughout the St. Louis Exposition, in 1904, was primarily, essentially, and constructively, one of education. The appeal to Congress for funds, to the States of the Union for support, and to the foreign nations for cooperation was made on this basis. Of course education in its broadest terms was meant.

The education which comes to people from observing art and architecture in heroic models; from inspecting exhibits grouped with regard to their dependence and relation to each other; and from seeing

processes in connection with the exhibits which will take the raw material and transform it under the eyes of the waiting crowd into the finished product ready for the markets.

In an exposition having this fundamental character it was only natural that education, technically speaking, should have the first place in the official classification and the central place in the great architectural picture. It will always be gratefully said, to the credit of the management of the St. Louis Exposition, that it was the first to give a building in its entirety to educational exhibits. Even in France, where the regard for education, letters, sciences, and art ranks higher in the minds of the people than of any nation in the world, the educational exhibits were chiefly installed in the gallery of the building shared jointly with the Department of Liberal Arts. In Chicago in 1893 this was also the case, but at St. Louis a building in the very heart of the main picture, beautiful in its pure classic outlines, was devoted to educational exhibits and in response the educational activities of the world rallied loyally to its opportunity. With this opportunity the educational exhibit had a double responsibility—to represent properly its own subject and to introduce in a fitting manner the great scheme of scientific classification. The object of the educational exhibit was two-fold; first, to secure a comparative exhibit from every country in the world noted for educational progress; second, to secure a comprehensive exhibit of every phase of educational effort in this country.

Quite as a surprise, it has come to many people in this country within the last few years, that in spite of the fact that we are a union of forty-five States, no one of which, in matters of this kind, is dependent in any degree upon the others, we have a national system of education which is more homogeneous than in many countries ruled by an autocrat, where the educational policy is ruled from a single bureau. This is due chiefly to two causes. First, the influence of the National Educational Association, which holds one general meeting every summer and draws thereto prominent educational leaders from every State in the Union; and one special meeting for the superintendents of the country every winter. The interchange of views, comparison of methods, discussions engendered, and above all the acquaintanceships formed at these meetings give a similar impulse to educational thought and development in every part of the country. Secondly, the influence of the United States Bureau of Education with its suggestive and helpful investigations, statistics, and advice, under the control of its Commissioner, Dr. William T. Harris. It remained, therefore, to secure the advice and support of the National Educational Association to insure a strong and well classified exhibit of the schools, colleges, universities and other educational agencies in the United States.

The classification adopted was made upon consultation with a special committee of the National Educational Association and while founded primarily upon the educational

system of the United States, it was so drafted as to permit foreign educational systems to be installed under it without injury to their theory of government. This comprehensive classification we insert for reference.

In the participation of the exhibit the first feature which impressed itself upon the visitor was its comprehensiveness. Thirty-three States and Territories, four cities, and fifteen foreign countries contributed alone to elementary and secondary groups. In Group 3 twenty-eight colleges and universities, and eight professional and technical schools were contributors. In Group 4 seven of the best art schools of the country made for the first time in the history of American expositions a classified exhibit. In Group 5 the agricultural and mechanical colleges and experiment stations of the United States made a comprehensive exhibit covering over 14,000 square feet of space. A special grant by Congress of \$100,000 was made to promote this exhibit and its collection and installation was made under the supervision of a special committee drawn from the Association of Agricultural and Mechanical Colleges. Most interesting experiments were carried on throughout the Exposition in soil testing, milk testing, laboratory work in chemistry, physics, analysis of farm products, and various similar topics. In Group 6, commercial and industrial education, the business colleges, commercial high schools, industrial and trade schools, contributed many exhibits, and in the southwest pavilion there was fitted up an exhibit of Brown's Busi-

ness Colleges, wherein was carried on a typical commercial school during the entire period of the Exposition. In Group 7, education for defectives, a radical departure was made from the stereotyped methods of exhibit, and classes of deaf and blind children were to be seen at their daily tasks throughout the summer. This was made possible by the combined efforts of the Convention of American Instructors of the Deaf and the American Association of Instructors of the Blind, the members of which contributed the cost of transportation of the pupils, maintained them, and also assumed the risk of the pupils, who were continually under their regular instructors and matrons. The Exposition on its part furnished dormitories for their residence. Group 8 included within its boundaries the commercial element of the educational exhibit in the form of text-books, school apparatus, and equipment.

The foreign participation in the educational exhibit was, with the exception of the absence of Russia, fully equal to the expectations of the American educational public. The nations of Germany, France, England, Italy, Austria, Belgium, Sweden, Bulgaria, Japan, China, Siam, Ceylon across the ocean, and the Latin-American countries of Mexico, Cuba, Brazil, and Argentina, were represented. Probably no educational exhibit ever excelled in size, careful attention to detail, and scientific accuracy, the exhibit of Germany.

The scope of this introduction will not permit the discussion of the details of the exhibits of foreign countries,

but it was easily possible for the American public to obtain from the exhibits as installed an adequate idea of the system and demonstration of public education in every one of the foreign countries participating.

The space at the disposal of the educational exhibit was, exclusive of all aisles, rotundas, and circulation area, 182,163 square feet. Of this amount 25,493 square feet, or 14 per cent, was set aside for the social economic exhibit. Of the balance, 67,854 square feet, or 43 per cent, of the space reserved for purely educational exhibits was allowed for foreign nations. The balance, or 57 per cent, was divided among the public schools, universities, colleges, and technical schools of the United States.

In no part of the Exposition was there a more representative exhibit than in the court devoted to higher education. The great universities of Harvard, Yale, Columbia, Cornell, Johns Hopkins on the Atlantic Coast, of Michigan, Wisconsin, Chicago, Illinois, Missouri, Washington, and St. Louis in the central plain, and of California in the far West, together with such famous polytechnic schools as Purdue, Worcester, Massachusetts Institute, Rensselaer, and Pratt, gave a presentation of the marvelous growth and activity of American higher education which will never be forgotten.

The tendencies of European and American elementary education were brought out very forcibly in the exhibit. In the first there was the subordination of the humanities to special industrial instruction with a view to permitting the

youth to become expert craftsmen and wage-earners at the earliest possible moment. In the latter was demonstrated the accepted theory of American education to educate all children alike until the first or second year of the high school course before permitting any specialization in the direction of the trade, craft, or profession which the pupil is to follow. These theories, radically different, are based on different beliefs of national maintenance, founded on different aspirations and traditions, and are conducive to very different results. It may be said in conclusion that the American educational expert found a great satisfaction in the comparison of these results and was more than satisfied with the broad, liberalizing, and general instruction given in our public schools as particularly well adapted to the genius and spirit of American institutions.

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UNIV. OF
CALIFORNIA

DIVISION CXIX.

Education, Its Beginning and Progress.

Education is a word which is so wide-embracing in its significance as to comprehend development in everything physical and mental, though in a technical sense *training* is a more definite term. But in whatever aspect we choose to view education, whether as a school for teaching mind or muscle, or for encouraging aspiration, or developing the individual and the state, the highest expression of its usefulness, the most pronounced demonstration of its accomplishments, the best examples of its evolution, were to be seen at the Louisiana Purchase Exposition.

Before proceeding to describe the great object lessons, the schoolhouse and the world university which was open for seven months at St. Louis and attended by the most learned men and women of both hemispheres, it is befitting that a glance be taken at the condition of the human race prior to the era of the schoolroom, for by doing so we are better able to appreciate the influence and the results of education.

Of all animal life man alone appears to be capable of mental cultivation and elevation. Patient training may

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teach other animals to perform many remarkable acts, but in all such cases there is exhibited no higher power than instinct or imitation, and there is never an attempt to transmit what has been learned. In man, on the contrary, there has ever been a disposition to acquire, to progress, to achieve. The earliest evidences of primitive man discover to us his efforts to improve his condition; not as the beasts that take refuge in caves, burrow in the ground, or migrate to escape the rigors of winter; but there has ever been a degree of intelligence exercised to improve conditions, to surmount the difficulties of harsh environment, to better his state, and to instruct his offspring. In other words, prehistoric man lived quite as much in the future, was fully as ambitious, refused to acknowledge limitations, and builded with a purpose as wisely conceived as that which distinguishes the efforts of modern civilization.

We wonder and smile at the tentative graspings of primitive man, how he painfully ground stones, and chipped flints, and scraped bones to make weapons and implements of agriculture. We express astonishment at the patience which was required to fashion an arrow, to build a raft, to construct a habitation, or to provide any of the means contributory to increased comfort, but our surprise is due wholly to comparison with present resources and conveniences. Primitive man was just as ambitious, and beyond doubt the first to make a stone or shell hoe was held in quite as great



GREAT SULPHUR-BOTTOM-WHALE—GOVERNMENT EXHIBIT.
SKELETON OF HORNED DINOSAUR—GOVERNMENT EXHIBIT.

EDUCATION, ITS BEGINNING AND PROGRESS

esteem for his invention, by his contemporaries, as we applaud the discoverer of a new force.

We marvel now at the faith which was imposed in the Chaldæan astrologers who sought portents in the stars and influenced nations by their predictions, but to the people of that age these prophecies were as real as church teachings are to us to-day. This is an age of scientific dominance, but science has by no means reached a limit, and a few years hence present-day discoveries will be stepping-stones back of us by which we have mounted to greater heights whence to laugh at beliefs we now entertain as to our supreme greatness.

The history of human progress is a marvelous one, and all progress is based upon education. The man who first produced fire by friction was probably the greatest benefactor, next to whom, perhaps, was the person who invented the wheel. Not only did these two most powerfully contribute to the comfort of the race in a physical sense, but the moral effects of these discoveries were so far-reaching as to stimulate conceptions of deity and promote intellectual aspirations. It was a step from the simple to the complex, for production of fire was followed by the smelting of ores, and the substitution of metal for stone and bone. Invention of the wheel introduced an agency that revolutionized the order of things and which at a bound raised early man from a condition of servitude to environment to a position which made him practically lord of the earth; that broke at once the

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bonds of his previous limitations, and launched him, as it were, into higher activities that expanded his mind as it enlarged his sphere of action.

But while man was immeasurably blessed by discovery of means for producing fire, and invention of the wheel, great as they were these were only approaches to the alphabet which was to fructify his mind and prepare it to receive and elaborate processes of thought by which he was to rise to better conditions. Imagine, therefore, the state of early man before he had evolved any ideas of writing, even by pictures; before he had conceived a suggestion of possible means for communicating messages other than by word of mouth! And yet it is really not so long ago—as compared with the certain existence of man on the earth—when there were neither symbols nor letters, and during that long interval the progress of the race must have been almost imperceptible. Indeed, the means of communicating desires, or information by one person to another constitute the most interesting phase of race development. No doubt speech came naturally, even as feeling and desire, but writing was a subsequent need which grew out of the importance of transmitting appeals for aid. Originally, so far as we may speculate by deduction, association of the race was confined to families, but after the lapse of much time the necessity for mutual protection united families into clans, and as the members of such clans were often isolated, communication became essential for safety. The evolution, therefore, of writing, from

EDUCATION, ITS BEGINNING AND PROGRESS

crude symbolism and the pictorial representation of objects, used by the earliest peoples, is persistently interesting to all intelligent persons, for the advance of civilization, with all that it implies, is not more certainly shown than by written records graven on stone, scratched on bone, impressed on soft bricks, painted on papyrus, and traced on scrolls, that bestrew the path of the milleniums of human existence.

It is not within the province of a work of this character to follow the history of writing, from pictures or signs to letters now in common use, but it is important that one should consider the slow processes of education through which so much has been accomplished, and to appreciate that however far we may now be advanced, the final goal of aspiration has not yet been reached; that while we have vastly progressed, our education is still so incomplete that every century, aye, every decade, adds much to it, and our immediate interest lies in promoting greater means for disseminating knowledge. No doubt the Chaldæan thought he possessed the most facile medium of communication when he employed cuneiform characters, and the ancient Egyptian was quite as well satisfied with the use of hieroglyphics, for by these records might be written and thoughts conveyed. These served their purpose for several centuries, but when Cadmus introduced into Greece (1550 B. C.) an alphabet of sixteen letters, the method of writing was so vastly simplified that people wondered why they had been content so long with a system so imperfect. For though these letters,

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borrowed from the Phœnicians, did not fully suffice the needs for definite expression, they were phonetic and therefore enabled the writer to convey his thoughts with greater facility and certainty of understanding than was possible by the use of ideographic characters.

The invention of letters, or phonetized symbols, was a very great advance, but how imperfect the system and how difficult it must have been for the people to use it intelligently will be understood when it is told that words were not separated by spaces, neither were there capitals or punctuation marks, so that the writing appeared like an unbroken string of letters, to be separated into words according to the skill of the reader. This difficulty led inevitably to the adoption of many styles to serve different uses, but this lack of uniformity, while it was vexatious to readers, promoted effort to improve the system by simplifying, amplifying, and rendering uniform the imperfect means in use. And it is instructive also to know that in the evolution of writing, not only have systems undergone great changes, but so also have the methods of their use; for the writings of some peoples were read from right to left; of others from top to bottom, and of still others, as in the ancient Mexican, from bottom to top.

It is quite as interesting to know that even in our day there remains one great nation—the Chinese—that has not yet reached the alphabet stage, for as all their words are monosyllabic they use only ideographic characters, that are

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purely conventional, in which respect their writing does not differ greatly in method from the hieroglyphic system of the ancient Egyptians. As contradistinguished from the Chinese, the Hindus possess, in the Sanskrit, what is said to be the most perfect of all known alphabets, founded as it is upon a subtle analysis of sound, which gives to the written language power of distinction vastly superior to that of European alphabets, so that smaller wonder attaches to Hindu belief in the derivation of his alphabet from the gods.

When printing was invented (1444), by which the pen was made subservient to the published word, it marked another stride forward towards the goal of universal desire, and so greatly quickened the pace of civilization that we have not yet ceased to exult over it as one of the mightiest achievements of all the centuries. But without detracting in the least from the credit which the world owes to Gutenberg, it must in justice be admitted that the invention of printing was only a step in the process of evolution; a step of incentive rather than of accomplishment, for it was left to others to perfect. Between crude wood letters and an equally deficient screw-press, which Guttenberg used, and the cast type and multiple cylinder presses of to-day, there is a difference measured by nearly five hundred years of active contriving and intelligent inventing; a difference almost as pronounced as that which separates the ox-team

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from the locomotive, the canoe from the steamship, and the mail-carrier from the telegraph.

There has always been present the vanity that causes people to believe that the age in which they live is the golden period of achievement; that not only are they blessed beyond those who preceded them, but that very material betterment of conditions may not be anticipated. It is quite true that it is our fortune to live in an age notable for comforts that were unknown to the past generation, and not only is our physical well-being promoted and gratified by inventions that relieve us of exertion and minister to our aid in a thousand ways, but opportunities for mental cultivation have kept pace with those that provide for our physical melioration. But though we are bountifully blessed, it must not be believed that we have approached near to the ultimate of human effort, for history and experience teach that the state of man is never quiescent, but is either progressive or retrogressive; that ambition being always present there is no cessation of effort to attain to higher conditions, in consequence of which aspiring no prophet may venture to set a limit to human achievement.

In my own personal experience, which is bounded by less than half a century, I can note changes in the system and extent of public education which to have forecasted even twenty-five years ago would have brought derision. Less than forty years ago I taught a country school in Illinois—such as is now so obsolete that to speak of it is

EDUCATION, ITS BEGINNING AND PROGRESS

like recounting a pre-Revolutionary story. The building was a low log cabin, without ceiling, covered with clapboards, warmed by a big open fireplace, and lighted by four windows three feet square that were protected by clapboard shutters. There were long benches, without backs, for the children to sit upon, and no writing-desks of any kind, while my seat was a home-made split bottom chair. There were no blackboards, no wall maps, no outhouses, and no playgrounds except the surrounding woods. Some of the children came a distance of more than two miles, wading at times through much of the way, for the roads were left to the care of Providence; on account of which wretched conditions the daily attendance fluctuated from two scholars in bad weather to forty in good. The old log schoolhouse long ago disappeared and in its place there has stood for several years a large frame building specially designed for school purposes, comfortable, commodious, and amply provided with seats, desks, stoves, blackboards, maps, playgrounds, and all the modern accessories of a model schoolhouse. The roads, too, reflect the progress of the age, and as the school districts have been reduced in size the distance to be traveled by pupils is not nearly so great and the attendance has been correspondingly increased. But even more pronounced has been the change wrought in the average grades. At the time and place I taught, the most advanced pupil was in the fourth reader and doing examples in simple interest, whereas to-day there

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are boys and girls attending that school who have passed from arithmetic to algebra, and from reading into rhetoric.

All the above may be considered unimportant to write about because it is so commonly known, but interest lies in consideration of the probabilities of the future as compared with what has been accomplished in forty years. Back of these forty years the older generation take pleasure in telling of early disadvantages, when there was no public instruction, and the means of education was confined to subscription schools that lasted sometimes for three months in winter, the teacher meantime going about peripatetically from one house to another. Having progressed so far that education is now freely offered to every one who would receive it, the country school having apparently been perfected, and opportunity for a collegiate or university course being open to poor and rich alike, what may be expected in the next fifty years?

The greatest movement in the interest of and for the widest diffusion of education may be said to have begun in 1867 with the establishment of a fund of \$3,500,000 by George Peabody, with a provision that the income therefrom should be devoted to education in the southern states of the union. Of this amount \$1,380,000 was in Mississippi and Florida bonds, which were never available because of an act of repudiation by the former, and by refusal of the authorities of the latter to recognize the legality of the issue. The income from the remainder being at first used



NATURAL HISTORY EXHIBIT, GOVERNMENT BUILDING.

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to maintain a public school system in the South, is now applied to the support of normal schools, for the training of teachers.

During the past twenty years a very praiseworthy practice has obtained of extremely rich men endowing universities, sometimes sectarian, but more frequently secular, the total amounts thus donated rising in one year, 1903, to the amazing sum of \$63,860,000, while for 1904 bequests for like purposes approximated \$70,000,000. Though exact figures are not at hand it is believed that the total endowments made by individuals during the past thirty-five years will not fall very much short of \$1,000,000,000, and it is comforting to know that these generous benefactions have been so wisely distributed as not only to reach all sections of the country, but to also meet practically all emergent conditions. Thus, while the government has made appropriations for agricultural colleges, Indian schools, the maintenance of museums and national academies, individuals of affluent means have established technologic institutions, libraries, and hospitals for the masses. Thus, for example, Andrew Carnegie, besides giving \$20,000,000 for libraries, set aside \$10,000,000 for the Carnegie Institution at Washington, the prime purpose of which is to encourage investigation, research, and discovery, and to show the application of knowledge to the improvement of mankind.

Mrs. Cornelia Day, of St. Paul, left \$3,000,000 to found

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an institution for trained nurses and other helpful agencies for the poor.

John D. Rockefeller has given \$15,000,000, one half of which was for the Chicago University and the other half to be devoted to such purposes as archæological research in Egypt and Babylonia, and an institute for medical and pathological research.

Joseph Pulitzer made a gift of \$1,000,000 to Columbia University, with a pledge of as much more, if needed, for a school of journalism.

Henry Phipps set aside \$1,300,000 for the establishment in Philadelphia of an institute for the study, treatment, and prevention of tuberculosis.

Mrs. Frederick F. Thompson gave \$350,000 for a school of physical education and hygiene.

Jacob G. Rogers bequeathed \$6,000,000 to the Metropolitan Museum of Art.

Gordon McKay left a bequest to Harvard University for a school of applied sciences property valued at \$4,000,000, and a reversion of several millions more.

Henry O. Peabody left \$350,000 for an industrial school for girls of Norwood, Conn.

Arioch Wentworth made a bequest of \$610,000 to charitable and educational institutions and left all the remainder of his estate, valued at \$7,000,000, for an industrial school for poor boys.

All the foregoing bequests were made in 1903, while dur-

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ing the year 1904 the following munificent gifts for educational, charity, and industrial purposes are recalled.

John D. Rockefeller, to Chicago University, \$1,000,000.

William Sampson, to Yale, \$700,000.

Andrew Carnegie set aside a fund of \$5,000,000 for the benefit of the families of those who may lose their lives, or become dependent through injuries received in heroic effort to save human life. Besides this gift Mr. Carnegie gave \$7,900,000 during the year to libraries and colleges.

Miss Sarah C. Tracey, after making several minor bequests to various charities, left the remainder of her estate, valued at \$6,000,000, for the founding and maintenance of an industrial school and an orphan asylum for boys and girls.

By action of the courts in sustaining the will of Peter Bent Brigham, an estate said to be worth nearly \$6,000,000 was left for the endowment of a hospital for incurables.

William M. Rice, who it will be remembered was murdered in New York, left the greater part of his fortune of \$4,500,000 for the erection and endowment of a Rice Institute, in Houston, Tex., for the advancement of literature and art.

John D. Rockefeller made gifts to various hospitals and colleges of \$1,500,000.

Mrs. Amanda W. Reed made a bequest of \$2,000,000

LOUISIANA PURCHASE EXPOSITION

for the erection and support of a scientific institution and technical school in Portland, Ore.

Mrs. Fanny S. Wilder, the validity of whose will was sustained in 1904, left \$2,000,000 for the benefit of the poor of St. Paul.

Mrs. Sarah E. Potter left \$3,000,000 to thirty-seven charitable institutions.

Archer M. Huntington gave \$1,000,000 and his valuable collection of paintings and archæological objects to the Hispanic Society.

Mother Katherine (Drexel) made a gift of \$1,000,000 for schools and missions among the Winnebago Indians.

Mrs. Julia F. H. Nevins made a bequest of \$1,000,000 for a home for the aged.

Daniel Parr left \$850,000 as an endowment for a home for infirm women.

Washington Carrington made provision in his will whereby his estate of \$750,000 was to be applied to the endowment of a university in Peoria, Ill.

Charles F. Doe left \$700,000 to the library of California University.

Miss Emily A. Watson made a gift of \$650,000 to the industrial branch of the New York Orthopedic Hospital.

Henry Rosenberg, by will, left \$600,000 for library purposes in New Orleans.

Miss Mary A. Terry made a gift of \$500,000 to the Hartford Hospital.



NEW YORK EXHIBIT, EDUCATION BUILDING.

NEW YORK TENEMENT HOUSE EXHIBIT, EDUCATION BUILDING.

<http://stores.ebay.com/Ancestry-Found>

EDUCATION, ITS BEGINNING AND PROGRESS

Judge and Mrs. Miles P. O'Connor gave \$500,000 to Trinity College for Women.

Professor Daniel W. Fisk gave \$500,000 to Cornell University, with which he was formerly connected.

Edward F. Searles presented Methuen, Mass., with \$500,000 for a school and museum building.

James Loeb made a gift of endowment of \$500,000 for a conservatory of music in New York.

These instances are a few that I can recall of recent benefactions made to institutions established for the moral and physical betterment of all classes, with a special view to providing for the less fortunately circumstanced. At the same time a much larger sum in the aggregate has been given every year by private persons for colleges and universities, and for research along particular lines, especially scientific, etiology, pathology, astronomy, chemistry, and the investigation of new forces.

Ambition to know has been wondrously quickened, for as we become better educated our desire for information increases in an arithmetical ratio, so that with the amazing stimulus which has been given by rapid acquirement of education, reenforced by opportunity and the promise of great rewards for fresh achievements, progress is so rapid that no one may hazard an opinion as to what condition man may attain to in the next fifty years. If knowledge is power, in the mental as well as physical sense, the speed of its accretion may carry the scientist to that border-land

LOUISIANA PURCHASE EXPOSITION

to which the alchymists of old so earnestly aspired. Transmutation of metals, the elixir vitæ, navigation of the air, communication with the planets, conquest of all diseases, universal peace, telepathic correspondence, perpetual motion, are considerations that now engage the energies of many ambitious minds. They appear to our present comprehension like impossibilities, but a beginning has been made towards the solution of all these mighty problems, and since man has progressed so rapidly in half a century who shall place a limit upon his discoveries in the next fifty years? The little log schoolhouse has been the laboratory in which the master thoughts of our age have compounded, analyzed, transfused, and transmuted conceptions into realities, which, starting with inquiry, created an ambition to enlarge understanding, and hence from this poverty of beginning has come the opulence of our achievements, the grandeur of our civilization, and the freedom, independence, and strength of our nation.

EDUCATION, ITS BEGINNING AND PROGRESS

The subjoined statistics are instructive as showing the number of universities and colleges having endowments in 1902, and classified by amounts received.

| Amount of Endowment. | Number. | Amount of Endowment. | Number. |
|------------------------------|---------|-------------------------------|---------|
| No endowment funds..... | 147 | \$400,000 to \$500,000..... | 18 |
| Less than \$10,000..... | 29 | \$500,000 to \$1,000,000..... | 29 |
| From \$10,000 to \$25,000... | 36 | \$1,000,000 to \$1,500,000... | 15 |
| From \$25,000 to \$50,000... | 30 | \$1,500,000 to \$3,000,000... | 10 |
| \$50,000 to \$100,000..... | 53 | \$3,000,000 to \$5,000,000... | 4 |
| \$100,000 to \$200,000..... | 61 | \$5,000,000 to \$8,500,000... | 4 |
| \$200,000 to \$300,000..... | 44 | Over \$12,500,000..... | 3 |
| \$300,000 to \$400,000..... | 20 | | |

Of 356 institutions having endowments varying from \$500 to more than \$12,500,000, 78 receive aid from national, municipal, or State governments. The income from these endowments is applied in most cases to the direct maintenance and operation of the respective schools, but in some various amounts are used for the support of scholarships, and in others for research. The aggregate endowment of all institutions, public and private, reaches the considerable amount of \$185,944,668.

Benefactions to universities, colleges, and schools of technology in ten years.

| Year. | Amount. | Year. | Amount. |
|-----------|-------------|-----------|--------------|
| 1893..... | \$6,532,157 | 1898..... | \$ 8,204,281 |
| 1894..... | 9,025,240 | 1899..... | 21,925,671 |
| 1895..... | 5,998,227 | 1900..... | 11,995,463 |
| 1896..... | 8,342,728 | 1901..... | 18,040,413 |
| 1897..... | 8,390,938 | 1902..... | 17,039,967 |

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This table is interesting as it shows an increase of nearly threefold in the amount given by individuals to the cause of higher education in the ten years ending with 1902. These remarkable evidences of private munificence attest the great prosperity of the times as well as a growing interest in the financial welfare of American colleges on the part of holders of great wealth.

It will be understood by the reader that in the above tables only the benefactions made to established colleges are noted, to which, in order to gain an idea of the total amount of private gifts, should be added bequests made for founding and supporting asylums, homes, industrial schools, libraries, galleries, museums, hospitals, and various institutions educational and purely charitable.

I have purposely omitted to localize the benefactors in giving a list of notable bequests of the years 1903 and 1904, which, though it may be some injustice to the generous givers, whose virtues deserve the broadest publicity, to locate the places of residence of these great philanthropists would be to bring out, in bold disparagement, the illiberal spirit, the hard, penurious, grudging, and sordid character of rich men in cities to which no splendid gifts may be credited. And this is a strange thing; that in certain places where wealth is just as great there are no citizens who show a disposition to imitate the benevolent impulses of those who manifest a sympathy and interest in their fellow man. Is charity, civism, sectional; or does climate



EXHIBIT BY MISSOURI BOARD OF CHARITIES AND CORRECTION.
EXHIBIT BY THE CHICAGO JUVENILE COURT.

EDUCATION, ITS BEGINNING AND PROGRESS

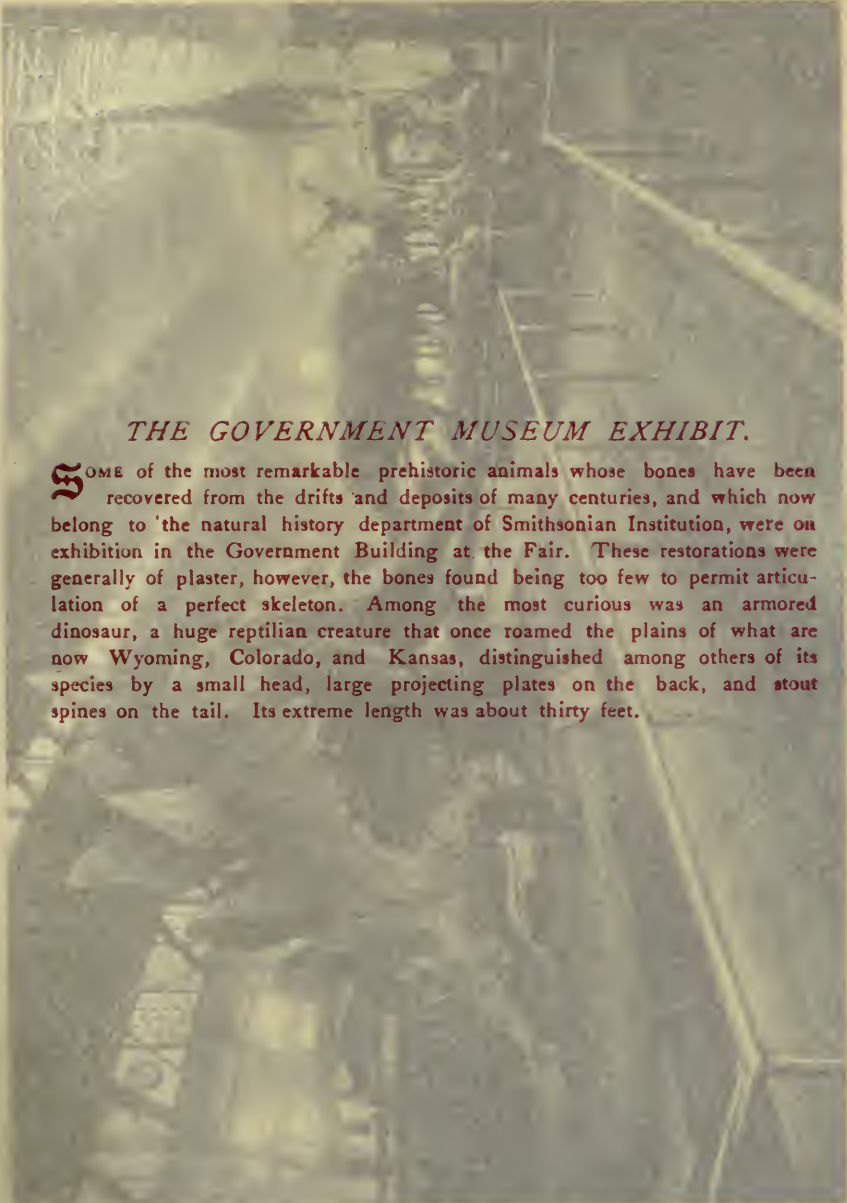
influence character? Similarly, it is to be noted, and was demonstrated at the educational displays at the Exposition, that appreciation of knowledge appears to be divisible into meridians, for in some communities we find the people enthusiastic over their schools, while in other districts there is so much indifference that the schoolhouse is held to be subordinate to every other local institution. Thus at the Exposition, some States made a magnificent demonstration of their efforts to promote education, while others, even in a better financial and populous condition, thought it sufficient to present an experimental exhibit in a perfunctory way, as if actuated by no higher purpose than a design to show to the world that their people had begun to think about establishing schools. While it does not in the least way explain this social phenomenon, the coincident, and probably relevant, fact may be mentioned that the English language is particularly rich in expressions relating to *bad*, *evil*, and *avarice*, while terms are astonishingly few that describe *good*, *charity* and *generosity*. It is in the same proportion that good and bad characters flourish in the world. Singular, is it not? And who is able to explain it?

DIVISION CXX.

The Lesson of the Educational Exhibit.

BY HOWARD J. ROGERS, Chief of the
Department of Education.

A great international exposition is not the result of chance conditions. It never develops from commonplace motives. Some historic sentiment may give the initial impulse, may fix the place of holding, but it is quickly subordinated to the world-forces which come to a common center for the building of a world's fair. By common consent, and actuated by a common purpose, the nations of the world bring together for comparison and exchange their best work in science, art, and industry. The energy which creates the exposition; the judgment which places the exhibits under a classification which is in itself the latest contribution to a category of the activities of the world; the financial ability which judiciously controls the expenditure of fifty millions of dollars; the executive ability which cares for, instructs, and entertains thirty millions of people, form an epoch-making event. This event determines the relative progress of each country in every phase of human



THE GOVERNMENT MUSEUM EXHIBIT.

SOME of the most remarkable prehistoric animals whose bones have been recovered from the drifts and deposits of many centuries, and which now belong to the natural history department of Smithsonian Institution, were on exhibition in the Government Building at the Fair. These restorations were generally of plaster, however, the bones found being too few to permit articulation of a perfect skeleton. Among the most curious was an armored dinosaur, a huge reptilian creature that once roamed the plains of what are now Wyoming, Colorado, and Kansas, distinguished among others of its species by a small head, large projecting plates on the back, and stout spines on the tail. Its extreme length was about thirty feet.

The Lesson of the International Exhibit.

By Edward J. McGuire, Attorney at Law
Deposition of _____

THE GOVERNMENT MUSEUM EXHIBIT.

Some of the most remarkable prehistoric animals whose bones have been recovered from the drifts and deposits of many centuries, and which now belong to the natural history department of Smithsonian Institution, were on exhibition in the Government Building at the Fair. These restorations were generally of plaster, however, the bones found being too few to permit articulation of a perfect skeleton. Among the most curious was an armoured dinosaur, a huge reptilian creature that once roamed the plains of what are now Wyoming, Colorado, and Kansas, distinguished among others of its species by a small head, large projecting plates on the back, and sharp spines on the tail. Its extreme length was about thirty feet.



THE LESSON OF THE EDUCATIONAL EXHIBIT

endeavor; it fixes the standard of national enterprise for the coming decade or generation.

Each of the international expositions has had its controlling motive, and each its important result. The latter is not always readily apparent, and often is appreciated only after a lapse of years, when we are able to look back over a great popular uplift and mark its beginnings; as we are able to trace the growth of industrial art in this country from the Centennial Exposition of 1876, and the growth of specialized training in the public schools of France from the Paris Exposition of 1878. But the motives are more clearly defined and stamp the character of the exposition. The first one, the Crystal Palace Exhibition in London in 1851, may almost be said to have been fraternal, since international comity and the establishment of better commercial relations were the avowed object of its promoter, Albert, prince consort. In the Paris expositions art has been the motive—art in its broadest sense, as applied to industries as well as to the purely æsthetic. In Vienna, in 1873, commercialism was the dominant factor; it was the only failure of the nine great international expositions. In Philadelphia national sentiment received its highest recognition in exposition history. In Chicago there was a less clearly defined motive at the start and a more brilliant result at the finish than in any previous exposition. It had its rise in historic sentiment, to be true; but it was too remote to be more than an excuse, and too accidental to

LOUISIANA PURCHASE EXPOSITION

create enthusiasm. The location of the Columbian Exposition was the result of a sharp rivalry between three cities; but, having given it to Chicago, fate drew together a group of broad and brilliant men for its development, and as a result the White City—with its Roman classic architecture, its magnificent distances, its landscape gardening, and its Court of Honor—stood forth as an object-lesson to the American people, more impressive, more convincing of the absolute necessity of the adaptation of art to the life of a nation, than thousands of sermons or years of instruction.

In an exposition the directorate proposes, but the exhibitor disposes. The classification may be perfect in its logic and comprehension; the space for installation and time of preparation ample in extent; the plan of arrangement thoroughly approved and appreciated, and yet the right-hand member of the equation, composed as it is of a great number of factors varying in time, money, capacity, and interest, and all involved with that variable quantity—human nature—renders its solution extremely difficult. Probably the perfect educational exhibit will never be made till some benevolent person provides at least a half million or more for the purpose, so that material may be collected and installed about a well-defined plan and under the guidance of a single mind. This would be an educational museum. It is doubtful after all whether it would have the popular attraction and human interest of an exposition where

THE LESSON OF THE EDUCATIONAL EXHIBIT

variety rules and where the limitations of one exhibit bring into bolder relief the excellencies of another.

At the risk of some repetition of former statements made in the Introduction, I must sketch the object of the exhibit. Not everything can be shown in an educational exhibit. It is a common expression that you cannot exhibit the finer parts of education—that you lose the spirit and personality of the class-room. It is true you cannot exhibit this. I sometimes wonder in the present days of tick-tack routine if our teachers would recognize it if we could; but neither in an agricultural exhibit can you exhibit the rural peace and environment of field and forest which hold the nature and the labor of the farmer. In education, as in agriculture, we can exhibit the courses of study as well as the rotation of crops; the methods of instruction as well as the methods of planting; the machinery and the equipment for the work; the products of the laborer and the comparative results of his labor. We can exhibit enough to be of interest and value to the student and establish a clearing-house for suggestive ideas whose influence will be carried to every quarter of the world. The great results which have followed educational exhibits in England, in France, and in America are the best demonstration of their value. In the preparation of the educational exhibit at St. Louis there were two points made prominent: the participation of foreign nations, in order that a comparison might be instituted between the educational systems of the various

LOUISIANA PURCHASE EXPOSITION

countries of the world noted for educational progress, and the thorough presentation of every phase of education in the United States, as exemplified in our public schools, our colleges, and universities, technical and professional schools, art, agriculture, defectives, and special forms of education.

In the preparation of the classification made with the advice of a special committee consisting of Dr. Harris, Dr. Butler, and Supt. Jones of the N. E. A., the field of education was divided into eight groups, as follows:

Group 1. Elementary Education.

Group 2. Secondary Education.

Group 3. Higher Education.

Group 4. Special Education in Fine Arts.

Group 5. Special Education in Agriculture.

Group 6. Special Education in Commerce and Industry.

Group 7. Education of Defectives.

Group 8. Special Forms of Education — Text-Books, School Furniture, School Appliances.

In its comprehensiveness, the participation in the exhibit fully reached our expectations. Thirty-three states and territories, four cities, and fifteen foreign nations contributed to the elementary and secondary groups. Twenty-eight colleges and universities and eight professional and technical schools were exhibitors in group 3. Seven of the best art schools of the country, for the first time, made a



CHICAGO EDUCATION EXHIBIT.
EXHIBIT BY THE CHICAGO ART INSTITUTE.

THE LESSON OF THE EDUCATIONAL EXHIBIT

classified exhibit. The Agricultural and Mechanical Colleges, under a special grant of \$100,000 from Congress, made a collective exhibit, as upholding in every detail the high grade of special instruction given in our farm laboratories. In group 6, Commercial and Industrial Education, the business colleges and commercial high schools and industrial and trade schools contributed many exhibits. In group 7, The Education of Defectives, the Convention of American Instructors of the Deaf, and the American Association of Instructors of the Blind combined to maintain a working exhibit, in order to demonstrate to the general public the thorough work which is being done for children deprived of all their normal faculties, and to further demonstrate the fact that the results of this instruction are so beneficial as to warrant the same care and maintenance on the part of the State as for normal children. In group 8, Special Forms of Education, Publishers and School Equipment, the exhibits were many and instructive. The belief is, therefore, that we gathered at St. Louis a basis for comparisons and generalization from which inferences and truths of value may be derived. It is a matter for regret that the strenuous life of the preparatory days of an exposition did not permit us to make a careful study of the exhibits, but in the examination that was made, two things seem to stand forth prominently. The first is the similarity of the exhibit from every State and city in the United States, demonstrating the fact that

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we have a national system of education; and the second is, the subordination of the humanities to industrial instruction in the exhibits of foreign nations. I hinted at something like this three years ago at Chicago, as inferences from the Paris Exposition, but they were not then so clearly borne in on my mind, nor did they then occupy so completely the objective points of vantage.

Concerning the first point: It was impossible for any person to go from State to State in this exhibit and detect any radical distinction in the work presented or the methods illustrated. Such as did exist was entirely local in its reason and was the evidence of the personality of the superintendent or the progressiveness of the community. There is no greater difference between Syracuse and Los Angeles than between Syracuse and Binghamton. It is a satisfactory and gratifying condition. The simultaneous advance of a nation vast in extent and power along any line of progress is an impressive fact. It indicates a flexibility of the mind, and a solidarity of purpose which would be irresistible applied to any problem. There are the same elements of strength in our union of ideas and mental training of every section of a great country as in their physical and constitutional union. At the same time, it must not be understood that there was a stereotyped form of processes in exhibits. There was enough originality and expression of experiment to insure against any possible danger of machine routine. If it is asked why the educational

THE LESSON OF THE EDUCATIONAL EXHIBIT

systems of forty-five States, each under a separate, independent government, separated by tradition, clime, and culture, show such unity, it may be asserted that it is due to two causes: first, to the United States Bureau of Education, under the able guidance of its great chief, Dr. Harris; and second, to the influence of the N. E. A. The Bureau of Education cannot arbitrarily shape the policy of any State or section, but so wisely has the power of suggestion been used, so forcibly has the inference from statistics been drawn, and so clearly has the comparison of systems, foreign and domestic, been set forth, that our educational policies from East to West have by force of logic formed in parallel columns. Nor should we omit to mention as a most directive force in this regard, the personal influence of the United States Commissioner of Education. The second reason advanced for this unity—the influence of the N. E. A.—is very apparent, drawing its constituency from every part of the Union, meeting once a year in numbers, and twice a year through its superintending officers, there is a constant interchange of criticism and information which holds in close relation every component factor. The special investigations of its Committee of Fifteen, and Committee of Ten show in the curricula of hundreds of elementary and secondary schools. There is no need to dwell on this point. The arguments are apparent as soon as the question is mentioned, but its practical demonstra-

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tion appeared to be so clearly set forth in the exhibits as to form a great and accepted fact.

The other main point emphasized by the exhibit, the subordination in foreign countries of the humanities to special industrial instruction can be proved by preponderance of evidence, if by no other means. Three nations participating in the Exposition thought it advisable to portray their educational system in a foreign land and in comparison with other systems, but in no other group than in technical and industrial education. In two others the predominance of the exhibits of this class served to accentuate the main point. In the remainder the relative proportion was greater with the exception of one—and in this one only—was there something of a balance maintained between the two great lines of the mental development of the child. It is not my province in this article to discuss the tendencies of European and American elementary instruction. They are based on different theories of national maintenance, founded on different aspirations and traditions, and require comprehensive treatment. The statement that the illustration of this difference was found in the exhibits at St. Louis is sufficient for this purpose. These were the two main points of the educational exhibit. A minor point was the scientific character of the exhibits and the exploitation of lines of research. It is, of course, a scientific age and exhibits of the universities would naturally assume that form, but the tendency of each institution to lay stress upon some



GERMANY'S EXHIBIT IN EDUCATION BUILDING.

THE LESSON OF THE EDUCATIONAL EXHIBIT

few lines of investigation was striking. Perhaps in this connection it may be said, without being open to the charge of discriminating between displays, that the exhibit of the German University laboratories in chemistry, physics, and biology was one of the most thorough and instructive ever made. Everything has its reason, and this showing was a magnificent attempt on the part of Germany to demonstrate that in the field of special training, particularly in biology and medicine, her universities are still the foremost in the world. In view of the marvelous advance of American universities in this respect in the last fifteen years and the acceptance of the idea that it is no longer necessary for American students to be trained abroad, the exhibit assumed a new and interesting aspect, even if it may not be assumed to become historic.

In the scientific group, our own most noteworthy exhibit was that of the agricultural and mechanical colleges of the country, which made a collective exhibit under the special appropriation of \$100,000 made by the Congress of 1903. If there has been demonstrated to the public the great ulterior economy in the liberal maintenance of these institutions, a most important benefit to the country will have been insured.

In the same spirit there was undertaken the collective exhibit of the Association of the Schools for the Blind, and the Schools for the Deaf, in which working classes were maintained throughout the Exposition. No

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more important lesson could be taught the great public than to demonstrate beyond a doubt that the education of those defective in some physical respect is as much a duty of the State as the education of those normally endowed whereby to remove forever from their thoughts the idea of its being in any wise a charity.

Such were some of the more general lessons of the educational showing. The exhibit had many strong points; it had some weak ones. There were some displays of institutions concerning which, to use the remark of our humorist philosopher, "it would have been money in their pocket if they had never been born," but as an average, the exhibit was undoubtedly high, and great benefit must result therefrom.

Thanks are due for the sympathetic cooperation of foreign countries in promoting the exhibit; for the magnificent support of the States and cities; and for the loyal assistance of the colleges, universities, and technical schools, many of which acted either through personal friendship or from a sense of duty in supporting an educational enterprise.

DIVISION CXXI.

Progress of Education, as Shown by Statistics.

The United States Bureau of Education made a very large and instructive display in the Government Pavilion at the St. Louis Exposition, a showing such as by far surpassed that ever before attempted by any nation. America is justly proud of her public school system, in which the people are vitally interested, but there were very few who appreciated the extent to which the system has been carried, so that the Government exhibition was a surprise not only to visiting multitudes, but even to specialists on the subject. The exhibit was made under direction of the Department of the Interior, though the compilation of information is to be credited to the Bureau of Education, which has been under the direction of William T. Harris since 1889.

As a rule statistics tell a story more instructive than dramatic or graphic, but they have the unique merit of condensity, and accuracy, and in some respects they are more eloquent than narrative. The facts as set forth by the Bureau were displayed upon blackboards, charts, and in object lessons, in addition to which pamphlets containing

LOUISIANA PURCHASE EXPOSITION

elaborate reports were issued and freely distributed, from all of which sources I collected the following, which I apprehend will be examined with deepest curiosity by all intelligent readers, since the results of popular education can in no other way be so clearly described and understood.

According to the census of 1900 there were in the United States 14,794,403 males over thirty years of age, which the Bureau of Education divided into four classes, as follows:

Class 1. Without education, 1,757,023.

Class 2. With common school training, 12,054,335.

Class 3. With high school training added, 657,432.

Class 4. With college education added, 325,613.

In the struggle for achievement it was shown that in Class 1 not one succeeded in becoming notable in the sense of being prominent for social or political attainment.

In Class 2, in which 24 were reported as being self-taught, and 278 privately instructed, 1,368 became notable. In Class 3 there were 1,627, and in Class 4 there were 7,709. By this showing it is discovered that those in Class 1 are practically without opportunity to become distinguished in fields of public effort; that in Class 2, a common school education gives one chance in nine hundred; that in Class 3 this chance is increased more than 20 per cent, while in Class 4 opportunity is multiplied nearly 200 times.

These statistics are certainly eloquently confirmatory of the claim that college training is practically indispensable



MINNESOTA EXHIBIT, EDUCATION BUILDING.

PROGRESS OF EDUCATION, AS SHOWN BY STATISTICS

to the largest success in life. Of course exceptions are not astonishingly infrequent, especially in commercial life, where natural shrewdness and what may be called luck, surmount the disadvantages of a lack of education; but these are not dependable conditions and may therefore be left out of the reckoning.

If the figures above given demonstrate the influence and uplifting power of education, the following statistics will be read with increased interest as showing the progress being made in the means of schooling, especially as opportunity is no longer limited, but is freely extended to poor and rich alike:

Sex of public school teachers, 1871-1902.

| Year. | Male. | Female | Total. | Year. | Male. | Female. | Total. |
|-----------|---------|---------|----------|----------|---------|---------|---------|
| 1871 | 90,293 | 129,932 | 220,225 | 1887.... | 127,093 | 212,367 | 339,460 |
| 1872 | 94,992 | 134,929 | 229,921 | 1888.... | 126,240 | 220,894 | 347,134 |
| 1873 | 97,790 | 139,723 | 237,513 | 1889.... | 124,467 | 323,110 | 356,577 |
| 1874 | 103,465 | 144,982 | 248,447 | 1890.... | 125,525 | 238,397 | 363,922 |
| 1875 | 108,791 | 149,074 | 257,865 | 1891.... | 123,360 | 245,028 | 368,388 |
| 1876 | 109,780 | 149,878 | 259,658 | 1892.... | 121,573 | 252,653 | 374,226 |
| 1877 | 114,312 | 152,738 | 267,050 | 1893.... | 122,472 | 260,278 | 382,750 |
| 1878 | 119,404 | 157,743 | 277,147 | 1894.... | 125,402 | 263,547 | 388,949 |
| 1879 | 121,490 | 153,840 | 280,330 | 1895.... | 129,706 | 268,336 | 398,042 |
| 1880 | 122,795 | 163,798 | 286,593 | 1896.... | 130,366 | 269,959 | 400,325 |
| 1881 | 122,511 | 171,349 | 293,860 | 1897.... | 131,221 | 273,737 | 404,958 |
| 1882 | 118,892 | 180,187 | 299,079 | 1898.... | 132,257 | 278,556 | 410,813 |
| 1883 | 116,388 | 188,001 | 304,389 | 1899.... | 131,793 | 283,867 | 415,660 |
| 1884 | 118,905 | 195,110 | 314,015 | 1900.... | 127,529 | 293,759 | 421,288 |
| 1885 | 121,762 | 204,154 | 325,916 | 1901.... | 123,941 | 306,063 | 430,004 |
| 1886 | 123,792 | 207,601 | 331,3 93 | 1902.... | 122,392 | 317,204 | 439,596 |

The proportion of male and female teachers remained practically unchanged for ten years from the first marginal date, the numbers standing approximately in the ratio of

LOUISIANA PURCHASE EXPOSITION

two to three, respectively. To-day places of all grades are filled by women from that of State superintendent and city superintendent down, and the ratio of numbers has increased to the extent that nearly three-fourths of the public school teachers are women.

Proportion of the total population enrolled in the elementary schools in certain countries.

I.—AMERICA, ASIA, AND AFRICA.

| Country. | Year reported. | Population enrolled. |
|---------------------------|----------------|----------------------|
| | | <i>Per Cent.</i> |
| Ontario..... | 1901 | 21.00 |
| United States..... | 1902 | 20.98 |
| Victoria (Australia)..... | 1900 | 20.29 |
| Prince Edward Island..... | 1902 | 20.14 |
| Quebec..... | 1902 | 12.30 |
| Japan..... | 1901 | 10.70 |
| Cuba..... | 1902 | 10.38 |
| Cape of Good Hope..... | 1900 | 9.69 |
| Argentina..... | 1900 | 9.40 |
| Porto Rico..... | 1902 | 6.50 |
| Uruguay..... | 1901 | 5.80 |
| Costa Rica..... | 1902 | 5.70 |
| Mexico..... | 1899 | 5.10 |
| Honduras..... | 1902 | 4.80 |
| Chile..... | 1901 | 3.90 |
| Nicaragua..... | 1900 | 3.60 |
| Bombay..... | 1901 | 3.06 |
| Egypt..... | 1900 | 2.20 |
| Burma..... | 1902 | 1.21 |

PROGRESS OF EDUCATION, AS SHOWN BY STATISTICS

II.—EUROPE.

| | Year re- ported. | Population enrolled. |
|-------------------------------|---------------------|-------------------------|
| | | <i>Per Cent.</i> |
| Switzerland..... | 1901 | 20.00 |
| United States of America..... | 1902 | 20.98 |
| England and Wales..... | 1902 | 18.08 |
| Scotland..... | 1901 | 17.16 |
| Ireland..... | 1901 | 16.91 |
| German Empire..... | 1901 | 16.50 |
| Norway..... | 1899 | 15.00 |
| Netherlands..... | 1901 | 14.30 |
| France..... | 1900 | 14.10 |
| Austria-Hungary..... | 1900 | 14.00 |
| Sweden..... | 1900 | 13.70 |
| Denmark..... | ..... | 12.50 |
| Belgium..... | 1900 | 11.86 |
| Bulgaria..... | 1899 | 9.2 |
| Italy..... | 1900 | 7.7 |
| Spain..... | 1895 | 7.3 |
| Greece..... | 1900 | 6.8 |
| Roumania..... | 1900 | 5.7 |
| Portugal..... | 1900 | 4.4 |
| Servia..... | 1899 | 4.0 |
| Russia..... | 1899 | 3.3 |

The two tables here presented, showing the proportion of the total population enrolled in the various classes of schools, public and private, in the thirty-nine countries named, are instructive in the highest degree. The term "elementary," as here used, embraces all grades of instruction below colleges and universities. The figures for all foreign countries are gathered from various authoritative sources, such as school yearbooks, annual reports, etc., but are not the results of inquiries of the Bureau beyond these sources. It will be noted that the statistics are variously for the four years ending with 1902, but an examination of

LOUISIANA PURCHASE EXPOSITION

the figures for any short term of years preceding a particular date will show that the changes are not so variable as to seriously impair the value of the comparison as here indicated.

*Percentage of the population between 5 and 18 years of age
enrolled in the public schools.*

| Year. | United States. | North Atlantic division. | South Atlantic division. | South Central division. | North Central division. | Western division. |
|----------------|----------------|--------------------------|--------------------------|-------------------------|-------------------------|-------------------|
| 1870-71..... | 61.45 | 77.95 | 30.51 | 34.17 | 76.87 | 54.77 |
| 1871-72..... | 62.20 | 77.33 | 32.27 | 37.94 | 77.04 | 54.43 |
| 1872-73..... | 62.36 | 76.79 | 35.86 | 38.67 | 75.97 | 57.52 |
| 1873-74..... | 64.40 | 77.77 | 42.10 | 40.82 | 76.98 | 61.04 |
| 1874-75..... | 65.54 | 78.59 | 44.61 | 42.47 | 77.54 | 64.39 |
| 1875-76..... | 64.70 | 78.55 | 46.72 | 37.36 | 77.05 | 66.37 |
| 1876-77..... | 63.92 | 76.83 | 47.02 | 38.51 | 75.60 | 66.12 |
| 1877-78..... | 65.75 | 77.09 | 48.85 | 43.50 | 77.38 | 66.26 |
| 1878-79..... | 64.64 | 76.18 | 46.72 | 44.71 | 75.28 | 65.63 |
| 1879-80..... | 65.50 | 75.17 | 50.74 | 46.43 | 75.84 | 64.96 |
| 1880-81..... | 65.03 | 74.28 | 51.49 | 47.03 | 74.59 | 64.82 |
| 1881-82..... | 65.03 | 74.56 | 51.90 | 47.02 | 74.15 | 65.93 |
| 1882-83..... | 66.39 | 74.15 | 54.30 | 50.68 | 75.13 | 67.05 |
| 1883-84..... | 66.96 | 72.83 | 56.25 | 53.59 | 75.06 | 68.01 |
| 1884-85..... | 67.96 | 73.23 | 57.17 | 56.57 | 75.46 | 68.53 |
| 1885-86..... | 68.14 | 72.63 | 57.68 | 56.82 | 76.08 | 68.03 |
| 1886-87..... | 67.98 | 72.23 | 58.98 | 56.21 | 75.77 | 67.97 |
| 1887-88..... | 68.33 | 71.60 | 58.68 | 58.67 | 75.96 | 68.53 |
| 1888-89..... | 68.20 | 70.60 | 58.40 | 58.28 | 76.63 | 69.39 |
| 1889-90..... | 68.61 | 70.45 | 59.22 | 60.14 | 76.46 | 70.01 |
| 1890-91..... | 69.40 | 70.04 | 60.15 | 63.01 | 76.25 | 75.49 |
| 1891-92..... | 69.51 | 69.78 | 59.50 | 63.72 | 76.30 | 77.98 |
| 1892-93..... | 69.70 | 68.99 | 61.94 | 63.92 | 76.23 | 77.16 |
| 1893-94..... | 71.32 | 70.45 | 63.08 | 66.00 | 78.04 | 77.45 |
| 1894-95..... | 71.54 | 71.53 | 62.21 | 65.83 | 78.17 | 79.32 |
| 1895-96..... | 71.80 | 71.57 | 62.46 | 66.75 | 78.16 | 79.72 |
| 1896-97..... | 72.36 | 72.12 | 64.49 | 67.75 | 78.06 | 78.27 |
| 1897-98..... | 72.68 | 71.78 | 66.25 | 67.36 | 78.66 | 78.00 |
| 1898-99..... | 71.96 | 71.69 | 64.93 | 66.54 | 77.75 | 77.85 |
| 1899-1900..... | 72.43 | 70.86 | 65.73 | 67.28 | 78.65 | 79.51 |
| 1900-1901..... | 71.26 | 70.55 | 66.14 | 64.55 | 77.10 | 78.99 |
| 1901-2..... | 71.54 | 70.05 | 67.02 | 65.37 | 77.25 | 80.28 |

PROGRESS OF EDUCATION, AS SHOWN BY STATISTICS

Average length of public school term (number of days) for each of the last thirty-two years (1870-1902).

| Year. | The United States. | North Atlantic division. | South Atlantic division. | South Central division. | North Central division. | West-ern division. |
|----------------|--------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------------|
| 1870-71..... | 132.1 | 152.0 | 97.4 | 91.6 | 133.9 | 119.2 |
| 1871-72..... | 133.4 | 151.9 | 103.4 | 97.7 | 136.1 | 121.8 |
| 1872-73..... | 129.1 | 154.6 | 97.4 | 89.1 | 129.6 | 118.3 |
| 1873-74..... | 128.8 | 154.8 | 95.6 | 81.1 | 132.6 | 119.0 |
| 1874-75..... | 130.4 | 158.7 | 95.2 | 81.0 | 134.6 | 132.5 |
| 1875-76..... | 133.1 | 158.0 | 95.6 | 82.5 | 139.1 | 130.3 |
| 1876-77..... | 132.1 | 157.2 | 91.4 | 80.3 | 139.8 | 130.1 |
| 1877-78..... | 132.0 | 157.6 | 89.7 | 86.7 | 140.1 | 129.9 |
| 1878-79..... | 130.2 | 160.1 | 88.6 | 81.9 | 136.4 | 132.0 |
| 1879-80..... | 130.3 | 159.2 | 92.4 | 79.2 | 139.8 | 129.2 |
| 1880-81..... | 130.1 | 158.7 | 92.4 | 82.1 | 138.8 | 133.8 |
| 1881-82..... | 131.2 | 160.6 | 95.9 | 82.5 | 137.1 | 136.2 |
| 1882-83..... | 129.8 | 161.0 | 95.9 | 82.5 | 137.1 | 132.6 |
| 1883-84..... | 129.1 | 156.0 | 95.6 | 85.9 | 138.6 | 133.8 |
| 1884-85..... | 130.7 | 163.1 | 93.4 | 87.5 | 139.1 | 131.8 |
| 1885-86..... | 130.4 | 161.6 | 93.4 | 86.9 | 140.4 | 130.8 |
| 1886-87..... | 131.3 | 165.9 | 95.3 | 87.5 | 139.5 | 131.6 |
| 1887-88..... | 132.3 | 164.4 | 95.7 | 87.6 | 144.0 | 130.7 |
| 1888-89..... | 133.7 | 164.1 | 95.0 | 88.9 | 147.5 | 135.7 |
| 1889-90..... | 134.7 | 166.6 | 99.9 | 88.2 | 148.0 | 135.0 |
| 1890-91..... | 135.7 | 168.1 | 103.8 | 92.0 | 145.8 | 136.9 |
| 1891-92..... | 136.9 | 169.1 | 105.3 | 94.1 | 146.8 | 139.1 |
| 1892-93..... | 136.3 | 169.6 | 103.4 | 93.0 | 146.6 | 138.8 |
| 1893-94..... | 139.5 | 172.3 | 108.3 | 97.5 | 150.2 | 137.1 |
| 1894-95..... | 139.5 | 172.8 | 106.5 | 92.8 | 150.8 | 142.4 |
| 1895-96..... | 140.5 | 175.5 | 107.8 | 92.2 | 151.9 | 142.0 |
| 1896-97..... | 142.0 | 173.3 | 110.9 | 96.3 | 152.8 | 148.6 |
| 1897-98..... | 143.0 | 174.3 | 113.8 | 97.4 | 152.8 | 151.7 |
| 1898-99..... | 143.0 | 174.0 | 112.3 | 98.4 | 154.5 | 141.6 |
| 1899-1900..... | 144.3 | 177.5 | 112.1 | 99.8 | 155.9 | 141.5 |
| 1900-1901..... | 144.2 | 177.2 | 112.1 | 96.4 | 157.5 | 143.0 |
| 1901-2..... | 145.0 | 177.3 | 115.8 | 100.6 | 156.5 | 143.9 |

LOUISIANA PURCHASE EXPOSITION

*Average number of years of schooling of two hundred days
each enjoyed by each individual of the population,
1870-1902.*

| | In all public and private schools. | In public elementary and secondary schools. | | In all public and private schools. | In public elementary and secondary schools. |
|-----------|------------------------------------|---|-----------|------------------------------------|---|
| 1870..... | 3.36 | 2.91 | 1897..... | 5.09 | 4.53 |
| 1880..... | 3.96 | 3.45 | 1898..... | 5.20 | 4.63 |
| 1890..... | 4.46 | 3.85 | 1899..... | 5.09 | 4.55 |
| 1894..... | 4.85 | 4.28 | 1900..... | 5.23 | 4.66 |
| 1895..... | 4.87 | 4.35 | 1901..... | 5.14 | 4.58 |
| 1896..... | 4.99 | 4.43 | 1902..... | 5.16 | 4.65 |

*Expenditures for public schools by geographical divisions,
1871 and 1902.*

| | 1871. | 1902. |
|------------------------------|--------------|--------------|
| North Atlantic division..... | \$29,796,835 | \$91,242,162 |
| South Atlantic division..... | 3,781,581 | 14,159,390 |
| South Central division..... | 4,854,834 | 16,780,141 |
| North Central division..... | 28,430,033 | 93,654,876 |
| Western division..... | 2,244,329 | 19,371,896 |

It is interesting to note that the expenditures in the North Atlantic States have increased in thirty-two years 206 per cent ; in the South Atlantic, 274 per cent; in the South Central, 245 per cent; in the North Central, 229 per cent; and in the Western, 762 per cent. The period named has been one of continued growth in the West, and the generous provision for public education has been a feature of the development of that section.



WISCONSIN EXHIBIT IN EDUCATION BUILDING.

PROGRESS OF EDUCATION, AS SHOWN BY STATISTICS

Amount expended for public schools per capita of the population in 1870-71 and in 1901-2.

| | Amount expended in 1870-71. | Amount expended in 1901-2. |
|----------------------------|-----------------------------------|----------------------------------|
| United States..... | \$1.75 | \$2.99 |
| North Atlantic States..... | 2.38 | 4.18 |
| South Atlantic States..... | .63 | 1.32 |
| South Central States..... | .73 | 1.14 |
| North Central States..... | 2.14 | 3.48 |
| Western States..... | 2.15 | 4.39 |

Amount expended for public education per capita of total population in certain countries.

| Country. | Year re- ported. | Amount. |
|-------------------------------|---------------------|---------|
| United States of America..... | 1902 | \$2.99 |
| Scotland | 1901 | 2.02 |
| England and Wales..... | 1901 | 1.99 |
| Switzerland | 1900 | 1.90 |
| German Empire..... | 1900 | 1.75 |
| Sweden | 1901 | 1.39 |
| Ireland..... | 1901 | 1.36 |
| Netherlands.... | 1901 | 1.27 |
| Belgium..... | 1900 | 1.16 |
| France..... | 1901 | 1.09 |
| Norway | 1900 | 1.08 |
| Austria-Hungary | 1900 | .67 |
| Italy..... | 1901 | .41 |
| Finland..... | 1897 | .24 |

LOUISIANA PURCHASE EXPOSITION

Number of public schoolhouses, 1870-1902.

| Year. | Number. | Year. | Number. |
|-----------|---------|-----------|---------|
| 1870..... | 116,312 | 1890..... | 224,521 |
| 1875..... | 157,364 | 1895..... | 239,630 |
| 1880..... | 178,222 | 1900..... | 248,279 |
| 1885..... | 205,315 | 1902..... | 249,969 |

Increase in value of public school property, 1870-1902.

| Year. | Increase. | Year. | Increase. |
|-----------|---------------|-----------|---------------|
| 1870..... | \$130,383,008 | 1899..... | \$523,679,996 |
| 1880..... | 209,571,718 | 1900..... | 550,069,217 |
| 1890..... | 342,531,791 | 1901..... | 576,963,089 |
| 1897..... | 447,321,190 | 1902..... | 601,571,307 |
| 1898..... | 495,912,048 | | |

Value of school property per capita of the population, 1872-1902.

| | Total value of school property. | | Per capita value. | |
|----------------------------|---------------------------------|---------------|-------------------|---------|
| | 1872. | 1902. | 1872. | 1902. |
| United States..... | \$159,406,374 | \$601,571,307 | \$3.38 | \$ 7.68 |
| North Atlantic States..... | 72,332,321 | 243,150,033 | 5.69 | 11.15 |
| South Atlantic States..... | 4,395,903 | 25,109,903 | .71 | 2.35 |
| South Central States..... | 3,498,535 | 29,875,383 | .55 | 2.03 |
| North Central States..... | 74,055,659 | 250,303,396 | 5.42 | 9.30 |
| Western States..... | 4,823,916 | 53,132,592 | 4.37 | 2.03 |

The increase in the value of school property will be seen by this table to have been 277 per cent in the last thirty years. It will be interesting to note that the largest relative

PROGRESS OF EDUCATION, AS SHOWN BY STATISTICS

increase has been in the Western division, and the latter is closely followed by the South Central.

Kindergartens in the United States—Number of schools, of teachers, and of pupils for certain years.

| Years. | Kindergartens. | Teachers. | Pupils. |
|-----------|----------------|-----------|---------|
| 1873..... | 42 | 73 | 1,252 |
| 1880..... | 232 | 524 | 8,871 |
| 1887..... | 544 | 1,256 | 25,925 |
| 1892..... | 1,311 | 2,532 | 65,296 |
| 1898..... | 2,884 | 5,764 | 143,720 |
| 1902..... | 3,244 | 5,935 | 205,432 |

Statistics of kindergartens were first collected by the Bureau of Education in 1873, and the work has been continued at intervals since that time. The Annual Report of the Commissioner for 1902 shows that 289 cities of a minimum population of 4,000 maintain kindergartens as a part of the regular public school system, there being 2,202 kindergartens in these cities. The table given here shows a total of 3,244 public and private kindergartens. The tendency is toward public fostering of this important branch of education, the number of cities maintaining kindergartens having been increased by 100 in the last four years.

LOUISIANA PURCHASE EXPOSITION

Private and public schools compared.

| | Elementary schools. | | Secondary schools. | | Higher institutions. | |
|------------------------|---------------------|------------------|--------------------|------------------|----------------------|------------------|
| | Public. | Private. | Public. | Private. | Public. | Private. |
| | <i>Per cent.</i> | <i>Per cent.</i> | <i>Per cent.</i> | <i>Per cent.</i> | <i>Per cent.</i> | <i>Per cent.</i> |
| United States..... | 93.3 | 6.7 | 77.0 | 23.0 | 40.5 | 59.5 |
| North Atlantic States. | 90.2 | 9.8 | 77.6 | 22.4 | 31.3 | 68.7 |
| South Atlantic States. | 95.4 | 4.6 | 54.7 | 45.3 | 34.3 | 65.7 |
| South Central States.. | 95.1 | 4.9 | 58.5 | 41.5 | 34.7 | 65.3 |
| North Central States.. | 93.2 | 6.8 | 84.7 | 15.3 | 46.4 | 53.6 |
| Western States..... | 94.9 | 5.1 | 78.3 | 21.7 | 68.6 | 31.4 |

The comparison of the attendance in the public schools with the corresponding item in the private schools indicates that as between the three grades of education the elementary branch is almost entirely under public control, secondary education is three-fourths public and one-fourth private, and in the higher institutions the attendance in institutions under private control is nearly fifty per cent greater than in similar institutions under public control. These observations apply with a fair degree of uniformity throughout the entire country in elementary education and in higher institutions with the exception of the North Central and the Western States. The figures relating to secondary schools show that the North Atlantic and Western States vary very little from the average of the whole country. The greatest variation from the average is in the Southern States, where possibly secondary education as a

PROGRESS OF EDUCATION, AS SHOWN BY STATISTICS

measure of public polity has not received as full sanction as in some other sections.

Proportion of the white and of the colored race in the population 5 to 18 years, and proportion enrolled in public schools, 1902.

| | Percentage of the whole. | | Percent of persons 5 to 18 years enrolled. | |
|---------------------------|--------------------------|----------|--|----------|
| | White. | Colored. | White. | Colored. |
| Alabama..... | 53.90 | 46.10 | 69.24 | 42.71 |
| Arkansas..... | 72.18 | 27.82 | 75.98 | 70.88 |
| Delaware..... | 81.85 | 18.15 | 76.70 | 69.09 |
| District of Columbia..... | 67.53 | 32.47 | 76.54 | 77.90 |
| Florida..... | 56.72 | 43.28 | 70.59 | 57.00 |
| Georgia..... | 51.76 | 48.24 | 76.56 | 56.39 |
| Kentucky..... | 87.19 | 12.81 | 73.11 | 71.84 |
| Louisiana..... | 51.50 | 48.50 | 51.85 | 32.36 |
| Maryland..... | 79.15 | 20.85 | 66.04 | 68.82 |
| Mississippi..... | 40.06 | 59.94 | 83.23 | 64.69 |
| Missouri..... | 95.12 | 4.88 | 74.90 | 68.22 |
| North Carolina..... | 65.28 | 34.72 | 74.12 | 66.31 |
| South Carolina..... | 38.97 | 61.03 | 68.46 | 49.58 |
| Tennessee..... | 75.85 | 24.15 | 79.09 | 67.61 |
| Texas..... | 78.68 | 21.32 | 67.65 | 63.41 |
| Virginia..... | 61.72 | 38.28 | 70.26 | 54.11 |
| West Virginia..... | 96.20 | 3.80 | 78.48 | 68.15 |

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Improvement in the education of negroes in the former slave States—Proportion of colored males of voting age who could read and write in 1870 and in 1900.

| State. | 1870. | 1900. | State. | 1870. | 1900. |
|-----------------------|------------------|------------------|---------------------|------------------|------------------|
| | <i>Per Cent.</i> | <i>Per Cent.</i> | | <i>Per Cent.</i> | <i>Per Cent.</i> |
| Alabama..... | 7.0 | 40.5 | Mississippi..... | 10.1 | 46.8 |
| Arkansas..... | 11.6 | 55.2 | Missouri..... | 24.6 | 68.1 |
| Delaware..... | 27.9 | 57.3 | North Carolina..... | 12.0 | 46.9 |
| District of Columbia. | 25.1 | 73.9 | South Carolina..... | 17.1 | 45.3 |
| Florida..... | 10.8 | 60.6 | Tennessee..... | 12.8 | 52.4 |
| Georgia..... | 6.9 | 43.6 | Texas..... | 8.4 | 54.9 |
| Kentucky..... | 14.5 | 50.5 | Virginia..... | 9.1 | 47.5 |
| Louisiana..... | 11.9 | 38.7 | West Virginia | 19.8 | 62.2 |
| Maryland..... | 30.7 | 59.5 | | | |

The figures of 1870 are those of the first census taken after emancipation. It will be noted that the States bordering on the free States of the North showed by that census the largest proportion of males able to read and write, and with few exceptions the same may be remarked of the later statistics. Georgia shows the largest percentage of increase.

PROGRESS OF EDUCATION, AS SHOWN BY STATISTICS

Education in the United States of America—Progress in
Twenty-five Years.

| | 1877. | 1902. |
|--|---------------|---------------|
| Total population, estimated..... | 46,112,700 | 78,544,816 |
| School population (5 to 18 years), estimated.. | 14,025,800 | 22,216,863 |
| <i>Public schools.</i> | | |
| Enrollment of pupils..... | 8,965,006 | 15,925,887 |
| Average daily attendance..... | 5,426,595 | 10,999,273 |
| Teachers: | | |
| Male | 114,312 | 122,392 |
| Female..... | 152,738 | 317,204 |
| Total..... | 267,050 | 439,596 |
| Value of school property..... | \$198,554,584 | \$601,571,307 |
| Expenditure for instruction..... | \$54,973,776 | \$150,013,734 |
| Total expenditure..... | \$79,439,826 | \$235,208,465 |
| Average number of days in school year..... | 133.4 | 145 |
| <i>High schools.</i> | | |
| Institutions..... | 1,340 | 8,127 |
| Teachers..... | 6,759 | 32,318 |
| Students..... | 98,485 | 655,301 |
| <i>Normal schools.</i> | | |
| Institutions..... | 152 | 282 |
| Teachers..... | 1,189 | 3,277 |
| Students..... | 27,765 | 65,068 |
| <i>Universities and colleges.</i> | | |
| Institutions..... | 433 | 520 |
| Professors and instructors..... | 4,865 | 17,898 |
| Students..... | 66,737 | 161,075 |
| <i>Schools of medicine, law, and theology.</i> | | |
| Institutions..... | 249 | 404 |
| Professors and instructors..... | 1,799 | 7,218 |
| Students..... | 16,422 | 48,076 |

The items used in this table were taken from the Reports of the Commissioner of Education for the years named. The figures shown will be found interesting over and above the mere fact of general progress in the amount of improvement recorded in each particular.

DIVISION CXXII.

International Congresses of Arts and Sciences.

Science, Art, Education, have been pronounced phases and features of every universal exposition, but at the St. Louis World's Fair they were given such supreme prominence as to place them preeminent as factors of the general exhibit, with all else essentially subordinate. Congresses of many kinds have also been held at previous expositions, but at St. Louis there were no less than three hundred conventions which brought together the most distinguished scientists, teachers, inventors, editors, lawyers, doctors, ministers, and professional specialists of all kinds and of all countries that discussion and exchange of ideas might conduce to the intellectual progress of the world. At these congresses essays were read by investigators and recognized authorities that contributed mightily to education and revealed, to lay minds especially, facts and discoveries of the most astonishing character.

International congresses on literature, science, art, and industry have become by custom and usage the accompaniment of international expositions. The same machinery which creates a universal exposition can best bring together

INTERNATIONAL CONGRESSES OF ARTS AND SCIENCES

the elements of a successful congress. The reasons are not far to seek. The exposition attracts in a larger degree than any other known agency crowds of people, among which are a fair percentage of persons prominent in the various pursuits of life; on the Juries of Award are appointed by each nation experts in their particular field who are thus present for the discussion; the influence of foreign commissions is exerted to promote a creditable attendance of scientists from their own countries; the tendency of organized societies is to combine pleasure with profit, and hold regular meetings at the place of the exposition; the exhibits illustrating the progress of the world in each phase of human effort compel the attendance of great numbers interested therein who are equally ready to attend a discussion of the various parts; the atmosphere of an exposition is stirring, progressive, and epoch-making, and the congress is the literary embodiment of its activities.

The Paris Exposition of 1889 was the first to organize with some degree of method a series of international congresses, although unrelated meetings had been held in connection with prior expositions. The success of the series of congresses in 1889 led the World's Columbian Exposition at Chicago, 1893, to organize the World's Congress Auxiliary to "establish a series of congresses in which the best workers in general science, philosophy, literature, art, agriculture, trade, and labor, may meet to present their

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experiences and results obtained in all those various lines of thought up to the present time."

The Paris Exposition of 1900 provided by a ministerial decree as early as June, 1898, that a series of international congresses be instituted for the time of the Universal Exposition of 1900, and in an instrument of twenty-two articles prescribed the division of the congresses, their organization, and conduct.

The authorities of the Universal Exposition at St. Louis, 1904, from the first recognized the desirability of providing for a congress which should exceed in its scope anything heretofore attempted, and which should stand as a monument to the enterprise of the Exposition long after the buildings had disappeared and the memory of its commercial achievements grown dim in the minds of men. Such a series of congresses was particularly appropriate for the St. Louis Exposition, where for the first time the educational influences of an exposition were made the dominant factor, and the classification and installation of exhibits made contributory to that principle. Something more than a series of unrelated and independent meetings, however valuable and instructive many of these might be, was felt to be advisable and worthy of promotion.

During the first year of the promotion of the Exposition overtures were made to two men in particular, prominent in the educational and scientific work of the country, to give their entire time for two years to the promotion and develop-



CONGRESS OF SCIENTISTS—PROFESSORS PIERSOL, WALDEYER, SPITZRAU AND NEIMEYER.

INTERNATIONAL CONGRESSES OF ARTS AND SCIENCES

ment of a congress or congresses which should be pre-eminent among gatherings of this nature. It was not until the latter part of 1902 that the organization of the Department assumed definite shape. Satisfactory arrangements could not be made with the men first approached for the work, owing to the pressure of their regular duties, and the entire plan of the supervision was changed. The plan adopted was based upon a year's consideration of the subject, and involved the idea that men of high literary, scientific, and professional standing should pass upon a somewhat thorough canvass of the kind of congress which should be best worthy of promotion.

In November, 1902, Mr. Howard J. Rogers was appointed the Director of Congresses and a standing committee from the Board of Directors was created, consisting of F. W. Lehmann, Chairman, Charles W. Knapp, Breckinridge Jones, John Schroers, and A. L. Shapleigh. At the same time there was appointed an Administrative Board, who should act not only in an advisory capacity, but also as organizers of a special congress which would reflect credit upon the Exposition and be attractive to the general and scientific public, not only from its originality but also from its scientific and literary value. The membership of the Administrative Board was as follows:

Nicholas Murray Butler, President of Columbia University, Chairman; William R. Harper, President of the University of Chicago; Frederick W. Holls, New York city;

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R. H. Jesse, President of the University of Missouri; Henry R. Pritchett, President of the Massachusetts Institute of Technology; Herbert W. Putnam, Librarian of Congress, and Frederick J. V. Skiff, Director of Field Columbia Museum.

The policy of the Department rapidly assumed shape during the months of November and December, 1902, and in the latter month it was announced by the Director that there would be held during the Exposition: First, a special congress (which afterwards developed into the Congress of Arts and Science), under the control of the Administrative Board. This congress was to be the main feature of the Department and the entire energy and resources of the Exposition were to be bent towards making it an unqualified success. Second, such independent congresses, similar to those usually held at expositions, as might be promoted by the Department or by some society or organization working in conjunction with the Department. For these congresses the Exposition furnished meeting-places, assumed certain expenses, and guaranteed to foreign countries the official standing of the congress both in personnel and program. Third, such conventions or meetings of associations, state, national, or social, which might seize the opportunity of visiting the Exposition to place their annual meetings in St. Louis. For these the Exposition furnished meeting-places free of cost, but assumed no responsibility for the program or the discussion.



DISTINGUISHED MEMBERS OF THE GEOGRAPHICAL CONGRESS.

INTERNATIONAL CONGRESSES OF ARTS AND SCIENCES

Sixteen halls within the Exposition grounds were set apart for the use of the Congresses, which were attended by world-famous professors in political and natural science, astronomy, physics, chemistry, biology, mathematics, arts, medicine, jurisprudence, surgery, a veritable concourse of the truly great of the earth, masters of that superior power which knowledge bestows upon its votaries. The addresses delivered by the more than five hundred scientists who participated in the Congress will, when printed, fill thirty volumes equal in size to that of *Louisiana and The Fair*, for which reason it is not practicable to present in this work more than an epitome of what I believe may interest the largest number of readers.

Foremost in immediate importance, because the subject is one of very recent suggestion and experimentation, was the lecture on radium by Professor Ernest Rutherford, F.R.S., who occupies the chair of physics in McGill University, Montreal. Preliminary to quoting any statements made by Professor Rutherford it will be instructive to know a few antecedent facts respecting the mysterious substance called radium.

For several years, and more particularly since Koch's discoveries, it has been known that many diseases were due to malignant germs, and this being ascertained, bacteriologists, in their investigations, learned that as germs require darkness in order to thrive and work the greatest mischief, most of them are destroyed when subjected to intense light,

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while those that survive such exposure are so enfeebled thereby as to be unable to propagate. As the life of these micro-organisms is very short, their power for evil ends with the death of a single generation.

It is, however, only within a recent period that light has been employed in the treatment of disease, because the transverse etheric, or light, waves, with which scientists were most familiar, were not able to penetrate the tissues of the body, and therefore could reach only the maladies which were superficial; that is, located upon or near the skin.

Beyond the limit of the violet, the finest or shortest of all waves of the visible spectrum, there is now known to be a region of gradually decreasing wave lengths which are characterized by tremendous chemical activity, and finally those so minute in fact as to be able to find their way through infinitesimally small inter-molecular spaces. The Roentgen or X-rays possess this power to a remarkable degree.

The scientific world, a few years ago, was startled by the accidental discovery of the X-rays by Roentgen while repeating some of the experiments of Crookes, Hittorf, Hertz, Thompson, and others, and this discovery gave a tremendous impetus to the study of all kinds of radio-activity. Thus Becquerel, in 1896, following some of the experiments of Williams, discovered the radiation of atoms from uranium nitrate which were capable of passing through

paper so thick that it was entirely opaque to ordinary light. Crookes, inventor of the remarkable vacuum bulbs or tubes which bear his name, and by the use of which Roentgen won his immortality in the discovery of the X-rays, proved that the rays which Becquerel had discovered were not in reality a property of uranium, but belonged to some impurity in the metal. This was soon followed by a statement from that remarkable woman, Mme. Curie, that she had discovered in pitchblende a substance which possessed a radio-activity 100,000 times greater than that of uranium, and which, in honor of her native Poland she named Polonium. From this discovery her husband, M. Curie, with her aid discovered radium.

As yet little is known of this remarkable substance, and all the claims that have been recently advanced as to its curative properties in cancer or other maladies must be taken as being without demonstration.

It is known, however, that such is its radiant activity that its rays travel with a speed of one hundred thousand miles a second, and produce at their point of impact upon any solid substance a transverse wave, the effect of which is distinguished through twelve inches of solid iron.

Professor Rutherford spoke in part as follows:

The subject of radio-activity is of interest to the public, on account of the surprising properties developed, and of interest to scientific men because of the light which it throws on the important question of the constitution of matter. I

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will give you a brief historical summary of radium and radio-activity.

It was first discovered in Paris by M. Honore Becquerel, who investigated the photographic effects of emanations from uranium compounds. He suspected a connection between the phosphorescence produced on the walls of an X-ray tube and these uranium rays.

Poincare suggested that the same results would be given by bodies naturally phosphorescent, and it was Becquerel who found this to be true in the case of uranium. The difference between the uranium rays and the X-rays is that the former are produced spontaneously and last definitely, while the latter require a great deal of energy to produce them.

The uranium rays have a property which forms the basis of physical measurements, namely, that of discharging an electrified body.

Professor Rutherford demonstrated this by means of a gold leaf electroscope. The leaves of the electroscope, which had been electrified previously, were discharged by bringing into their neighborhood a very small quantity of radium, whose properties are similar to those of uranium, but much more intense. The illustration was a demonstration of the tremendous power of radium. Continuing, Professor Rutherford said:

Mme. Curie investigated to determine whether other substances would act like uranium, and she found that thorium acted similarly. Later, she found that pitchblende, an ore found most largely in Austria, possessed these properties in a very high degree; much greater, in fact, than would be possessed either by pure uranium or thorium. She attributed this increased activity to a new substance which

she called radium. She found that the radiated power varied directly with the amount of radium present, and not at all upon the degree of concentration of the substance containing it.

The preparation of radium from the pitchblende is a very tedious chemical process. From one ton of the original material only about one ten-millionth remains. It is on this account that radium is so expensive, but because of its wonderful power very little of it produces very noticeable results.

Since the discovery of radium two new substances, called polonium and actinium, having properties similar to radium, have been discovered. Pure radium has a radial active power between one and two million times that of pure uranium.

The radiations from radium are not ordinarily visible. A feeble glow is the sign of purity. The radiations may be detected by the florescence produced by them on an X-ray screen or in willemite, an ore, or zinc. (This was illustrated by experiments conducted in the darkened auditorium.)

Radium produces three kinds of rays or emanations, which are called the alpha, beta, and gamma rays. The alpha rays are deviated in one direction, the beta rays in the other, when a magnet is placed in their neighborhood. The gamma rays are not deviable. The beta rays are very similar to the cathode rays, produced by an electric discharge through rarified gases. They consist of very small particles of matter negatively electrified, and moving with a speed equal to half that of light. J. J. Thompson estimates that the size of these particles is one one-thousandth that of an atom of hydrogen.

The alpha rays have different properties and are the most important. They consist of particles of matter about the size of a hydrogen atom and are positively electrified. They move with the speed of about 20,000 miles a second.

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Their presence may be detected by an instrument called the spinthariscopes, in which the small particles are made to strike a screen coated with sulphide of zinc. Under the influence of the bombardment of particles, the screen glitters with particles of light.

As Professor Rutherford was unable to demonstrate this because he did not have a spinthariscopes, he had to use the stereopticon as a substitute. The slides were so arranged that the effect of the rays striking the screen gave off brilliant flashes of light, which, if the spinthariscopes had been used, would have demonstrated the presence of the alpha rays in radium.

In the lantern slide illustration the action of an individual atom was witnessed, the atom throwing off parts of itself, represented by the particles of light, indicating the presence of the alpha rays. The alpha rays are very penetrating and similar to the X-rays. This was demonstrated by Professor Rutherford, who showed that the alpha rays penetrated an iron plate two inches thick.

Another important property of radium is the gaseous emanation that it diffuses, which is like the gases of the argon family. Professor Rutherford then raised the question whether these emanations are material, and said that they are, because they can be condensed by cold. To prove this, Professor Rutherford heated a tube containing radium, making emanations. The emanations were carried to an electroscope through a tube, and discharged the electroscope.

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Professor Rutherford has discovered that one grain of radium gives off 100 grammes of caloric an hour. The heat of radium is very great, and Professor Rutherford said that one pound of radium would generate 100,000 horse-power. These effects of radium are produced by some sort of chemical or atomic charge, and, therefore, the energy produced by radium comes from itself.

The professor continued :

One month after losing the emanations, radium gradually recovers its radio-active power, while the emanation loses power just as fast as radium recovers. Then the total power of radium is constant. After the alpha rays are expelled the emanations are left. The emanation produces another kind of matter, which in turn produces excited activity. Then three kinds of matter are produced in succession.

The fourth change produces polonium, while the final product is either helium or hydrogen, although it is not known definitely which. Evidence for the breaking up of atoms is found in the fact that radium has been radiating since creation. The alpha particles given off are either helium or hydrogen, helium always being found near radio-active substances.

Each change forms a definite product. Then the transmutation is spontaneous. It goes on immutably. It is not probable that we can control it. If we could, a large amount of power would be available from a minute quantity of radium.

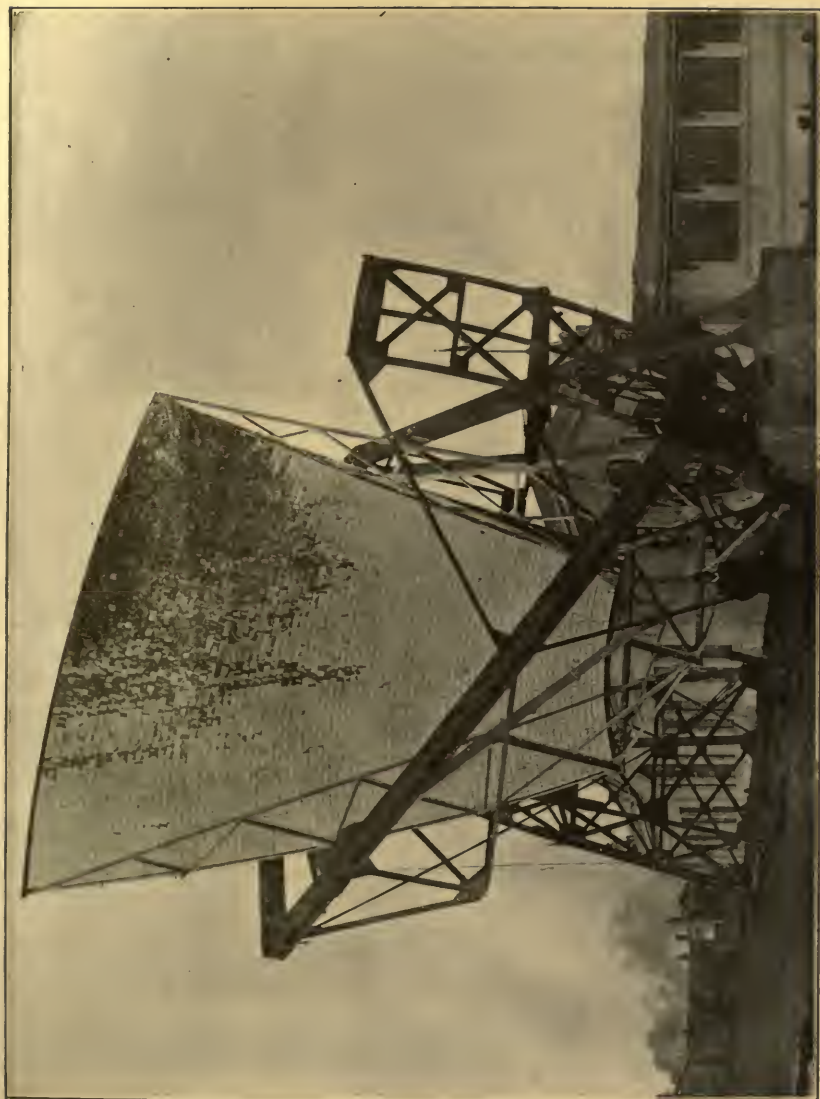
As to its medical uses, Professor Rutherford said that it might be a partial cure for cancer, while on the question

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of whether it is a cure for consumption there is much speculation, but little definite knowledge.

In a recent article contributed by Professor Rutherford to *Harper's Monthly*, he intimates that radium is practically a universal substance, to the presence of which is due the retention of heat in the earth, which if true overthrows the long-accepted theory by which the age of the earth is approximated through estimates based upon the process of cooling. He writes:

While the heat supplied by possible chemical combination is quite inadequate to account for the heat of the sun and earth, the recent discovery that the radio-active bodies are able to emit an amount of heat about one million times greater than is evolved in the most violent chemical reaction, throws quite another light on the question. Those radio-active bodies, among which the best known are radium, uranium, thorium, and actinium, are mostly found in the mineral pitchblende. Attention has recently been concentrated on the substance radium, which emits heat and other forms of energy at a rate that appeals to the lay and scientific mind alike. The radiations from radium, which are able to produce such marked luminous, photographic and electrical effects, are qualitatively very similar to those emitted by the other radio-active bodies already mentioned, but differ from them in intensity. Weight for weight radium emits energy more than a million times faster than uranium or thorium. In addition to its penetrating radiations, radium also emits heat at a comparatively rapid rate. * * * The amount of heat emitted from radium is sufficient to melt more than its weight of ice per hour. This rate of heat emission is continuous and, so far as observation has gone, does not decrease appreciably with the time.



PYRHELIOPHORO, OR SUN-MOTOR.

In the course of a year, one pound of radium would emit as much heat as that obtained from the combustion of one hundred pounds of the best coal, but at the end of that time the radium would apparently be unchanged and would itself give out heat at the old rate. It can be calculated that although the actual amount of heat per year to be derived from the radium must slowly decrease with the time, on an average it would emit heat at the above rate for about one thousand years.

Sir William Roensey and Mr. Soddy have recently found that the volume of the radium emanation stored in one gram of radium is about one cubic millimeter at atmospheric pressure and temperature. The emanation is known to be a heavy gas, and taking its molecular weight to be one hundred times that of hydrogen, it can be readily calculated that if one pound weight of the emanation could be collected it would initially radiate energy at the rate of about 8,000 horse-power. This output of energy in the form of heat would fall off with the time, but the total amount of energy liberated during its life corresponds to that required to drive an engine of 10,000 horse-power for five days.

Radium exhibitions which were given daily in the Government Building, accompanied by lectures, attracted large crowds who, however, were generally more curious than seekers for information. Next to the radium demonstrations, or rather in the same room, X-ray exhibitions were offered to visitors, but interest appears to have subsided through familiarity with the fluoroscope and repeated opportunities for seeing objects through opaque media, including the skeleton of one's own person.

A new feature, however, was the radiophone, which

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though the instrument was shown in Electricity Building, might more properly be classed as a part of the educational exhibit because it concerns the most improved means for speech transmission. This very new and remarkable device which was exhibited jointly by the American Telephone and Telegraph Company and the General Electric Company, consists of a combination arc light, reflectors, and what is known as a Selenium cell. By the use of it speech is transmitted to distant points without the use of wires or other such material intervening medium, conveyance of sound taking place over a beam of light furnished by the arc lamp and projected as a slender ray by the parabolic reflector. By the use of this device Ernest Ruhmer, a noted German physicist, has succeeded in transmitting speech a distance of fifteen miles.

The radiophone, as exhibited, had great interest for the curious, and though its possibilities for practical purposes are undoubtedly great, at the Fair no attempt was made to use it other than to convey bugle calls five hundred feet, the sounds being produced in a closed transmitter booth.

More astonishing and commercially useful was the De Forrest Wireless Telegraphy Exhibit, for which a tower three hundred feet high was erected, from which messages were delivered by sound-waves with the precision and much greater despatch than by wires.

A history of wireless telegraphy to be truthfully written



"TAKING THE HURDLE."—GROUP BY ZOLNAY—EDUCATION BUILDING.

will serve to illustrate anew the old saying, "There is nothing new under the sun." For though credit for the invention is generally given to Marconi, it is a fact quite well established that Professor Morse on Dec. 16, 1842, did actually send a wireless telegram across a stream eighty feet wide, and in Nov., 1844, Mr. Gale, acting under Professor Morse's instructions, made wireless signals across the Susquehanna River, at Havre de Grace, a distance of nearly one mile.

But if we care to go back to Bible writ and prophecy it may be recalled that Job exclaims: "Canst thou send lightnings, that they may go and say unto thee, 'Here we are?'" But to be somewhat more definite it may be stated that in Galileo's "Dialogue," published in 1632, occurs a passage in which the great astronomer utters a prediction as to man's ultimate mastery over nature that appears to be, beyond question, a fore-vision of wireless telegraphy. But prophecy, even if it were direct, lacks much of accomplishment, while Professor Morse's method was abandoned as of no value.

Passing into what may be called fields of practical development, to Michael Faraday may be credited deduction of the generalization that ether is the medium by which not only light and heat are propagated, but electric forces as well. Fourteen years later (1869), James C. Maxwell evolved a theory of etheric phenomenon, showing that luminous waves are of electric origin and are besides

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electro-magnetic in character. Though the basic principles of wireless telegraphy were thus defined and understood, no further progress was made until 1888, when Heinrich Hertz by a series of experiments demonstrated that electro-magnetic waves are propagated through space with definite velocity which admitted of direct measurement. This discovery led immediately to the use of such waves in experiments thereafter made looking towards message transmission, but though the fundamental principles of wireless telegraphy were now quite well defined, little that was practical was accomplished until 1896, when William Marconi succeeded—by using the radio-conductor devised by Edward Branly in 1890, and Alexander Popoff's invention for registering incoming waves in 1895—in so improving upon earlier discoveries as to be able to send and receive a message transmitted by etheric waves over a distance of more than ten miles. This first practicable system was considerably improved by Oliver J. Lodge in 1897, who succeeded in tuning the oscillator of the transmitter with the resonator of the receiver.

Like all great inventions wireless telegraphy is the result of a long series of experiments made by many investigators to each of whom more or less credit is due, nor has the limit of possibilities latent in etheric waves been nearly reached. For example:

Nikola Tesla's experiments contribute an imposing suggestion of the possibilities that lie before us. The prob-

lem that Mr. Tesla is trying to solve is much broader than that of wireless telegraphy alone. He aims at the transmission of electrical energy without wires "not only for telegraphic but also for industrial purposes." Mr. Sewall illustrates Tesla's idea of the transmission of enormous energy over vast distances, and high above the level of the sea, in this way:

"If one captive balloon were put at several miles' elevation over Niagara Falls and another balloon at the same height in France, energy from a dynamo at the former station might, without undue loss in transmission, be made to set in motion upon French territory electric motors, or supply the power to illumine electric lamps."

Few things are better calculated to impress the imagination in relation to this subject than the "terrific commotions" which Tesla's electric oscillators are capable of setting up in ether.

Wireless telegraphy was one of the scientific wonders at the St. Louis Exposition, but there were others that fairly divided interest with that achievement and which possess potentialities almost confounding the comprehension of even those of scientific training. As means of subsistence may reasonably claim the highest efforts of man, since it forms the basis of material life, there was exhibited at the Exposition a remarkable device by the use of which nitric acid is extracted from the air and applied to fertilization of the soil. In one respect, at least, this experiment is not unlike the

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dreams of the old-time alchemists who had visions of vast stores of gold transmuted from the baser metals, whereby untold wealth might be theirs. Modern-day alchymists, as their demonstrations at the Exposition proved, entertained an ambition to so enrich the earth that it would produce with a bounty so great as to render unnecessary all labor of cultivation.

The theory upon which this hope is based lies in the fact that with sufficient nitric acid mixed with the soil its productivity may be increased a thousand fold. Four fifths of the atmosphere consists of nitrogen, and to produce nitric acid only oxygen, nitrogen, and water are needed, two of which constituents are available in the air. But nitrogen, while more abundant than any other element, is the most inert of gases, and combines directly with only a few elements, such as boron and titanium, both of which are too expensive for use as fertilizers, besides they are hurtful to plant life. But a clew to means of extracting nitrogen from the air was furnished by nature herself.

Chemists who made a study of water, and who had supposed that the purest water was that of the rain-storm, were surprised when they put it to the test to find that traces of nitric acid were always present in the first rain precipitated during a heavy thunderstorm. Whence came this nitric acid, and what were the conditions incident upon its formation, was the question they set out to answer. Was the electrical discharge in the upper air the cause of the com-

bination of this inert nitrogen or must some other explanation be sought? The molecule of nitrogen had been broken into its constituent atoms and this was left free, scientists thought, to combine with the oxygen which had been changed into the more active ozone by the same flash that severed the nitrogen bonds. This was the theory of the formation of the trace of nitric acid in the rain-water, and if a trace could be formed in this manner, why could not a large quantity be obtained in the same manner, under laboratory conditions? The only way to solve the question was to produce the same conditions under circumstances where the experiment could be controlled. A thunderstorm on a small scale must be operated in the laboratory and the products analyzed.

As the nearest possible approach to natural thunder, the induction coil and spark electrical machines were tried. Starting with a small coil and a very feeble spark, the dimensions of the machine were gradually increased and the resulting gases analyzed after the air had been subjected to the action of the spark. Small traces of nitric acid were found, and the answer to the question of the occurrence of acid in the rain-water was considered solved so far as the possibility for extracting nitric acid from the air was concerned, but the experiment was very far from being a commercial success. Thereupon scientists set about devising a machine that would accomplish the end desired at a minimum of cost, to which end an apparatus was used at the Exposition which consisted of a row of large gridiron plates, enclosed within

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a glass case, or tube, one end of which was open and immersed under water contained in a tight glass box. When the electric current was turned on electric flames, greenish-blue in color, leaped across from one plate to the other, while in the glass box a brownish gas was formed that was absorbed by the water. This gas is oxide of nitrogen and the water solution is nitric acid, the product sought by the experiment.

The tests that were made at the Fair were very interesting, but they merely foreshadowed possibilities. But what would be the result should a cheap means for extracting nitric acid from the atmosphere in quantities desired be perfected? If the percentage of nitrogen in the air becomes diminished, oxygen would probably increase, and with the disturbance that might follow life would be shortened at least, if not quickly destroyed, for the lungs and heart would be called upon to do probably double the work they are now required to perform.

As an educational exhibit one of the most interesting, though it was not generally appreciated by the masses, was the Vatican display of precious literary and historical relics in Anthropology Building. The Vatican, drawing upon its vast store of historical treasures, selected from among its valuable manuscripts, mosaics, prints, casts, and maps, practicable for transportation and sent them to the Exposition in charge of Cardinal Satolli, accompanied by other papal dignitaries. Upon their arrival the exhibits were ar-



PHILADELPHIA COMMERCIAL MUSEUM EXHIBIT, EDUCATION BUILDING.

ranged by Monsignor Francesco Cagiati, prefect of the pontifical library, who had the custodianship of them until the close of the Fair.

One of the most remarkable things shown was a facsimile of the Vatican Bible, classed in the library as the Codex Vaticanus, 1209, the oldest manuscript in existence containing the Scriptures, dating back to A. D. 350.

It is written on vellum or prepared skin and is remarkable for the freshness of its appearance and the thinness of the material on which it is written. The characters are Greek, and are all uncial, or capitals. There are three columns to each page and the written matter is without any division of chapters, verses, or words. It has, however, the Greek accents and breathings, added, it is supposed, by a later hand. The peculiarities of the letters seem to show that it was written by one and the same copyist, though Tischendorf contends that it is the work of three different scribes, one of whom he identifies with the copyist who wrote part of the Codex Sinaiticus, discovered by himself in May, 1844, in St. Catherine's monastery on Mount Sinai, whence its name "Sinaiticus." It is impossible to pronounce upon this matter with certainty, but there is at least some evidence to show that the Codex Vaticanus and the Codex Sinaiticus, the two oldest copies of the Scriptures in existence, once stood side by side in the same library, though now separated, the one in Rome, the other in the Imperial library of St. Petersburg.

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Next in interest to the Vatican Bible were exhibits of facsimiles of reports and narratives which concern pre-Columbian discoveries, settlements, and church founding in America. It has long been contended that a settlement of America followed the discoveries of Lief Eriksen, who, tradition has said, landed on the coast of Massachusetts near the close of the tenth century. The story is also told that a church was established which flourished for nearly four centuries, and sent reports at infrequent intervals to the mother church at Rome until the settlement was visited by a plague that destroyed all the whites. Another tradition reports that all the settlers were massacred by the Indians, and that only the old tower at Newport remains as a proof of European discovery and occupancy long prior to the time of Columbus.

The truth of old claims respecting American discovery by Norsemen is apparently substantiated by the exhibit made of actual narratives of Catholic fathers in the thirteenth century. These very precious documents were unearthed from the mass of long accumulated manuscript in the Vatican library and photographed for exhibition at the Fair, where they were examined with great curiosity by the masses, and with keenest interest by learned persons, who will be glad to learn that the facsimiles were presented to the St. Louis University. Unfortunately the documents are generally incomplete, pages being missing, though those found were all in an excellent state of preservation. A translation of the parts recovered is being made, I am told, and

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when published much new light will no doubt be shed upon the antecedents of the Columbian voyages, as well as proofs adduced respecting traditions recounted in the Sagas which have long been the subject of much dispute among writers of history.

DIVISION CXXIII.

Education of the Deaf, Dumb, Blind, and Feeble-Minded.

In the remote past, and even as late as the middle ages, defectives were often treated as agents of Providence; and especially were the dumb and idiotic regarded with superstitious respect if not awe, as personages bearing the birth-mark of god or fiend. We need not go so far as the Bible for proof of this statement, for modern history, witchcraft, and even latter-day experiences among ignorant people present illustrations of the survival of this ancient belief. But if defectives were at one time treated with semi-reverence, it has quite as frequently happened that their unhappy deprivation brought upon them objurgation and cruel usage, in the belief which long obtained that being incurable they could never be less than a charge upon the care of parent, community, or State. The falseness of this opinion was demonstrated in the educational exhibit at the Exposition by working schools of defectives which represented the systems of instructions imparted at several State institutions. The public was, of course, aware that nearly every State supports one or more schools for the deaf, dumb, blind, and feeble-minded,

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but it is the few who have by visiting such institutions made themselves acquainted with the infinite good that is accomplished. The exhibitions, therefore, made at the Louisiana Purchase Exposition, were revelations of real wonders to visiting thousands. This interest was very largely increased, it must be admitted, by the visit of Miss Helen Keller, who was a guest of the Fair for more than a week, who though bereft of speech, sight, and hearing, has, through the infinite patience and amazing capacity of her instructress, Miss Annie Sullivan, become astonishingly proficient as a scholar and in many respects may be considered the most remarkable woman in the world. Her presence, entertainment, and addresses by gestural language, interpreted by her teacher, and also by articulation, created a very deep interest among those who had the opportunity of seeing her and this curiosity, perhaps it may be called, very naturally directed public attention to the school exhibits in Education and Social Economy Building.

It is reassuring, comforting, and encouraging, not more so as to the possibilities of the human mind than creditable to the sympathetic disposition of the masses, that schools have been established everywhere in Christendom devoted to the training and preparing for useful citizenship those unfortunates who in earlier years were shut out of society because of their affliction.

Though tentative efforts were made nearly two centuries ago in Europe, especially in France, to teach the deaf and

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dumb to communicate by means of gestures, results appeared to be so meager that no systematic attempt was made in America to educate defectives until Thomas Gallaudet organized a school in Boston, 1817, to teach the dumb, which was followed fifteen years later by the opening of a school for the blind in New York, 1831, and one for the feeble-minded in Philadelphia, 1845. At first all these schools, being experimental, were private institutions which, while they did not flourish, produced results that led presently to the establishment of others supported by the State. The movement once fairly begun spread rapidly to Connecticut, Massachusetts, New Hampshire, Vermont, Ohio, Kentucky, Virginia, and Illinois, in the order named, and thence to other States, until now institutions for defectives are supported by every State and Territory as a part of the public free school system.

A truly remarkable thing occurred in 1857, when the Columbian Institute was incorporated in Washington by act of Congress, which though originally intended primarily for the exclusive benefit of deaf children of government beneficiaries, very soon largely extended its scope and secured permission to confer collegiate degrees upon its graduates.

There has been amazing progress made in the last quarter of a century in the system of teaching the deaf, dumb, and blind, quite as much if not more than characterized the improved methods in our common schools. The deaf and dumb, being deprived of two senses, acquire an education



CLASS IN TAILORING, MISSOURI SCHOOL FOR THE DEAF.
CLASS IN LIP READING, NEBRASKA SCHOOL FOR THE DEAF.

less readily than one who is blind, and the process of instruction is accordingly very different. For illustration: Gestural language is necessarily ideographic, and being objective the form of sign phraseology is somewhat as follows: A deaf-mute seeing a person fall and spill a bucket of water, would describe the incident by sign language about in this manner: "Saw—I—man—fall—bucket—water—drop." While such a description appears awkward and even indefinite to those who have the use of all their faculties, it is because our instruction has been different, and not really because the form is vague. In acquiring a foreign language, notably the German, it is necessary to think in German, and to transpose verbs to the end of a sentence, thus: "I have to my brother's been." The difference is that instead of a set form of expression, the sign language is always susceptible of two or more interpretations, though the meaning would be the same in each case. This manual language is a vernacular and is easily taught, but because of its lack of definite form of expression many teachers have adopted as preferable what is known as the intuitive, direct, or English language method, which Gordon explains as follows: "The simple sign for *cat* illustrates the graphic nature of the language. In order to teach this sign, the sign teacher would show the child a cat. The next step would be to direct attention to the cat's whiskers, drawing the thumb and finger of the hand lightly over them. A similar motion of the hand above the teacher's upper lip at once becomes the sign

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for cat. The instructed deaf child will be expected to recall the object, cat, on seeing this conventional sign."

The difficulty of imparting instruction by this so-called oral method is very great, especially in the early or primary stages, and further objection is urged that there is less uniformity in the means employed, and that for lecture purposes it is wholly inadequate. But though these objections appear at first glance conclusive, the oral system is advocated as being free from a mixture of natural signs, pantomime, finger-spelling, and conventional gestures, that distinguish the old method, and substitutes a sign language that admits of no uncertainty of interpretation.

For a time, or from about 1865 to 1890, the oral method practically succeeded the gestural system, not only in America, but also in Europe, in which latter year Dr. Alexander Graham Bell introduced a new method, invented by his father, known as visible speech, by which written characters were substituted that showed the position and movement of all the organs of articulation, which was improved by a simpler system devised by Mr. Zera Whipple, of Connecticut, and again by the Lyon Phonetic Manual, which enables one to write in air, so to speak, with the fingers. Finally, however, an eclectic method was evolved, which combines the best of all the several systems and this is now generally in vogue. It is interesting to note that the invention of the telephone resulted from experiments made by Dr. Bell to enable the deaf to read the vibrations of the human voice.

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It is only within the last score of years that the practical training of deaf-mutes has been undertaken very seriously by States, but so general has interest become that such instruction has now been incorporated in the free school system, though necessarily confined to special institutions. The disadvantages of defectives is so great that the policy of industrial training now obtains everywhere, by which not only are deaf-mutes educated to read, write, and communicate, but manual training schools equip them to enter the fields of labor in all trades.

The history of instruction for the blind runs parallel with that of the deaf and dumb, both as to time and character of aid that has been given. In 1829 a movement was begun in Boston to undertake systematic schooling of the blind, by the incorporation of the New England Blind Asylum, but it was not until 1832 that the institution was opened and then with only six pupils. Meantime, and nearly one year earlier, 1831, a school for the blind was established in New York city, followed two years later by a similar institution in Philadelphia, these three being the pioneer schools for the blind in America, and all alike had their origin in private effort and were supported by private funds. Results were such that in due time State legislatures were prevailed upon to make appropriations and to establish institutions, but for a long while these schools continued to include the deaf, mute, and blind, no discrimination being made or thought entertained of separating these unfortunates into classes; nor

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was it until a comparatively recent time that recognition was given to the need of educating the blind upon lines wholly independent of those pursued in instructing deaf-mutes. The wise policy was ultimately adopted whereby separate institutions were founded, since which time amazing progress has been made, as was particularly demonstrated by exhibitions given in showings, model schools, and class exercises at the St. Louis Exposition.

Not only are such schools supported by all the States but the kindergarten has been made a useful adjunct of child teaching and is accordingly a part now of the public school system for educating all defectives. Nearly every day during continuance of the Exposition practice lessons were given to the deaf, dumb, and blind, by pupils sent from several State institutions to demonstrate the extent of progress made towards qualifying these unfortunates for useful citizenship, and the dexterity, skill, adaptability, and intense susceptibilities of the pupils were astonishing to a degree. The facility with which the deaf and dumb held conversation was no more surprising than the deftness and precision with which blind boys and girls played on musical instruments, followed the trades, read, wrote, found their way without guidance, and *actually distinguished colors*. By the use of embossed type pages the blind are able to explore all fields of learning, and as the loss of one or more senses invariably results in quickening those that remain, it has been found that the deaf, dumb, and blind are much more acquisitive,



MODEL SCHOOL FOR THE BLIND, ILLINOIS EXHIBIT.
KANSAS MODEL SCHOOL FOR THE BLIND EXHIBIT.

EDUCATION OF DEFECTIVES

that their minds are more alert, that they not only learn more readily, but assimilate knowledge more thoroughly and retain it better, as a rule, than persons favored with all the natural faculties. It is not generally known that in 1873 Congress subsidized a printing-house, with an annual appropriation of \$10,000, for the printing of books for the blind, but even more surprising is the fact that the Perkin's Printing-house of Boston, founded in 1834, for publishing literature for the blind, is the largest institution of the kind in the world. From this press there is regularly issued not only books, but also magazines, music-scores, and papers. Besides these advantages the physical training of defectives is looked after by teachers of the science of muscle development, for which gymnasia are provided in all the State institutions.

The possibilities which lie within reach of instructors of the blind and deaf were most interestingly illustrated and demonstrated by exhibits at the Exposition, but more impressive than even these was the example of Miss Helen Keller, in whose honor the eighteenth of October was appointed at the Fair, where she made an address in the Hall of Congresses to an audience that packed the auditorium to its utmost capacity. Her words, though she could not hear them, were spoken in a voice that was perfectly modulated in accord with the sentiments expressed. The words as she uttered them were repeated by Miss Sullivan to President Francis, who in turn delivered them to the audience. In my

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estimation it was the best address that was heard during the entire Exposition period, as follows:

I have been asked to come here to-day and lend my voice to what is being done in the world for the uplifting of those who struggle in unequal and untoward circumstances.

All these great halls of machinery and power and art are the achievement of the strength of man when his arm is free and his spirit unbound. In the midst of so much mighty achievement it is gratifying to know that man has not forgotten his weaker brother. Many people have been invited here because of learning, attainments, skill, and invention, their contribution to the power, wealth, and beauty of the world. I come not for aught that I have done, but for what has been done for me to raise me to the level of those who see and hear. I testify to what the good and the strong have done for deprivation and infirmity.

I bring my evidence that able men and women are doing their best to unstop the ears of the deaf, open the eyes of the blind, put speech upon dumb lips, and bring the light of intelligence to darkened minds. I enter with you into communion of living speech, and for the joy of speech I express my heartfelt gratitude that the impediment of dumbness has been removed from my tongue. Such is my brief but earnest message to those who have asked me to come and to those who sit before me.

Now, may I say what seems to me the message of this Exposition to all people, the sightless and the seeing, the deaf and the hearing. Within the inclosure stand model factories, model mines, and model works of art. Yonder is the locomotive that annihilates distance, there the processes of irrigation that annihilates the desert, and in the halls of education we see how man has reclaimed his fellowmen and annihilated darkness.

The Louisiana Purchase Exposition is a great manifestation of all the forces of enlightenment and all of man's

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thousand torches burn together. The value of everything here and of all is educational. The Exposition is what its distinguished founder intended it to be—a world's university. Here we see the machine and the product side by side with the intellect and the principles that begot them—body and soul together, the root, the process, and the fruit.

The Fair, in its vastness, is an epitome of what the world is. It stretches the capacity of the soul to comprehend it, and extends the intelligence in an attempt to grasp it. Here all nations of the earth are brought together so that each profits by the experience of all. We think that no country since Eden has been as good to live in as ours. But no nation is so great as the sum of the achievements of all. All that is gathered here symbolizes the will of the American people that a way shall be paved to the education of all, no matter how humble or limited their capacity.

Here the spirit of civilization stands forth, illumining and enlightening those who walk in darkness and silence. The service of man to man shines all the brighter through these circumscribed individuals.

All that these great halls contain tell us the world is on our side. The forces here displayed hold up my hands and support my weakness. Science, nature, and art say to me, "Thou art deaf and blind, but enter thou, too, into the kingdom of God." God bless the nation that provides education for all her children!

As normal and healthy as any other baby, Helen Keller was born June 27, 1880, in Tuscumbia, Ala. An illness at the age of nineteen months deprived her of sight and hearing and consequently of the ability to learn speech in the usual manner. For six years no systematic effort was made to develop the child's mind. Mentally and physically she groped in utter darkness.

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In 1887 Miss Annie Sullivan became Helen Keller's instructor. Laboriously, with the sign language, she taught the girl through the sense of touch that placing her fingers in certain positions meant d-o-l-l. This process with other simple objects was continued for many months and after that she was taught to read by means of raised letters. Now, at the age of twenty-four, without having heard a human voice or having seen a ray of light, she understands Latin, French, and German, is versed in higher mathematics and many sciences and in every way is more thoroughly educated than the average college girl.

In 1890 Helen Keller began to learn to talk. After twelve months of effort only her teacher could understand her words. To-day her speech is as clear as that of the average individual. Her only method of learning to pronounce words was to place her fingers on her teacher's lips. Close your eyes, muffle your ears, and try the experiment yourself and you will see what a remarkable achievement has been Helen Keller's.

We marvel at what has been done within less than a century for the amelioration of the deaf, dumb, and blind, which in many respects is almost beyond our comprehension, for it has the appearance of creating new faculties rather than a process of mere teaching, but instruction of feeble-minded children has been productive of equally astonishing results, as was demonstrated by exhibits made at the St. Louis Fair.

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It is not so very long ago that idiotic persons were as effectually cast out from human society as were the lepers that cried "Unclean!" beyond the walls of Jerusalem. Before this time they were believed to be devil-posessed, so that their lot has ever been a hard one, physical as well as mental. But in recent times ability to compensate very largely the loss of certain faculties has come to the rescue of the feeble-minded, and by patience, directed by sagacious will and a study of mental discipline, these former aliens to society have been admitted to citizenship and fellowship.

The movement which lead to the manumission of the feeble-minded, or idiotic, had its beginning in 1846, when a few kind-hearted physicians of New York and Massachusetts agitated in the public prints and by personal influence for the liberation of these unfortunates from the cruelties to which they were subjected by brutal keepers in almshouses and insane asylums. In Massachusetts especially the agitation produced almost immediate results, for the legislature of that State appointed a commission to report upon the number, condition, and best means of relieving idiots in the State. The committee thus provided for, of which Dr. Samuel G. Howe was chairman, made an exhaustive report on the subject in 1848 and recommended the opening of an experimental school at the expense of the State. This recommendation was promptly adopted and in 1851 the Massachusetts School for Idiots was founded in South Boston, and in the same year New York appropriated

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money for a like purpose and established a permanent school in 1853.

The movement having once been fairly begun and the empirical stage passed, other States followed, one after another, in the following order: Pennsylvania, Ohio, Connecticut, Kentucky, and Illinois, so that by 1874 seven States were supporting public schools for the feeble-minded, and I believe all the States of the Union now maintain such institutions.

Both physiology and pathology teach that feeble-mindedness is the result of either cerebral abnormality, existing from birth, or of disease affecting the central nervous system, and hence incurable. Being a permanent condition the feeble-minded are not properly patients, but are subjects either for the asylum or the training school. A large majority of these unfortunates are improvable and as they are happiest when employed the object of training schools is to teach them some useful occupation within their limitations.

The feeble-minded, who may be separated into three classes, viz.: absolute idiocy; simple idiocy, and imbecility, are all subject to more or less improvement, but the congenital least. Some see but do not perceive, others hear but do not understand, still others are almost insensible to feeling, and the minor senses of tasting and smelling are absent in not a few cases. In all respects the feeble-minded, before training, are absolutely helpless to care for themselves, and



EXHIBIT BY MISSOURI SCHOOL FOR THE BLIND.
EXHIBIT BY ILLINOIS SCHOOL FOR THE BLIND.

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being without initiative, require leading, even at play. For this reason training must begin with the infant.

The simple occupations of the kindergarten fit these children of eight to twelve years of age as they do bright children of four and five. The teacher devises all manner of busy work for them, generally using coarse materials: the stringing of spools, beads, buttons; spool-knitting; plain knitting; braiding with broad leather strips, with shoe-strings, with straw; and block building from the simple cube to the forms that are more complex.

No instruction is in more general use and is more helpful to the children than that of the kindergarten. After this all their education continues on a very elementary plane beyond which it is impossible for them to go. Many learn reading, writing, and arithmetic. The brightest read simple stories with pleasure, and go as far in arithmetic as multiplication. Division is beyond them. Calculation in the abstract they cannot master. The greater part of their education is, therefore, of a purely practical kind. They are taught a good deal of fancy work, like knitting, crocheting, embroidery, and lace-making; but chiefly domestic work, sewing, washing and ironing, baking, farming, house-painting, shoe-making, brush-making, etc.

Unimprovable idiots are termed "custodial cases," and these are kept apart by themselves, since they must be treated as infants or constrained in some cases, the care of whom is generally given over to trained feeble-minded girls who feel

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flattered by the privilege to care for those more helpless than themselves.

But that even "custodial cases" may be made useful is proved by an offer made by Superintendent Doren, of the Columbus, Ohio, institution, that if the State would give him free use of one thousand acres of good farm land he would care for all such cases free of expense to the State.

A distinctive result of work for the feeble-minded has been the gathering of statistics of causes. It has been known that a very large percentage of cases, variously estimated from fifty to seventy per cent, are of congenital origin; that of all classes of defectives the feeble-minded most surely tend to transmit their defect; hence, that the feeble-minded must be sequestered for life.

Edward Ellis Allen, in his address at the Fair, made the statement that "A very radical experiment is being tried, particularly at the Kansas institution. The operation of castration has been performed on several boys, after which they have been found to be so improved that some were transferred from the custodial to the school department, some sent home."

It has been shown that there is a strange but strong correlation between the forms of degeneracy, *i. e.*, the criminal, the inebriate, the prostitute, and the feeble-minded. Of late years the energies of charitable and sociologic organizations "have turned towards combating the causes of degeneracy, thereby protecting posterity." The United States census for

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1890 gives in round numbers 95,000 feeble-minded and this number is undoubtedly short of the actual number. Still but one-twelfth or about 8,000 of those returned in the census are cared for in special institutions. Here is a terrible problem ahead for the sociologists to work out. Those who have most thoroughly studied the feeble-minded are convinced that, as prevention is cheaper than cure, so the gathering of all this vast army into institutions and especially colonies where fifty per cent of them can be taught to be at least partly self-supporting, and where their multiplication can be cut off, is, by all odds, the most economical and the best policy for the States to pursue in the future.

DIVISION CXXIV.

A History of Education in America and Coeducation of the Sexes.

That women are advancing in all the branches of human pursuit; that they are gradually being freed from the trammels with which immemorial beliefs and archaic customs invested them, was impressively shown by the educational exhibits at the St. Louis Exposition. In the work of building, decorating, and otherwise preparing, the hand and brain of women were manifest. But especially prominent did they appear in the school, college, and university exhibits. Not always as ministering angels, though their work as nurses, teachers, and mothers was strongly in evidence, but often as physicians, lawyers, orators, scientists, merchants, the peers in professions and occupations of men.

At no previous Exposition was her representation so great; at no other time in history did her manumission appear so complete, and never before was there recognition of her abilities as the coordinate of man's. How largely this remarkable change is due to coeducation has not been generally realized, but will be understood by the most skeptical when consideration is given to the history of the movement

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that has led to the admission of women to nearly all the various educational institutions in America.

For the facts herein set forth I am indebted to the Commissioner of Education, and to Anna Tolman Smith, especially, who has made a careful study of the subject.

Coeducation, or the instruction of both sexes in the same schools and classes, is a characteristic feature of public education in the United States. As such it impresses all foreign students of our institutions, and it is largely from their comments that we ourselves have come to realize its importance as a factor in our social life. Mr. Bryce, who has discussed the policy in his *American Commonwealth*, notes among its effects that it tends to place "women and men on a level as regards attainments and to give them a greater number of common intellectual interests." Our national impulse in this matter was discerned by De Tocqueville, writing sixty years earlier, when as yet our school policies were not well defined. "The Americans," he says, "have done all they could to raise woman morally and intellectually to the level of man; and in this respect they appear to me to have excellently understood the true principle of democratic improvement." His acute mind penetrated thus to the underlying motive of the whole vast work of public education in this country. The impulse of democracy unrestrained by conventional or traditional modes of action has shaped its forms in the spirit of freedom and equality.

While the United States has no national system of educa-

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tion, in the sense of an official system under centralized authority, after the manner of the French system, it presents the nearest approach to that ideal of a national system expressed by Huxley under the figure of an educational ladder reaching from "the gutter to the university." No one is excluded from its provision by reason either of social condition or of sex. As in other countries, public and private institutions have flourished here side by side. But the United States affords the unique example, among the principal educating countries, of a great preponderance of free public agencies over private agencies up to the college and university grade. Even on this highest plane State institutions show an ever-increasing proportion of both students and resources. Statistics alone indicate the full extent of this public education. In the elementary grade it amounts almost to monopoly, above 15,000,000 children (15,375,276) being enrolled in public schools against a little more than 1,000,000 in private schools. Of pupils in secondary studies, public high schools enroll 566,124 against 168,636 in private schools. Public universities and colleges claim 39,487 students (33 per cent.) out of a total registration of 119,496 students. Even professional education, which meets the demands of special classes, has its quota of publicly supported schools, which registered in 1902 nearly one-sixth of the students (10,726 in a total of 61,499) preparing for the liberal professions.

As to the prevalence of coeducation throughout this pub-



NEW YORK STATE EDUCATIONAL EXHIBIT.
NEW YORK CITY EDUCATIONAL EXHIBIT.

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lic system, the statistics are convincing. Of elementary pupils at least 96 per cent are in mixed schools, and of secondary pupils 95 per cent. Altogether, on a total enrollment of 15,990,803 pupils in public schools (elementary, secondary, and normal), 15,387,734 are in schools attended by both sexes.

To realize how deeply this policy is involved with the spread of democratic principles, we have only to recall the past history of education. This relation is emphasized in our own country by the marked extension of the policy in the western States, the section in which, as Professor Ely has observed, "the whole education of the citizen has been conceived as a public function." Under this conception women have been freely admitted to all provision by which the State seeks to foster intelligence and high ideals. Hence to understand what coeducation implies as a matter of public policy we turn naturally to this section of the country rather than to the older eastern States.

What is here termed the "West" includes two great divisions of our country, the north central and the western, having to-day a combined population of 30,424,000, or 40 per cent of the total population. It is worthy of note also, since cities shape public opinion, that this number includes 38 per cent of the urban population of the country.

This vast section received its first intellectual impulses from the eastern States and is one with them in respect to the essential principles of an educational system. It has,

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however, made some distinctive contributions to the work, which have in turn reacted upon the East, enriching its ideals and liberalizing its methods. From a city of the West emanated a philosophic movement which, starting with a few earnest minds, has spread throughout the country, and by its effect upon teachers and educational leaders has helped to fortify secular education against the insidious influence of materialism. The West furnished the type of a university founded upon State and national endowments, and gave also to this country the first example of a university open alike to men and to women.

Two great events mark the early history of this region. The one was the initial measure in our whole policy of expansion; the other was the first formal expression of our national concern for popular education.

The Louisiana Purchase of 1803, which added to the national domain 1,171,931 square miles and secured to the United States absolute control of the Mississippi River and its tributaries, had been preceded by a national measure of scarcely less importance. This measure, a legacy from the Continental Congress, was the ordinance of 1787 for the government of the Northwest Territory—that is, the territory extending north of the Ohio River to the Great Lakes and westward to the Mississippi River. In the memorable passage “religion, morality, and knowledge being essential to good government and the happiness of mankind, schools and the means of education shall forever be encouraged,”

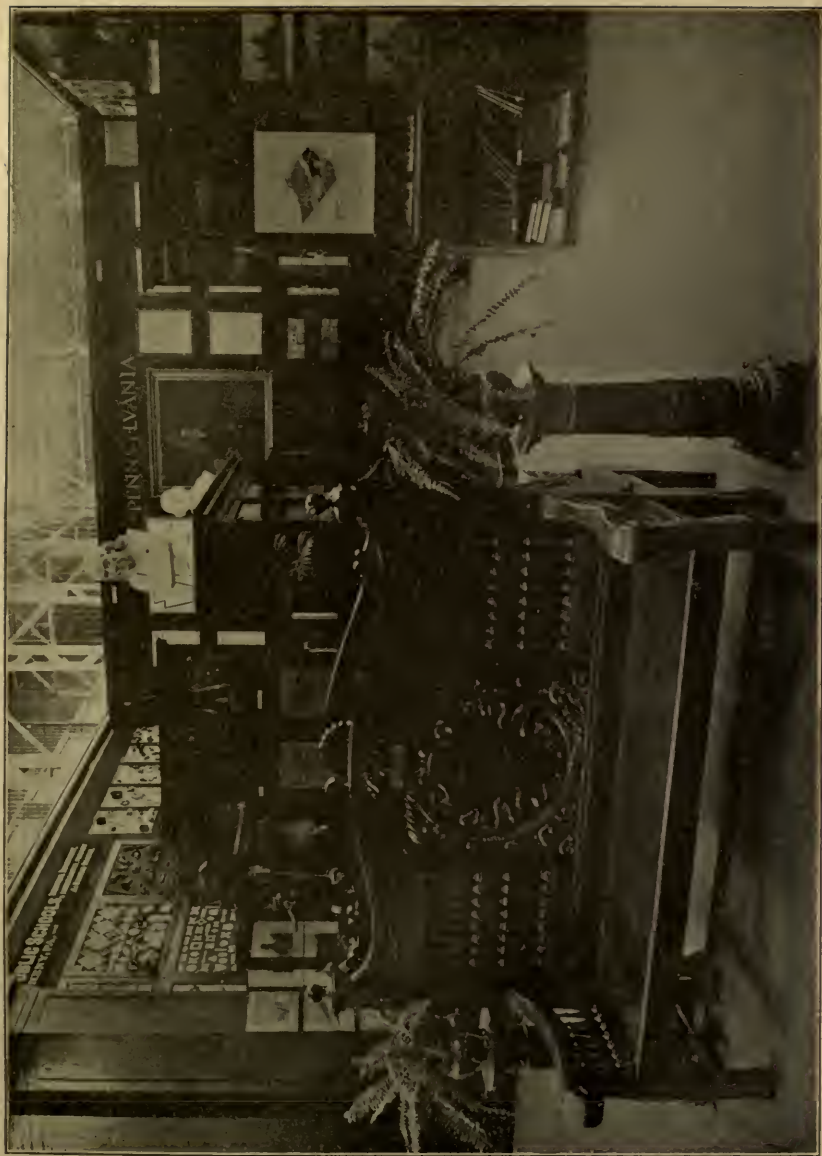
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the ordinance embodied an idea which had been reiterated again and again in the constitutions of the original States, but which received in this new form the force of national sanction. The constitution of Massachusetts (1780) had in particular declared: "Wisdom and knowledge, as well as virtue, diffused generally among the body of the people, being necessary for the preservation of their rights and liberties; and as these depend on spreading the opportunities and advantages of education in the various parts of the country, and among the different orders of the people, it shall be the duty of the legislatures and magistrates, in all future periods of this Commonwealth, to cherish the interests of literature and the sciences, and all seminaries of them." The document further specified as institutions to be cherished "the University at Cambridge, public schools, and grammar schools." The language of the ordinance of 1787 quoted above is less specific than that of the Massachusetts constitution, but its very vagueness proved significant. As events showed, it was not only held to sanction in perpetuity the clause of a previous ordinance of 1785 reserving "the lot No. 16 of every township for the maintenance of public schools within the said township," but also the reservation of lands for university endowment, a provision which it had been vainly sought to embody in the earlier ordinance.

At its first practical application the ordinance was taken in its largest scope. The Ohio Company, formed for the purpose of settling in the Territory, had been active in secur-

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ing the provisions of the ordinance with respect to education. Before the purchase of the lands was consummated, the agent of the company, Doctor Cutler, in his negotiations with Congress, insisted that the conditions of purchase should include not only the reservation of lot No. 16 for schools, but also the reservation of two townships near the center of the tract and "of good land, for the support of a literary institution." The conditions were approved, and the work of settlement went vigorously forward. Other purchases followed upon similar terms, and in 1803, the very year of the Louisiana Purchase, Ohio was admitted to statehood. A university had already been chartered by the Territorial legislature on the basis of the land grant, and one of the earliest acts of the general assembly of the State was the granting of a new charter to the institution under the name of the Ohio University. The two reserved townships of land were given as an endowment to the university by the act of incorporation, which contained also specific directions for the disposition of the lands. Thus upon the very eve of Jefferson's transaction with Napoleon, which gave immense expansion to our domain and our resources, a policy was stamped upon our national laws and wrought into the sentiments and activities of pioneer settlers which made for the highest ideals in individual character and citizenship. The Louisiana Purchase and all subsequent areas secured by annexation or treaty came under its beneficent influence. Every State formed in this boundless territory has been met



PENNSYLVANIA EDUCATIONAL EXHIBIT.

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by provision for common schools and provision for the higher education, which gives vigor to the common school.

For upward of twenty years the Ohio University was the only institution of collegiate rank west of the Alleghenies. Even in those pioneer days—days of hand-to-hand struggle with the wilderness, of exhausting efforts for the supply of the primitive wants—it had its roll of students, and in 1815 graduated two men, one of whom, Thomas Ewing, was destined to achieve national distinction.

For several years, outside the lands of the Ohio Company and the Cincinnati district, settlers in the Territory were few and isolated. In the census of 1810 the north central division, the only portion of the West included in that census, shows a population of 293,169, of which 78 per cent was credited to Ohio. In 1820 the population of this division had increased to 859,305 and the era of phenomenal growth had set in. In the next two decades (1820-1840) the population increased to 3,351,542, a gain of 290 per cent. Of the twelve States and Territories comprised in the division, four had acquired, prior to 1840, the full rights of statehood. The educational record for those years is meager and scattered, but one fact is noticeable—everywhere as population increased, colleges multiplied. In 1820 the Ohio University was the only representative of the higher learning in the whole region. In 1824 Miami University, in Ohio, and Indiana University were both chartered; the University of Michigan followed in 1837, all drawing their orig-

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inal endowment from the national land grant. Around them sprang up in the brief space of twenty years within the limits of the Northwest Territory no less than seventeen additional colleges, which are still in operation. Many of these early foundations were mere preparatory schools struggling bravely up to the college plane, but they never lost sight of the moral purposes of education. Over and over again the convictions that were expressed in the ordinance of 1787 meet us in their charters or acts of incorporation. This is noticeable alike in church and in state foundations. The act establishing Miami University declares it to be "for the promotion of good education, virtue, religion, and morality." The act to incorporate a university in Indiana, passed in 1806, was introduced by a preamble which declared that "the independence, happiness, and energy of every republic depends (under the influence of the destinies of Heaven) upon the wisdom, virtue, talents, and energy of its citizens and rulers," and further that "learning hath ever been found the ablest advocate of genuine liberty, the best supporter of rational religion, and the source of the only solid and imperishable glory which nations can acquire." The objects proposed by the founders of Western Reserve University were "to educate pious young men as pastors for our destitute churches, to preserve the present literary and religious character of the State and redeem it from future decline; to prepare competent men to fill the Cabinet, the bench, the bar, and the pulpit."

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Although the development of the region embraced in the Louisiana Purchase belongs to a later period than that of the Northwest Territory it has followed for the most part the same course. Missouri shows, indeed, modifying influences from the old French occupation, and Louisiana, both by reason of its earlier history and its geographic position, has had a distinctive history. These two States represent the only portions of the domain purchased in 1803 that were included by name in the census of 1810. At that time the population of Louisiana, which was admitted as a State two years later, was 76,556, and that of Missouri (admitted in 1821) was 20,845. Missouri shared in the advancing population of the Northwest Territory, as is shown by the fact that it increased from 140,455 inhabitants in 1830 to 682,044 in 1850, an increase of 385 per cent. It is interesting to note here that the act of Congress of 1812, organizing the Territory of Missouri, reiterated the language of the ordinance of 1787 with amplification as follows: "Religion, morality, and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall be encouraged and provided for from the public lands of the United States in said Territory in such manner as Congress may deem expedient." Subsequently Congress provided that two townships of land in the Territory should be devoted to a university and "one thirty-sixth of the entire public domain, together with saline and swamp lands, to township (nondistrict) schools." The first

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constitution of the State ratified these provisions, and thus the policy which had been initiated in Ohio was transferred beyond the Mississippi.

The precedent established in 1787 has been followed by Congressional appropriations of much greater value, notably those made under the land-grant act of 1862 and the supplementary acts of 1887 and 1890, and this national policy has been supplemented by extensive grants on the part of the State legislatures. It is this whole princely endowment which must be taken into account when the value of the initial act is in question.

It is a significant fact that coeducation is the policy in every college and university of the north central and western divisions of our country that has had the benefit of Congressional land grants. Their uniform action in this respect has made this a distinctive feature of our higher education.

The West is thus distinguished by the unity of higher and elementary education through their common origin in the public bounty. Private agencies shared in the work, but never gained ascendancy, as they did in the older States; hence, while the East led in the work of public education, the West perfected the type. The history of the process as it went on in the several States discloses their interrelations during the formative period of our national life. The constitution of Ohio, adopted in 1802, on its admission to statehood, reiterated the educational clause of the ordinance of 1787, with additional provisions looking to the support of

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schools by public funds and guarding against denominational intolerance and class distinctions. At first the application of the law was left to private or local initiative, as had been the case in the Massachusetts colonies; but this precarious policy was soon abandoned. In 1806 a school district law was passed; in 1821 a school tax law was carried. Scarcely were these measures secured when the impulse of that extraordinary campaign of education waged by Horace Mann in Massachusetts, spreading westward, swept New York and Ohio into the movement. In 1838, the year after Horace Mann was made secretary of the Massachusetts State board of education, the legislature of Ohio created a State school fund and provided for State supervision of public schools. The experience of the older State was utilized though never slavishly imitated by the younger. It is interesting to note that whereas in this early period the impulse toward progress in public education came from the East, in later years the movement became that of the interchange and intermingling of impulses.

The series of school laws passed in Ohio between 1806 and 1840 contained in embryo all the essentials of a State school system. The history which they embody was repeated at a later date in Indiana, whose people, less homogeneous than those of Ohio, seemed at first firmly wedded to sectarian schools. Later still it was repeated in Illinois, where the contest over the slavery clauses of the ordinance of 1787 long obscured every other provision, and in Michigan, which

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began its independent existence with a scheme for an organized system of public education. The movement gained momentum as it proceeded, for the farther West it is traced the more rapid seems its development from the initial stage of permissive laws and isolated efforts to that of complete organization and vigorous growth. Thus Colorado, the Centennial State, passed a comprehensive school law the year after its admission, and in six years was able to boast with good reason that in respect to its public school system it was equal to any State in the Union. Indeed, as we follow the development of systems of education beyond the Alleghenies and beyond the Mississippi we can not fail to be impressed with the rapid spread of ideas that were struggling for recognition in older civilizations. Old customs and ingrained prejudices lost their hold on people in this wilderness. They addressed themselves to the problems of their collective life with a vigor of initiative and a readiness of adjustment which are still characteristic of the West and which have marked its contributions to the general educational progress. But in the West, as in the East, the internal conduct of schools was determined by circumstance, and here and there in the early annals of the region instances are even found of separate district schools for the two sexes. Thus under the first ordinance (passed July, 1837) for the establishment of common schools in Cleveland, Ohio, three school districts were formed, and two schools, one for boys and the other for girls, opened in each. This provision fol-



UTAH EDUCATIONAL EXHIBIT.
RHODE ISLAND EDUCATIONAL EXHIBIT.

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lowed that of a so-called free school which had been previously opened in Cleveland, but which was free only to poor children.

Among many influences promoting the spread of coeducation in this country public high schools, because of their universal adoption and liberal support, have undoubtedly been the most powerful. Up to 1850 the schools of this class were few in number. According to Commissioner Harris, 11 were in operation at that date, considering only schools organized distinctively as high schools with from two to four year courses of study; 33 were added in the next ten years, and by 1870 the number had risen to 160. Later years have witnessed a phenomenal increase in the number of these schools, but their policies were settled in this initial period.

In respect to high schools, as to other organized forms of social activity, Ohio was the pioneer State of the West. Before other communities in this vast region were ready for high schools their maintenance as a necessary part of a public school system had passed beyond all question.

It is important to remember how far local conditions explain these initial distinctions, because prejudices engendered of custom still lend a coloring to the arguments pro and con whenever the question of coeducation is agitated. The policy was fostered in the West by the conditions of pioneer life and the easy spread of democratic ideas in new and adventurous communities. That there was the lingering

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spirit of patrician exclusiveness in the eastern preferences for separate high schools is indicated by the contrary attitude in respect to normal schools. The first institution of the latter class in this country—an outcome of the labors of Horace Mann, Henry Barnard, and their coworkers in the cause of popular education—was established at Lexington, Mass., in 1839. The school was, indeed, characterized by the vote of the board of education as “a normal school for the qualification of female teachers,” but the same vote carried also a second normal school for both sexes, which was opened the following year at Barre. Two years later a third normal school, also coeducational, was opened at Bridgewater, the first class numbering 21 women and 7 men. The movement spread rapidly, preserving in its course the original policy; but the institutions were identified in the public mind with the common or elementary schools, and it was some time before their true character as professional schools of a high order was recognized and their policies studied for their general interest.

This survey of influences that were shaping public sentiment with respect to the education of women would be incomplete without reference to the early efforts for promoting in their behalf what was distinctly recognized as higher in contrast with elementary education or special training. The persistent appeals of Mrs. Emma Willard through the press and before the legislature of New York, and the heroic efforts of Mary Lyon in Massachusetts, broke down

HISTORY OF EDUCATION AND COEDUCATION

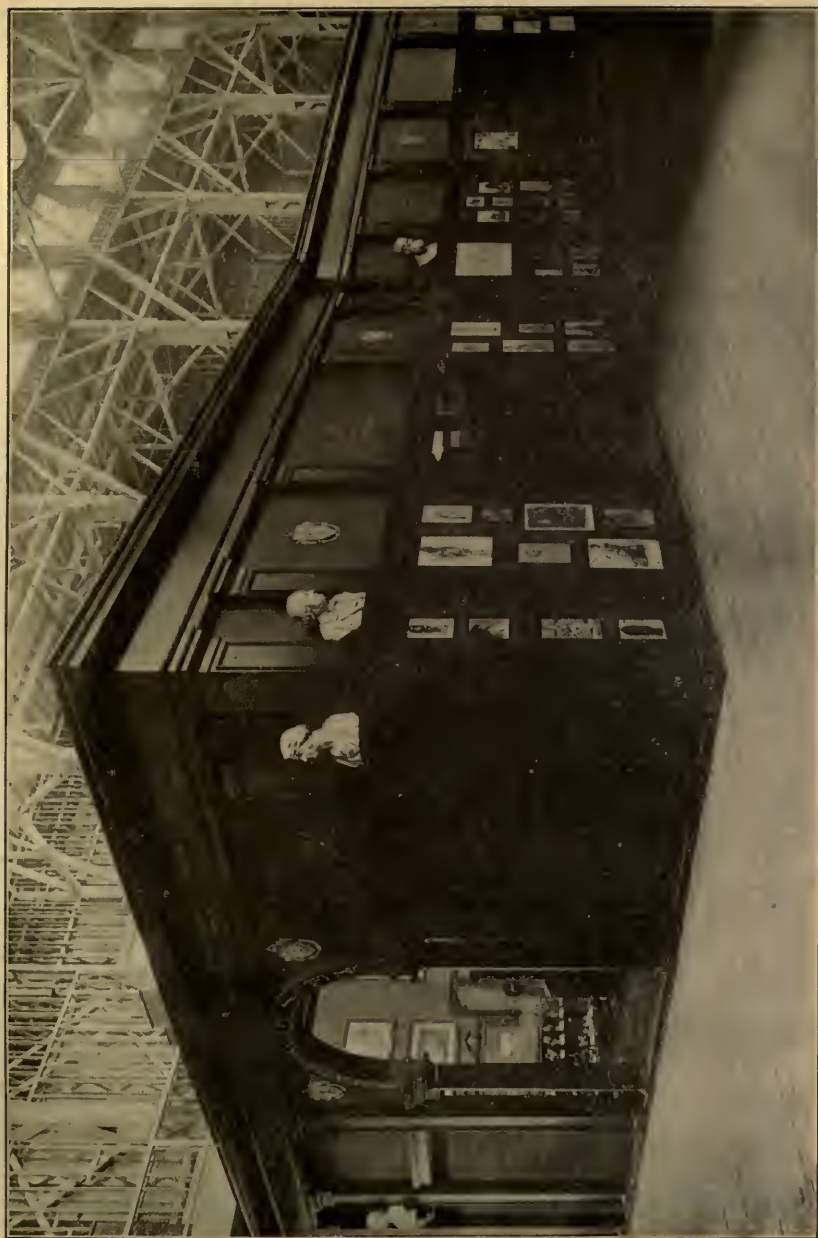
in centers of commanding influence the notion of woman's limitations, which, like all traditional beliefs, has shown wonderful tenacity. The sanction of a charter for Mount Holyoke Seminary, won by Mary Lyon from the Massachusetts legislature in 1836, and the corresponding triumph of Mrs. Willard, who the following year secured a charter for Troy Female Seminary from the New York legislature, were events of national importance. Both institutions stood for serious work and high standards as against the superficiality of fashionable schools. The public agitations from which they sprung had drawn wide attention to the enterprises, and the seminary movement, like the free school and the normal school movements, spread far beyond the centers in which it arose. A ripple of the movement is noticeable in Georgia in the establishment of Wesleyan Female College at Macon, which was chartered the same year as Mount Holyoke, with authority to confer degrees.

These institutions indirectly promoted coeducation, for as time passed it became evident that their work and aims were incompatible with those of higher education in the college or traditional sense of that expression. They could not command the necessary resources nor students of adequate preparation for forceful college work.

The first college in this country to admit women on the same basis and to the same classes as men was Oberlin College (originally Oberlin Collegiate Institute), founded in 1833 in an isolated district of Ohio. From the outset the

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new institution stood for so many unpopular ideas, social and theological, that the mere fact of the admission of both sexes excited little attention. Indeed, the original plan of the institution included a special department for women similar in scope to the seminary work, and it was not until 1837 that women were admitted as full collegiate students under the pressure of a normal expansion of the inner life of the institution. The innovation seems to have caused little comment even within the college itself until several years later, when a variety of influences had combined to make coeducation a subject of earnest discussion in many quarters. Oberlin then became a model and exemplar for all colleges that proposed the open door for women. Before this period arrived the Oberlin experiment was supplemented by the establishment of Antioch College at Yellow Springs, Ohio, which was coeducational from the start. The college was opened under the presidency of Horace Mann, although this distinguished educator entertained at the time serious doubts as to the wisdom of coeducation. His attitude in this respect was readily inferred from his inaugural address, and also from a by-law that he sanctioned prohibiting marriages between students during their connection with the college, but in spite of his dubious support of the policy it gained strength from his relation to the new institution. Not the least triumph of Antioch was the complete conversion of its own president to the full support of the new system.



MASSACHUSETTS' EXHIBIT IN EDUCATION BUILDING.

HISTORY OF EDUCATION AND COEDUCATION

The various efforts for the promotion of public education or the upbuilding of private institutions here reviewed were deeply involved with that profound movement of thought and feeling which had overturned political systems in Europe and infused new social ideals into the minds of all thinking men. The ordinance of 1787 was passed on the eve of the French Revolution, and Oberlin recalls by its charter date the initial steps in public education in the two foreign countries most closely related to the early history of our own. In that year (1833) was passed Guizot's law, the basis of the primary school system of France. In the same year the English Parliament made the first appropriation (£20,000) in aid of popular education. Both measures grew out of the spread of democratic principles as indicated by the increase of popular suffrage; but underlying these political changes was an industrial revolution, which extended also to our own country.

The period from 1830 to 1860, marked, as we have seen, by the growth of the public school system in the eastern and north central divisions of our country, witnessed also the transfer of many industries from the home to factories, thus depriving women of their wonted occupations and thereby diminishing their economic importance. As a consequence, a feeling of unrest rose in the minds of forceful women and gradually affected entire communities. Women of special talent found their way into journalism. Mrs. Ann S. Stephens, who in 1837 became an editorial writer and lit-

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erary critic for the New York Evening Express, was followed by a brilliant company of women—Mrs. Lydia Child, Margaret Fuller, Mrs. Jane G. Swisshelm, Grace Greenwood, Harriet Beecher Stowe, Gail Hamilton, to name a few belonging to the earlier years of this period—who aided powerfully in breaking down the traditional notion as to the mental limitations of their sex. Women took courage and began here and there to agitate for other fields of activity. In 1845 Elizabeth Blackwell formed the daring resolution of studying medicine. Around her name clusters a small but remarkable group of women, whose determined spirit opened up the profession to women, with all that it entailed in the way of schools and hospitals for their suitable preparation.

Of far greater moment than this stirring of individual aspiration was the rising demand for a new order of education—"practical education," to use the common misnomer—which affected the whole industrial world. The relation between the commercial advantages of a people and the special training, scientific and artistic, of its industrial classes was strikingly illustrated by the first international exposition (the Crystal Palace Exposition, London, 1851), which as an educational force has never been surpassed by any succeeding event of the kind. Our own country was not indifferent to the lesson, and in 1862, in the midst of the distractions of civil war, Congress set its seal to the slowly forming purposes of the new industrial era by a measure of wider appli-

HISTORY OF EDUCATION AND COEDUCATION

cation and possibly deeper import than the land reservations of 1787. This measure was the land-grant act of 1862, appropriating 10,000,000 acres of land for the endowment of colleges "to teach such branches of learning as are related to agriculture and the mechanic arts in such manner as the legislatures of the States may, respectively, prescribe in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The effect of this bounty upon the growing interest of woman's education was not the least surprising of its many unforeseen consequences. In the northwestern States the land grant was generally regarded as a provision upon which women had the same claim as men, and the policy of coeducation, which had already been adopted by the State universities of Iowa and Wisconsin, endowed by the land reservation of 1787, was adopted by the land-grant colleges throughout the West. The successive State universities of that section followed the same course, and thus the entire system of public education in the West presented from the lowest primary school to the highest university classes complete equality of provision for both sexes.

In 1861, when the land-grant act was already under consideration, an event occurred in the eastern section of our country which strengthened the tendencies toward separate education for men and women. In that year Mr. Matthew Vassar, of Poughkeepsie, N. Y., conveyed to trustees stocks,

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bonds, etc., of the total value of \$408,000, to found a college which, as stated in his own words, "shall accomplish for women what our colleges are accomplishing for men." The trustees to whom Mr. Vassar committed the enterprise carefully canvassed the whole subject, considering the possible adaptations of the usual college course to the needs of woman, and more particularly the means of making her college residence safe and healthful. It is amusing now to recall the fears expressed in many quarters as to the effect of this very cautious experiment in college education upon womanly character—fears which drew from Mr. Vassar an emphatic expression of his own ideals. "It is my hope," he said, "indeed, it has been the main incentive to all I have already done or may hereafter do or hope to do, to inaugurate a new era in the history and life of woman. I wish to give one sex all the advantages so long monopolized by the other. Ours is and is to be an institution for women, not men. In all its labors, positions, rewards, and hopes the idea is the development and exposition and the marshaling to the front and the preferment of women, of their powers on every side, demonstrative of their equality with men.

* * * This, I conceive, may be fully accomplished within the rational limits of true womanliness and without the slightest hazard to the attractiveness of her character. We are, indeed, already defeated before we commence if such development be in the least dangerous to the dearest attributes of her sex. We are not the less defeated if it be haz-

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ardous for her to avail herself of her highest educated powers when that point is gained. We are defeated if we start upon the assumption that she has no powers save those she may derive or imitate from the other sex. We are defeated if we recognize the idea that she may not, with every propriety, contribute to the world the benefits of matured faculties which education works. We are especially defeated if we fail to express by our acts our practical belief in her preeminent powers as an instructor of her own sex."

At the time, as President Raymond observed, not a single endowed college for young women existed in all Christendom. The example was contagious. Vassar did not assume full collegiate rank till 1868; two years after, Wellesley followed; the next year, 1871, Smith was founded; and thus the policy of separate education to which the older colleges of the East were committed was enormously strengthened.

In the general history of education 1870 stands forth as a memorable date; in that year was passed the education law by which the English Government was pledged to secure elementary education for every child in the realm; the same year was proclaimed the French Republic, whose existence is staked upon a system of state education; in that year also the Prussian Government, alarmed, it is stated, by the declaration of papal infallibility, issued new school regulations, emphasizing the paramount right of the state in respect to the control of popular education. In the United States, as we have seen, the tentative period of the public school

LOUISIANA PURCHASE EXPOSITION

systems was virtually completed before 1870. The essential principles of such a system—support by public taxation, public supervision, public provision for the training of teachers, free tuition for all youth from the primary school to the door of the college, compulsory school attendance—one and all had been adopted in every State. Recent events—the land-grant act of 1862 and the establishment of the Bureau of Education in 1868—had also shown on the part of the Federal Government a growing sense of responsibility in respect to this great interest. Two educational questions were then uppermost in our country—namely, that of new adjustments of college education and that of higher education for women. By the passage of the land-grant act the two questions had been brought into close relation, since it was very generally conceded that women should not be excluded from a share in the Government bounty.

While such was the general situation in 1870, two events occurred about that time which greatly modified the outlook in the East—Cornell University, enriched at once by the land grant and the liberal benefactions of Mr. Cornell, was formally opened at Ithaca, N. Y., in 1868. The institution stood for the departures in higher education which were being agitated throughout the civilized world. The forceful and deliberate manner in which the new problems were undertaken, the remarkable character of the two men—Mr. Ezra Cornell, the founder, and Mr. Andrew D. White, first president of the institution, who together had worked out the



PENNSYLVANIA SECTION, EDUCATION BUILDING.

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plan of its operations—excited universal interest. The college was at first opened to men students only, but at the inaugural ceremony, which was of an imposing character, both Mr. Cornell and Mr. White expressed the hope that the university might speedily offer every advantage necessary for the higher education of young women equally with young men. "Speaking entirely for myself," said Mr. White, "I would say that I am perfectly willing to undertake the experiment as soon as it shall be possible to do so." The mere expression of this hope brought the means for its realization. Upon the evening of the inaugural day Mr. Henry W. Sage went quietly to President White and said: "When you are ready to carry out the idea of educating young women as thoroughly as young men, I will provide the endowment to enable you to do so." Mr. Sage's purpose strengthened with the growth of the university, and shortly after, all other difficulties being then practically removed, he renewed his offer. A committee, of which President White was chairman, made an exhaustive study of all questions relating to coeducation, visited the leading institutions in which it had been tried, corresponded with eminent educators, and in a report, which reviews at length the whole problem, recommended the acceptance of the offer. That offer was of an endowment of \$250,000 upon the simple condition that "instruction shall be afforded to young women by the Cornell University as broad and thorough as that now afforded to young men." In April, 1872, the offer was

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formally accepted by the trustees, and women were admitted to all the privileges of the university.

The University of Michigan, whose commanding influence was already foreshadowed, had opened its doors to women two years previous, and its example had great weight at Cornell. Meanwhile, in conservative Massachusetts, measures had already been started which in 1869 resulted in the incorporation of Boston University with coeducation as one of several distinguishing features. The spirit of the institution in this respect was frankly set forth by the president, Dr. William F. Warren, in the first "Yearbook" of the new institution. "A fourth fundamental idea with the organization of Boston University," he says, "was, and is, that a university should exist not for one sex merely, but equally for the two. Class schools are very well in their place. Schools for the feeble-minded, reform schools, schools for deaf-mutes—no one should object to these. So, if any class of philanthropists feel called upon to organize special schools for girls or boys constitutionally too delicate to bear the nervous shock of school association with the other sex, let no one oppose. Such institutions may serve to illustrate the tender and gentle charities to which our Christian civilization gives origin, but a university exists for altogether different purposes. It is not instituted for the benefit of a class. It is the highest organ of human society for the conservation, furtherance, and communication of knowledge; for the induction of successive generations into its posses-

HISTORY OF EDUCATION AND COEDUCATION

sion; for the service of mankind in all highest social offices. To artificially restrict the benefits of such an institution to one-half of the community by a discrimination based solely upon a birth distinction is worse than un-American. It is an injury to society as a whole, a loss to the favored class, a wrong to the unfavored.

"Boston University, therefore, welcomes to all its advantages young women and young men on precisely the same conditions. It welcomes women not merely to the bench of the pupil, but also to the chair of the professor. It is the first institution in the Commonwealth of Massachusetts to admit the two sexes to common advantages in classical collegiate studies; the first in the world to open the entire circle of post-graduate professional schools to men and women alike. Nor is any fear whatever felt lest the newly enfranchised class prove in the end incapacitated, either intellectually or by physiological constitution, for making a wise and beneficent use of these new-found facilities."

At that time, indeed, no systematic effort had been made to collect and sift the facts as to the actual effects of coeducation in places where it was already practiced. The want has since been well supplied by the collection of vital statistics published by the Collegiate Alumnæ Association, and by a similar collection, "Health statistics of women students at Cambridge and Oxford and of their sisters," due to the efforts of Mrs. Henry Sidgwick.

The stubborn facts disclosed by the investigations refute

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the unsupported assertions of alarmists. They show, as Professor Angell humorously puts it, that "the audacious young female who attempted to follow the same collegiate course as her brother generally insisted on the retention of oppressively good health; and she has done even worse things to discredit the general calling of prophet by discovering numbers of educated men who were willing and eager to attempt matrimony with her assistance. Worst of all, when she has married, she has had a normal number of vigorous children." Nothing, indeed, is left "the irreconcilables on these points" but to "deny themselves the luxury of the available statistics."

Looking back thus over the past, it is easy to see that public education in our country is a growth in which all the parts are organically related. The admission of girls to the public schools and subsequently the admission of young women to the publicly endowed colleges and universities came about naturally, and was a well-established policy prior to 1870. This date, as we have seen, may be conveniently taken to mark the close of the merely formative period of our State systems of education. In the sifting that has since been going on, temporary expedients have been gradually eliminated; continuance and progress since that date may be taken as signs of vital force. Peculiar interest therefore attaches to the history of coeducation since the year specified. In this consideration only secondary schools and higher institutions—colleges and universities—demand

HISTORY OF EDUCATION AND COEDUCATION

attention, as the policy of elementary schools in this respect has passed beyond all question.

The most noticeable fact in the recent history of high schools is the increase in their numbers, or, to state it more impressively, in the number of youth brought under their influence. The 6,292 high schools reported in 1902 enrolled 550,611 pupils (226,914 boys, 323,697 girls), and of this number 95 per cent, or a total of 523,344 pupils (215,944 boys, 307,400 girls), were in coeducational schools. In this respect there is no break between the high schools and the lower grade public schools, in which at least 96 per cent of the pupils are enrolled in mixed classes.

The few separate high schools for boys and girls are in cities situated for the most part on the eastern border of the country. They form exceptions, however, to the general practice even in their own States, and as a rule are survivals from the period of cautious experiments rather than indexes of public opinion or sentiment.

From the replies to special inquiries respecting the subject issued by the Bureau of Education in 1891 and 1901, it appears that of 628 leading cities of the country 15 only had separate high schools in 1891; in 1901 the number had fallen to 12.

Since the public school is the only school that three-fourths of the people ever attend, the association of the two sexes as there maintained must have a very great influence upon their social and business relations in after years.

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It explains in a great measure the freedom that women enjoy in this country with respect to the pursuit of careers, and especially the large share which they take in the educational work of the country.* Relations which would cause great irritation and annoyance in countries where separate education is the rule, here come about naturally and without friction.

It should be premised in this consideration that the terms "college" and "university" have not in this country the same definite meaning as in Great Britain or continental Europe. In general, however, it may be said that a university in the United States includes a college department, in which students complete a course of study leading to the bachelor's degree. So far the universities are like the colleges. But, in addition, a university generally includes also a department of post-graduate work and professional schools. Our present consideration relates in particular to colleges and college departments of universities, which for convenience may be designated simply as colleges.

The increase in the number of coeducational colleges since 1870 may be taken as a sign of the progress in this

*In the public schools (all grades included) 72 per cent of the teachers are women. Their relation to the public schools does not stop here. They participate as school officials and also, through the exercise of the ballot, in the local conduct of school affairs.

The number of women serving as district school officers appears to be comparatively large, but there are no complete statistics on this point. The number of women serving as county school superintendents in States having this office is 324.

As a rule women are eligible to the school boards of northern and western cities and 11 women hold the position of city school superintendent. (1904).

In two States, Colorado and Idaho, women are at the head of the public school system, holding the position of State superintendent.

In 27 States and 2 Territories women have the right to vote for school officers.



HARVARD UNIVERSITY SECTION, EDUCATION BUILDING.

HISTORY OF EDUCATION AND COEDUCATION

country in respect to the higher education of women, as the colleges exclusively for women—that is, establishments having the same standards as the colleges for men—were, with few exceptions, opened just about the year mentioned. In that year the United States Bureau of Education began the work of collecting statistics from the entire country, and by 1873 the Annual Report had become quite complete for all sections. Particulars were given in that report of 97 coeducational colleges having 2,147 women in their college departments. In 1880 more than half the colleges of the country, 51.3 per cent (omitting in this consideration colleges exclusively for women and land-grant colleges not departments of universities), reported coeducation either in the preparatory departments or in both preparatory and collegiate departments. Considering the latter only, there were 128 universities and colleges, or 35.7 per cent of the total number reported, which admitted women to the college classes. The 2,323 women regularly matriculated in these institutions formed 7.2 per cent of the total number of their undergraduates. In the decade 1880 to 1890 the number of coeducational colleges had increased to 65.6 per cent of the total number and the proportion of women matriculated to 19.5 per cent of the total number of college students. In 1900 the proportion of coeducational colleges had reached 71.6 per cent, and the proportion of women in their collegiate departments 24.7 per cent of the total registration. Many of these institutions are small denominational col-

LOUISIANA PURCHASE EXPOSITION

leges, drawing their patronage chiefly from members of their respective communions and surrounding their students with the influences of cultured Christian homes. Like the high schools of the country, they are in close sympathy with the people and reflect in a very practical manner the prevalent ideals, moral and social, of their respective communities. These colleges are, without exception, affiliated with Protestant denominations, the corresponding Roman Catholic colleges being always exclusively for boys. While colleges of the class referred to represent a very important part of the educational provision of the country and have had no small influence in fostering coeducation as a policy, they are of less importance as an index of its extension than larger institutions, and especially those that may justly claim university rank. But with all allowances that must be made for differences in the resources and standards of the institutions classed together as universities and colleges, comparison of the conditions in 1873 and in 1900 are extremely suggestive.

Between the two extremes of coeducational institutions as maintained in the West and the separate colleges for women characteristic of the eastern States two modified systems have developed. The one is that of distinct colleges for men and for women forming integral parts of a university organization, illustrated by the colleges of Western Reserve University, Cleveland, Ohio; of Tulane University, New Orleans, La., and by the Women's College of Brown Uni-

HISTORY OF EDUCATION AND COEDUCATION

versity, Providence, R. I.; the other modification is that of a separate college for women annexed to but not an integral part of a university, as Barnard (an annex to Columbia) and Radcliffe (annex to Harvard). These modifications show how strong and universal is the demand that women shall enjoy the largest opportunities for culture and training; at the same time they illustrate the disposition everywhere manifested to adjust these opportunities to prevailing conditions and sentiments.

The recent action of three coeducational institutions, Chicago, Leland Stanford, and Wesleyan (Connecticut), discriminating in noticeable ways between the men and women students, has excited great agitation and has been widely discussed as a general reaction against the coeducation policy. This view gives exaggerated importance to measures growing out of conditions peculiar to the respective institutions.

In his official report for 1903 Doctor Harper submits a full explanation of the segregation policy recently adopted by Chicago University, for which he assigns three principal causes: (1) The proximity of the university to a large city, with the attendant social distractions; (2) the high ratio of young women students to the whole body; (3) the comparative youth of the junior students. In all these respects Chicago University offers a contrast to the older coeducational colleges.

The action of the authorities of Leland Stanford Univer-

LOUISIANA PURCHASE EXPOSITION

sity in limiting the number of women students to 500 at any time is in pursuance of the special purpose of Mr. Stanford, which was the endowment of a university to be distinctively for technical and graduate students.

The limit placed by the trustees of Wesleyan University, Middletown, Conn., upon the number of women students—namely, 20 per cent of the total number for the preceding year—appears to have been determined by the accommodations of the college home for women.

The universities whose action is thus explained are all of private origin, and their action in this matter does not affect at all the position of publicly endowed or State universities. The weight of influence from the latter, as we have seen, is wholly in favor of the association of men and women in class exercises. This is also the position of all land-grant colleges in the West. Of the 50 institutions for white students participating in this Congressional bounty, 26 are colleges or departments within the universities already considered. Of the 24 remaining institutions all but 8 are coeducational.

In an inquiry as to the choice of studies on the part of students it should be remembered that in the United States college education is practically within the reach of all youth whose parents can meanwhile provide for them the necessities of life. Indeed, we may go further and say that even the poorest youth may hope for such advantages if he is willing and able "to work his way through." Hence, it



CALIFORNIA EXHIBIT, EDUCATION BUILDING.
INTERIOR CALIFORNIA EDUCATION SECTION.

HISTORY OF EDUCATION AND COEDUCATION

follows that in this country liberal education is not, as in many countries of Europe, the particular privilege of the nobly born or the rich, but is valued as something desirable in itself, or leading to higher opportunities of usefulness or self-advancement, a conception which is indicated by the rapid spread of the elective system.

The opinion has been often expressed that within prescribed limits the choice of studies by women students is widely different from that of men. This fact is indeed recognized by Professor Angell, of Chicago University, in the most discriminating article on coeducation that has appeared during the recent agitations of the subject. "It must be admitted," says this author, "that on the instructional side only one difficulty of serious import appears to exist. This is the tendency toward sex segregation in certain courses of which we have already spoken at length."

It is difficult to estimate the effect of this tendency, so far as it exists, on account of the lack of statistics showing the scholastic classification of students. In the case of the few institutions that give this information there is found to be an excess of women students in certain courses and of men students in others; but it is equally evident that the choice is determined not by sex, but by the practical consideration of careers that may be followed after graduation. In the University of California, whose catalogues give the desired classification, the proportion of women in the several subjects in the senior class of 1902 was as follows:

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Letters, 54 per cent; social science, 68 per cent; natural sciences, 66 per cent; chemistry, 20 per cent; agricultural, commercial, and engineering courses, no women. In the University of Wisconsin, which also gives these particulars, the proportion of women in the several branches in the senior class was as follows: English, 34 per cent; modern classics, 75 per cent; civics and history, 27 per cent; general science, 18 per cent; philosophy, 39 per cent; ancient classics, 49 per cent. In this university the engineering department is entirely distinct from the college of letters and science and has no women students. The only excessive "segregation" shown by the above is that of men in technical courses leading to professions of which they have the monopoly.

In one respect the presence of women in the higher institutions has had a marked effect upon courses of study. It was in the interest of women that provision was first made for instruction in domestic science. From small beginnings elaborate courses of study have developed, including chemistry as related to food, household hygiene and sanitation, and home architecture, and extending to the larger subjects of municipal sanitation, public hygiene, etc. The colleges endowed by the land grant were the first to make special provision for these branches, and they form the majority of all institutions in which the subjects mentioned have distinct recognition. Among private foundations that have organized special courses in domestic science are Leland

HISTORY OF EDUCATION AND COEDUCATION

Stanford Junior University, Chicago University, Pratt Institute (Brooklyn, N. Y.), The Drexel Institute (Philadelphia), all coeducational.

Happily, there are indications that the tendency to early specialization which the universities have developed under the pressure of industrial demands has reached its climax. Influences are at work which promise to restore the lost ideals of liberal education and to distinguish between the instruction which makes for ideal development, "the humanities," and that purely technical training whose end is aptitude in a special direction. Furthermore, the careers open to educated women are increasing in number, and these two movements must inevitably tend to equalize the proportion of men and women in the culture studies as distinguished from those of immediate utility.*

Graduate courses of instruction, from the nature of the studies which they include, and the services for which they prepare students—among which the profession of teaching is paramount—are closely related to undergraduate work, and in the universities of the West these specialized courses have naturally known no distinction of sex. The most significant fact in the recent history of the movement here followed is the admission of women to graduate courses in certain universities of the East—notably Yale and Colum-

*The census of 1890 gave the number of women in professional service as 311,687; in 1900 as 430,576, an increase of 38 per cent. Teachers and college professors formed the great majority in these totals—viz., 246,066 in 1890 and 327,614 in 1902. The number of women physicians increased from 4,557 to 7,387, ministers from 1,143 to 3,373, and lawyers from 208 to 1,010.

LOUISIANA PURCHASE EXPOSITION

bia—which exclude them from the undergraduate departments.

The tendency in this direction is particularly observed by Doctor Harper in his report upon the new arrangements in his own university. “Women,” he says, “are being admitted in all leading institutions to the privileges of graduate and higher college work.” Apparently he regards this action as similar to the anomalous plan of segregation recently adopted at Chicago, which separates the men and women for the first two college years and admits them to the same classes for the remaining years.

The proportion of women in mixed graduate courses as compared with men is about 3 to 8 (actually 1,456 to 3,895). Here, as in respect also to undergraduate classes, women have very little aid from scholarship or other funds.

As a general rule, coeducational universities maintain the policy in all departments. There are, however, numerous instances of the exclusion of women from the professional schools of such universities. This action involves no arbitrary distinction between the parts of an integral process. Professional training differs fundamentally from general education. The former is related primarily to individual demands and controlled by professional conditions; hence it stands quite apart from higher education in the broad general sense. For this reason professional training for women, whether offered in separate schools or in the same schools with men, is an index of the growth of liberal senti-



INDIANA SECTION, EDUCATION BUILDING.

HISTORY OF EDUCATION AND COEDUCATION

ments in our country rather than, like coeducation, the outcome of democratic impulses.

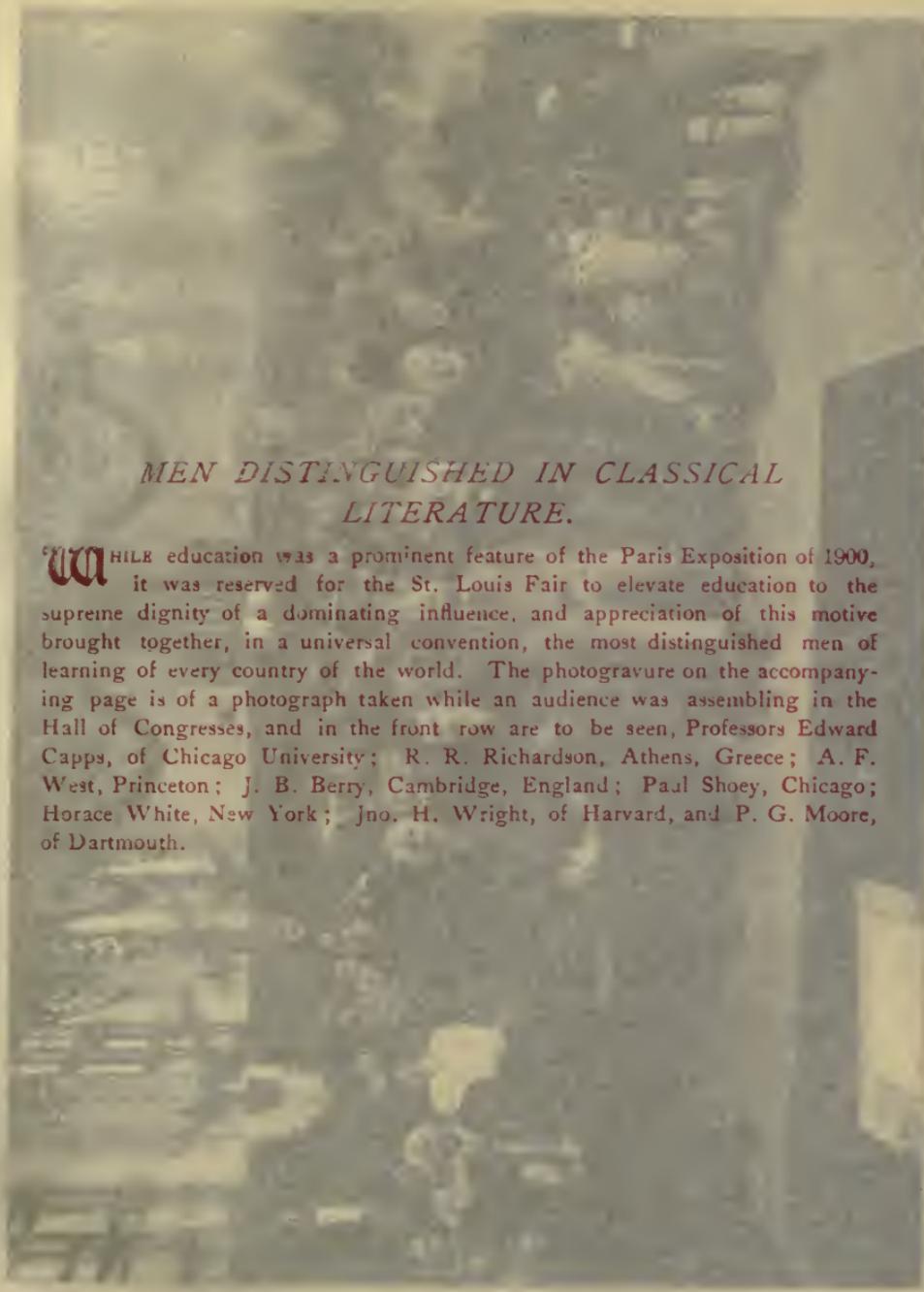
Reference has already been made to the early efforts of women to secure medical training. It is a story of heroic perseverance against desperate opposition, and even persecution, and for a long time every advance in this respect was a victory over prejudice and selfishness. The efforts of women to secure training in law or theology have been less urgent than in the case of medicine, and the advance in respect to the former is consequently less noticeable. All orders of professional training are, however, now open to women in the United States, and they form an ever-increasing proportion of the total number of professional students.

The opening of professional schools to women has naturally been accompanied by the opening of the professions themselves, a matter of some social and economic importance. On account, however, of the small number of women engaged in professional practice the apprehensions expressed in certain quarters of a general disturbance of family or other normal conditions from this cause appear to be groundless. Meanwhile, because of the growing complexity of life and the demand for expert skill in dealing with social problems, especially in the great centers of population, the services of women learned in medicine, hygiene, and kindred subjects, familiar with the legal relations and restrictions of employers and laborers, or trained for the philanthropic, civic, and reformatory work that scientific sociology pro-

LOUISIANA PURCHASE EXPOSITION

motes and that even modern theology recognizes as part of its legitimate field, are becoming every day more and more indispensable to the public welfare.

The review of public education in the United States here presented reveals an inward coherency stronger than that which comes from mere external authority or formal organization. At the basis of the whole work is the conviction expressed by Washington that knowledge contributes "to the security of a free constitution * * * by teaching the people themselves to know and value their own rights * * * to discriminate the spirit of liberty from that of licentiousness, cherishing the first, avoiding the last, and uniting a speedy but temperate vigilance against encroachments with an inviolable respect to the laws." So long as education is made an exclusive privilege this diffused intelligence as to rights and duties is impossible; hence that impulse toward universal instruction of which coeducation is but one sign. This deep import of what has been sometimes regarded as a crude expedient of pioneer life was clearly set forth by Doctor Harris in his report already referred to. "The demand of women for equal advantages in education with men," he says, "is not a temporary demand arising out of the sentimentalism incident to the epoch, but only an index of the social movement that underlies our civilization." The particular mode by which this equality shall be secured will doubtless be determined in the future, as it has been in the past, by circumstances of time



*MEN DISTINGUISHED IN CLASSICAL
LITERATURE.*

WHILE education was a prominent feature of the Paris Exposition of 1900, it was reserved for the St. Louis Fair to elevate education to the supreme dignity of a dominating influence, and appreciation of this motive brought together, in a universal convention, the most distinguished men of learning of every country of the world. The photogravure on the accompanying page is of a photograph taken while an audience was assembling in the Hall of Congresses, and in the front row are to be seen, Professors Edward Capps, of Chicago University; R. R. Richardson, Athens, Greece; A. F. West, Princeton; J. B. Berry, Cambridge, England; Paul Shoey, Chicago; Horace White, New York; Jno. H. Wright, of Harvard, and P. G. Moore, of Dartmouth.

UNIVERSITY EXPOSITION

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...are.

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TEACHING
MEN DISTINGUISHED IN CLASSICAL
LITERATURE.

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...education is a prominent feature of the Paris Exposition of 1900.
...for the St. Louis Fair to elevate education to the
...of a dominating influence and appreciation of this motive
brought together, in a universal convention, the most distinguished men of
learning of every country of the world. The programme on the accompany-
ing part is of a photograph taken while an audience was assembling in the
Hall of Congress, and in the front row are to be seen, Professors Edward
Copp, of Chicago University; R. W. Richardson, Athens, Greece; A. F.
W. B. Bury, Cambridge, England; Paul Schoy, Chicago;
H. W. H. Wright of Harvard, and P. G. Moore,
H. W. H. Wright of New York; and H. Wright of Harvard.

...and all
...already
...advantage
...temporary
...to the
...that under-
...by which this
...is the
...of time



HISTORY OF EDUCATION AND COEDUCATION

and place. At present the choice of the people by an overwhelming majority is that of the open door to all schools and colleges without distinction of sex. The practice derives new force from its steady advance in Europe as the old feudal forms of society pass into oblivion.

Whatever modifications of this policy may hereafter be favored among us, it is certain that they will never impair the principle of equality, which is precious to our people, nor will they be imposed upon any class of the people except by their voluntary preference.

The history of coeducation in this country reflects so clearly the impulse from which it has arisen and the principle by which it is sustained that it seems quite unnecessary to rehearse the arguments for and against the policy. In the final analysis the latter reduce to individual cases, but so far as these deserve attention in an educational scheme they can readily be met by the elective system. This system, like coeducation, is only a phase of the movement for making education in its full extent the common privilege of our people. Both are conducing—the former by its liberalizing influence, the latter by its humanizing spirit—toward that higher but half unconscious ideal of education as an instrument for the perfection of democratic society which has haunted the minds of men for a hundred years.

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Status of foreign universities with respect to the admission of women.^a

| COUNTRIES. | Number of universities at which no (or unimportant) distinctions are made between men and women students. | Number of universities at which women students are admitted by courtesy or special permission to some lectures and examinations. | Number of universities at which women students are admitted by courtesy or special permission to some lectures only. |
|------------------|---|--|--|
| England..... | 4 | 2 | ..... |
| Wales..... | 1 | ..... | ..... |
| Scotland..... | 4 | ..... | ..... |
| Ireland..... | 62 | 1 | ..... |
| Canada..... | 5 | ..... | ..... |
| Australasia..... | 5 | ..... | ..... |
| India..... | 5 | ..... | ..... |
| France..... | 16 | ..... | ..... |
| Belgium..... | 4 | ..... | ..... |
| Holland..... | 4 | ..... | ..... |
| Denmark..... | 1 | ..... | ..... |
| Norway..... | 1 | ..... | ..... |
| Sweden..... | 2 | ..... | ..... |
| Germany..... | ..... | 2 | 14 |
| Austria..... | ..... | ..... | 6 |
| Switzerland..... | 4 | 1 | ..... |
| Italy..... | 21 | ..... | ..... |
| Spain..... | 3 | ..... | ..... |
| Greece..... | 1 | ..... | ..... |
| Roumania..... | 2 | ..... | ..... |
| Finland..... | 1 | ..... | ..... |
| Total..... | 86 | 6 | 20 |

^aFrom replies to a special inquiry issued by the English department of education in 1897, revised by later information.

^bTrinity College (Dublin) has just sanctioned the admission of women.

^cIn one case the position of women students seems to be more strongly differentiated than in the other two.

DIVISION CXXV.

Manual, Industrial, and Technical Training.

I have taken the liberty of reducing to a division space the very admirable paper read at the Education Congress by Prof. Calvin M. Woodward, of Washington University, which will be found to contain much advice that is extremely valuable to parents to whom the question is always pertinent and insistent: "What kind of education shall I give my boy?"

Manual training, according to the best usage, signifies the systematic study of the theory and use of common tools, the nature of common materials, elementary and typical processes of construction, and the execution and reading of working drawings. The materials referred to are wood, metals, alloys, and plastic minerals; the drawing includes both free-hand and instrumental, with pen, pencil, and brush.

The prime purpose of the manual training school is:

1. To furnish a broader and more appropriate foundation for higher technical education.
2. To serve as a developing school where pupils can discover their inborn capacities and aptitudes, whether in the

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direction of literature, science, engineering, or the practical arts.

3. To furnish to those who look forward to industrial life opportunity to become familiar with tools, materials, the methods of construction, and exact drawing, as well as with mathematics, elementary science, and ordinary English branches.

Manual training is essentially a culture study. Its function is to develop the body by developing the brain and increasing its control over materials through the hand and eye. In early years the work of a child is qualitative rather than quantitative. Physiologists tell us that the areas of the brain develop gradually and unequally; that a normal child does not recognize accuracy, and that he is incapable of precision, either in ideas or deeds, until he is several grades along in school. Tool work should result in accuracy in thought and in deed, and hence should not be attempted before the sixth or seventh grade.

In all ages men have recognized the value of skill in the use of tools and the processes of construction. The mythical Vulcan, the Jewish Tubal Cain, the Greek Dædalus, Archimedes of Syracuse, the Miltonian Memnon are familiar examples. The greatest invention of the ages has been the generation, transmission, and utilization of mechanical power, and along with it has come the invention and use of tools. Rousseau advocated systematic instruction and practice in the details of a trade or occupation, and



EXHIBIT MADE BY THE COLLEGE OF BALTIMORE.

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Carlyle, in words now familiar to us all, declared that man was a tool-using animal; that without tools he was nothing; with tools, he was all. In every land men advocated the learning of a trade for a livelihood or for culture. Witness Peter the Great of Russia, the King of Prussia, and the New England seer, Emerson; but in all cases it was taken for granted that the only avenue to mechanical skill and culture lay through an apprenticeship to a builder or manufacturer. Schools were for the study and mastery of books. The arts of the schoolroom were for masters and freemen; hence they were noble and were called the liberal arts. The arts of the mechanic were for serving men, and were acquired only by intimate association with mechanics; so the practical arts were held to be degrading because requiring a base companionship.

The invention of machinery and the use of costly machine tools so far modified and limited apprenticeship as almost to ruin it. Trade schools sprang up all over Europe, and native American skilled mechanics ceased to exist. Numerous "manual-labor" or "half-time" schools came into being in America, but they involved no forward step, for the manual elements were unsystematic and unprogressive, since the purpose of the labor was to earn a living while gaining literary culture. Engineering schools in Germany, England, and America introduced some features of "shop work," with skilled mechanics engaged upon commercial work as foremen. Next arose a widespread demand for an op-

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portunity for American boys to acquire the arts of the mechanic and at the same time avoid the narrowing, unscholarly atmosphere of the trade school.

This consummation was helped on in a signal manner by an exhibit at the Centennial Exposition at Philadelphia in 1876. In the educational exhibit of the Imperial School of Moscow, there was a full presentation of the method of tool instruction, devised by Victor Della-Vos in 1868. Della-Vos gave three years to tool instruction and then three more to actual construction with engineering students. His systematic analysis of tools and processes offered a practicable basis for such work in the programme of secondary schools. Prof. John D. Runkle, of the Massachusetts Institute of Technology, performed a great service to education by publishing a report upon the Russian exhibit, by emphasizing the difference between "instruction" and "construction," and by insisting upon the former as the special province of the school. Instruction shops for students of college grade were opened in Boston and in St. Louis in 1877. The St. Louis Manual Training School was established June 6, 1879, and opened in September, 1880, as a school of secondary grade. This was the first of its kind and soon attracted wide attention from educators both at home and abroad. The Baltimore Manual Training School opened in 1883, the Chicago Manual Training School in 1884, the Toledo school the same year, the Central Manual Training School of Philadelphia in 1885, and then the movement be-



MANUAL TRAINING EXHIBIT MADE BY MINNESOTA IN EDUCATION BUILDING.

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came general all along the line. All these schools were of high school grade, and there was a close resemblance in curricula, equipments, and methods of instruction.

In England manual training is more often called technical education, and it is more often than not associated with trades, and even this in a majority of cases is given in evening schools. There is as yet in Great Britain no general conviction that manual training is essential to intellectual development and that its moral influence is wholesome and strong. Accordingly it is planned for working people chiefly. Undoubtedly the educational value of tool work of the most elementary character as developed by Doctor Solomon, of Sweden, has had great influence in England, but manual training of a severer and more intellectual sort owes its establishment largely to Sir Philip Magnus, of London, Sir William Mather, of Manchester, and Professor Ripper, of Sheffield. Sir William has not only encouraged its introduction into Manchester schools, but has built and equipped a "department of manual training and technical instruction" in Gordon College, Khartoum, in the Sudan, for the benefit of Sudanese boys.

There is an abundance of elementary manual training in France, particularly in Paris, but no sooner is the boy old enough and strong enough to learn a trade than he is put at trade work. The French are convinced, as indeed are all nations, that the principles and details of a trade, like the fundamental principles of a profession, may be most suc-

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cessfully taught in a special school connected with a commercial or manufacturing establishment. Hence all the fine specimens of metal work exhibited by French educational institutions are the work of special or trade schools.

Educational tool work is found in all lands—Australia, Japan, China, India, South America, the islands of the Pacific and Indian oceans, and the West Indies.

The proper functions of the shop teacher are little understood. He is not a historical character. Literature is not full of him; his sayings and doings are not on record; he is the latest product of evolution. Doubtless many have pictured him, in imagination, as a brawny fellow, with immense brown hands, with deft ways, an unerring eye, a fund of anecdote abounding in ungrammatical figures drawn from the shop, and cherishing undying admiration and reverence for the man he served under while learning his trade. One fancies him more fluent in directions than in reasons; therefore, more ready to take one's tool and do one's exercise himself than to patiently explain and illustrate the method till his pupil can do it.

But that is an error. The picture is that of the experienced mechanic, not of the accomplished teacher. This new type of teacher is not a common article as yet. It is still a curiosity, and visitors to a school fortunate enough to have one spend most of their time watching him and his work. Let me give an account of him and present his picture.

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This man has never served his time—that is, he has not spent from three to seven years earning his living while learning the mechanical processes and the business management of a single trade. His knowledge of applied mechanics differs from that of the ordinary workman as the mathematical training of a senior wrangler differs from the art of a lightning calculator. Under a variety of expert teachers he has mastered the principles and become familiar with many crafts. He has studied a wide range of tools and materials and is equally at home at every bench.

But he is much more than a master mechanic; he is a draftsman, almost an artist, ready to sketch an engine or a pump, to find the shade and shadow of a Greek vase, or to give a “chalk talk” before his class. Then, he is somewhat of a scientist, and he sees how truly the principles of the lever and inclined plane underlie all mechanical operations; he has experimented upon the effects of heat on metals and has studied the dynamics of elastic fluids. He is able to classify the phenomena of the shop and can show how different the ideal problems of the text-book are from the real problems of industry.

Moreover, he is gifted with speech and has an accurate knowledge of technical terms. He never says, “I know, but I cannot express it,” for he can express it, either in words, by drawings, or in the concrete—that is, provided the thought is clear. If the thought is not clear, he knows that there can be no clear expression of it. He is suffi-

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ciently a psychologist to know how to work out a clear thought when one is within his reach.

He has no great reputation for superior workmanship; probably he has never invented a valve motion nor a motor, nor is he the author of a text-book on any subject; but he has a level head, a clear voice, a steady hand, a confident look, and a reassuring smile. He is a rare man, and he has been rarely trained. So much for the man; now, how does he teach and manage his class?

In the first place, he believes it is his chief function to teach. His pupils are not to be left to find out for themselves how the various tools are to be used, how they are to be kept in order, and how certain processes are to be analyzed. He would no more leave them to thus teach themselves than he would give them pen, ink, and paper and leave them to learn penmanship by themselves, or than he would give an ignorant sailor a sextant and leave him to find out how to determine a ship's latitude and longitude by constantly trying. Tools are not what they are through accident or caprice; they are the product of ages of thought and experience, and there are right ways of using them. There is teachable art in handling the chisel, the gauge, and the file, as there is in using a table fork, a tennis racket, a drawing pen, a violin, and a crayon.

Moreover, as he has a score or more pupils to teach, he teaches them as a class, and not individually. This enables him to make his instruction much more systematic and full,



WILLIAM JEWELL COLLEGE, MISSOURI, EXHIBIT.
EXHIBIT BY THE ST. LOUIS MANUAL TRAINING SCHOOL.

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and it leaves him time to observe whether his instructions are followed. The class lecture is, therefore, almost a daily feature in his shop. It may occupy fifteen minutes or only ten, but while it lasts it must absorb the attention of every pupil. During his demonstration his room must be noiseless, and he must have at hand tools, materials, drawings, and blackboards. It is not a lecture properly so called, for as a rule he does not read to his class; he talks, explains, and illustrates. He suits the action to the word and the word to the action. This is an important point, for, like every other teacher in the school, he is a language teacher. When the need of a new word is clearly seen he gives it to his pupils, writes it before them, and henceforth it is a part of their vocabulary. He knows just where the class stands, how much and how little they know of the work in hand, and he discreetly leads them on a step at a time, and a step that they never need retrace. He teaches the theory of every tool, and how it is to be put in order and kept so; he shows just how it is to be used and when; he analyses a complicated operation into a series of simple steps, and points out the logic of this arrangement; he warns his pupils of peculiar difficulties and dangers; he leads them to see that drawings may represent not only the details of form, but the order of construction. Gradually he helps them to build up a habit of careful analysis and a love for system, precision, and plan.

While in the shop our teacher dresses as he expects his

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pupils to dress, appropriately. He sets no bad example; his language is correct and pure; his manners are those of a gentleman. The atmosphere of his shop is that of a science laboratory. His pupils soon become zealous and enthusiastic; there is no sense of drudgery, and no sordid motive impels to work. The pupils are as innocent of definite plans for utilizing the knowledge and skill they are acquiring (beyond the making of a toy, a present for a friend, or a convenience for one's home) as they are in their arithmetic and history. The consciousness of growing power, both mental and manual, gives a satisfaction which throws a charm over every department of school-work.

Under the cover and name of manual training more or less industrial work has been introduced into schools of different grades. Basket making, with woods and with grasses; bookbinding, with special emphasis upon the use of colors, leather, gilt, etc.; hat making, blanket weaving, gardening, etc. Among the Indians we have been pleased to note the general introduction of industries suited to particular localities. Among white children such occupations have much of educational value for young children, but they are liable to be ends, rather than the means, in intellectual and moral growth; they aim rather at ideas of luxury than at household thrift and economy. Such things should be called "elementary manual training," or they should be called what they really are—"industries," or "arts" and "crafts."

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Manual labor is not manual training, be the labor in a shop, on a farm, in a garden, in a kitchen, or in a brick-yard. A half-time school may be a good device for earning one's bread while getting the rudiments of an education, but it is not manual training. Gymnastics and physical exercise in general appeal almost exclusively to the fundamental muscles and their brain centers and rarely to the accessories. Nothing short of manual training will reach effectively the important brain cells governing the fine motor adjustments of the muscles of the hand.

In considering the relation of education to industry these three questions are of prime importance:

1. When and how shall a boy make a wise choice of an occupation?
2. To what extent does "manual training," as gained in high schools and academies, open the doors into the trades?
3. Why are so few "manual graduates" enrolled as mechanics? Does the small number indicate any failure or disappointed hope?

The choice of an occupation is a very important matter. The theory of the ordinary manual training school assumes that the boy of fourteen or fifteen is unprepared to make a choice—first, because he does not know himself his mental and physical possibilities; again, because he does not know what the different trades involve; finally, he does not know what other avenues of employment or occupation there are

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which would naturally compete in his mind with the mechanical trades.

In point of fact I suppose it to be true that, so far as a majority of parents go, the controlling motive in sending boys to a manual training school is to find out what is in them—what their innate capacities and inherited tastes really are. Parents continually complain that their boys will not decide what they want to do in life. Again and again have I heard boys in the presence of their parents insist that they did not know what they would like to do; that they “could not make up their minds.” This sort of answer frequently irritates a parent, and it has been my privilege to read many parents a very pointed lecture on the spur of the moment, showing them how utterly unreasonable and illogical they were; and I have commended the boy for persisting in his attitude of unwillingness to decide whether he wished to be an electrical engineer, or a chemist, or an architect, or a lawyer, for the simple reason that he was utterly unprepared to make such a decision. The whims and fancies of a boy are as inevitable and as natural as his appetite for play and his fondness for sweetmeats, but they depend very largely upon his environment, upon what he sees and hears, and upon the opportunities that seem to be open to his boyish gaze. They are only surface indications and have very little to do with natural or inherited aptitudes.

In regard to this matter of boyish fancies I find myself

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exactly in agreement with Professor Henderson, who was for some years principal of the Northeast Manual Training School of Philadelphia. He says:

At fourteen a boy is too young to interrupt the culture process, much too young to know what will be the true occupation of his adult life. I have seen—and who, indeed, has not?—the very sad effects of this too early specialization. A boy of fourteen is full of fancies, and it is perfectly right and wholesome that he should be. The harm comes when those fancies are taken too seriously. Let them occupy his leisure time. Let him run the whole scale of boyish interests; let him be the naturalist, surveyor, mechanic, electrician, astronomer, artist, musician, poet, philosopher. Let him go in for them heart and soul, and then, quite as light heartedly, let him drop them. You make a sad mess of it when you hold a boy to an outgrown interest.

The fancy of a boy as regards his future occupation may, and probably will, change with every year of school training; but that should excite neither rebuke nor criticism. The boy that starts with the hope of being an electrician and comes out with an ambition to be a lawyer is not to be called fickle; and he that begins with the firm purpose of being a machinist but graduates with the deliberate aim of being an architect has probably replaced a groundless whim by an intelligent choice. Give a boy manual training by all means, not because you wish or hope that he may become an artisan, but because you want him to be a whole man and to have an opportunity to make the most of himself, whether he become in the end an artisan or an artist, a fol-

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lower or a leader, a bookkeeper or a general manager, an engine driver or a civil engineer, a farmer or a manufacturer.

The following extract from a letter written by the master mechanic of the Missouri Pacific shops is pertinent here:

When a manual training school boy enters our shops he is paid \$1.50 per day; all other boys, or those not having what is called a manual training school education, are paid \$1 a day. Each year after the first we add 25 cents per day to the pay of these boys, and when they become proficient, or at the end of the third year, they receive very nearly the full rate, provided they are the right kind of boys. Were it possible, I would in all cases prefer employing graduates from manual training schools for apprentices to ordinary boys who apply to us with perhaps nothing more than a very ordinary public school education, but, of course, it is not always possible to act on these lines.

There have been cases where young men, graduates from training schools, have come into our shops and have actually been worth more money to us than we were paying them, but in accordance with rules established long ago in regard to apprentices, we could not give them higher wages.

I can confidently state that most of the graduates who have come to me from the manual training school of the Washington University have proven to be exceptionally good boys and have turned out good men. In fact, most of them do so well that they are often offered better situations and they leave us to accept the same. We cannot afford to pay the wages they can command from other sources.

From the days of John Milton, in 1608, to the end of the eighteenth century, university training culminated in a preparation for the professions of law, medicine, and the-



MODEL CLASS-ROOM FOR THE STUDY OF ANIMAL HUSBANDRY.



COLORADO EXHIBIT, EDUCATION BUILDING.

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ology, and in the training of the nobility for the duties and responsibilities of government and elegant society. But when alchemy developed into chemistry; when physics became an experimental science; when Leibnitz and Newton elaborated the infinitesimal calculus; when Watts invented an efficient steam engine; when Fulton built a successful steamboat; when Stephenson devised the locomotive and constructed a road with smooth rails, and, finally, when Siemens and Gramme produced the electric motor, vast fields of fascinating and useful material were opened for study and research. Mathematical analysis and the principles of mechanics, which had previously been devoted to the problems of physical astronomy, were now directed to the study of the transformation and transmission of energy, the theory of structures, and the phenomena of electricity. The theory of evolution has given a new meaning to all vital phenomena, and the doctrine of the conservation of energy has permeated all our study of motion and force.

In the earlier days Alexander Pope voiced the popular notion that "The proper study of mankind is man." "Nature study," which to-day is the bright, attractive feature of the primary school, and equally the inspiring field of the savant, was not countenanced by polite society. For centuries it was held to be little short of blasphemy to wound the earth by digging for ores which were intended to be hidden away from our sight and touch, or to attempt in any way to improve upon God's workmanship. When in

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1680 a Spanish engineer proposed to deepen the channels of certain rivers and to restrain their overflows in the interest of navigation, the Spanish council decreed as follows: "If it had pleased God that those rivers should have been navigable, He would not have needed human assistance to make them so; but as He has not done it, it is plain that He does not want it done," and the improvements were forbidden.

The modern thought of the creation is that it was and is a part of the all-wise plan to fill the earth with unsolved problems, the study and solution of which should develop our best powers and at the same time cultivate our highest instincts of reverence for the Creator and of love and devotion for His creatures.

It has taken many centuries for the world to discover that the great forces of nature are neither sacred nor profane, neither kind nor cruel, that they neither love nor hate, and that they are more unchangeable than the stars; that shrines and temples, priests and priestesses, tripods and oracles have been in vain, except so far as they reacted upon the human heart and satisfied its natural craving for the worship of a superior being. Instead of building a temple to Apollo, or to Zeus, the Thunderer, we now stretch over our cities a network for artificial lightning; and all the winds that blow and all the waters that flow are made to furnish their tribute to our comfort and pleasure. We tap the sources of endless energy and transmit it through all the ramifications of our social order, relieving mankind from

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heavy burdens and creating hundreds of occupations hitherto all unknown.

Out of this vast extension of the horizon of human activities and this multiplication of occupations has come an imperative demand for technically educated men. In our industrial system the crying want has been and is for men who can both plan and execute. The secret of our recent success in foreign markets lies in the fact that we have put educated brains into our products and into our methods of manufacture. Hence a score of professions unthought of one hundred years ago have been called into being, and the standards of these new professions are intellectually not one whit lower or less humane than the old. This demand for trained men of action has been followed by only a partial supply.

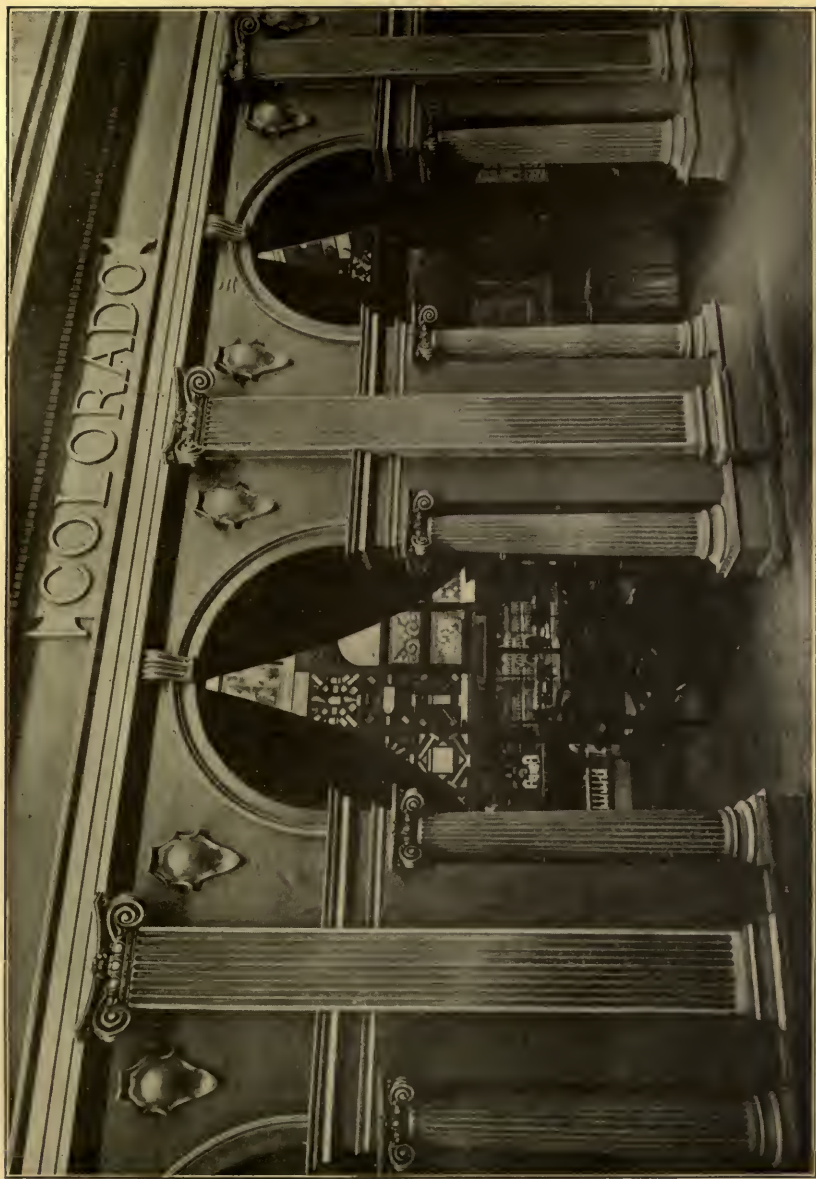
The first engineering course in the United States was organized at Troy, N. Y., in 1835. The Sheffield Scientific School of Yale was established in 1847 and the Lawrence Scientific School of Harvard in 1848. Both of these schools organized engineering courses a few years later. The Massachusetts Institute of Technology was opened in 1865. There are now engineering courses in every State in the Union, with equipments and appointments of every grade and quality. Thus do the technical features add strength and dignity and breadth to the university. The department of letters, philosophy, and pure science, still holds the center, the venerable mother of all the arts; but the younger members

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of her numerous and growing family will ever flock loyally and lovingly by her side.

Architecture dates back from beyond the Christian era. Engineering is the product of modern scientific progress, a union of mathematical analysis and an intimate knowledge of the materials of construction. Architecture has always been regarded as one of the fine arts, and in ancient times skill in architecture and in sculpture were usually combined. The builder of the Parthenon, "the hand that rounded Peter's dome," and the architect of St. Sophia have earned immortal fame for exquisite skill and refined taste.

For centuries the only building materials were brick and stone, and the styles were limited to constructions which relied almost wholly upon compressive stresses. It was a daring innovation when, in 1851, the gardener of the Duke of Devonshire was called upon to construct for the first world's exposition a crystal palace of iron and glass. Since that day the introduction of a material whose strength in tension and compression is practically the same has added immensely to the scope and the possibilities of architecture. This is the age of steel, and the demands upon the architect are something amazing. He must be both an artist and an engineer. There is nothing which the architect must not know and know well. He must know thoroughly the nature and limitations of his materials. He must be able to apply mechanical analysis to every detail of his structure, whether foundations, columns, arches, trusses, or girders.



COLORADO SECTION, EDUCATION BUILDING.

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His building must combine stability, comfort, fitness, and grace. He must study the laws of light, heat, and the transmission of power. He must be familiar with the best usage as regards the supplies of water, gas, and electricity and the best methods of purification and drainage. The architect must be many kinds of an artist, and last, but by no means least, he must be a man of refinement and literary culture.

Refined taste and good judgment come only from study and comparison. So our architect must be familiar with the ancient types, but he must not be their slave. The classic beauty of the Greek temples, the awful grandeur of the English cathedrals, and the towering splendor of Cologne must serve but to lead him to the essential architectural features of an age which is more and more building in steel. The structure which shares with Notre Dame the admiration and wonder of every visitor to Paris to-day is the steel tower of M. Eiffel. Of course it breaks nearly every canon of the old masters, but it lays down some of the laws of a new style to which a new material gives timely birth. Gustave Eiffel was no accident, no sudden growth, no inspiration of the moment; he was already the most distinguished engineer in France. He had built hundreds of steel bridges before he set out to design the most remarkable architectural structure of the century.

How naturally I have been carried over from architecture to engineering. How closely allied are the arts. I some-

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times feel as though we ought to class engineering with the fine arts, its masterpieces are so well balanced, so luminous with human intelligence, so full of that splendor of truth which is said to be the essence of beauty. Study the great superstructure of the Eads Bridge; note in every detail those slender ribs, with every necessary and sufficient provision for security under all possible loads, amid the shocks of fields of ice, under all conditions of temperature, and you will find them not only beautiful but, like the pages of a book, full of human thought, of achievement through human experience.

The words "engine" and "enginery" are very old. They are of classic origin and are kin to "genius" and "ingenuity." In their descent through the French the initial "i" of "ingenium" was changed to "e." Twenty-two hundred years ago Archimedes was a famous engineer, and the marvelous mechanisms by means of which he destroyed the enemy's ships in the harbor of Syracuse are called "engines" by the historians.

Naturally the first engineers were military, as the earliest functions of organized society were those of attack and defense. But when nations began to learn the arts of peace and fixed public works became necessary the civil engineer, as distinguished from the military and the naval engineer, came into being. During the last fifty years engineering has been differentiated and has thrown off, as distinct departments, mining engineering, mechanical engineer-

ing, and electrical engineering. Still more recently each one of these in actual practice has been subdivided many times, as the necessity has arisen and as special lines of research and experience have been opened. At present it is the civil engineer who designs and constructs our railways, whether in our streets, underground, or overhead, across our prairies, or among the mountains; he constructs our bridges and tunnels; our canals and locks; our lighthouses, breakwaters, and jetties; our dams, reservoirs, and aqueducts; our highways, streets, and sewers. It is the civil engineer who rescues our swamp lands from ruinous overflow and deadly miasma; who liberates our lowlands from the grasp of ocean; who by extensive irrigation converts a desert into a garden.

What boundless and attractive fields of human activity are here! Every one of these specialties calls up the names of men who have served humanity and helped build the civilization of to-day. When I mention canals you will think of a score of engineers, from the English Brindley to the French De Lesseps; you will recall the German ship canal across Holstein, and you will stop only with the Panama Canal, the most stupendous ever planned. If I speak of redeeming lowlands you think of parts of Holland, recovered or soon to be recovered by fine engineering, from the Zuider Zee. The mention of dams brings up the great dams in Egypt to regulate the flow of the Nile and the reservoir dams in New England and in old England

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that store up pure water for the millions. The word "bridges" brings up a hundred names, from Telford and Robert Stephenson to James B. Eads, Sir Benjamin Baker, and George S. Morrison. And so on almost without limit. These are engineers, and these are some of the achievements which give inspiration and direction and scope to the peculiar kind of higher education to be gained in engineering schools.

Though greatly diversified in practice, all these special lines of engineering science and art require the same mastery of mathematics, the same knowledge of physics, the same graphical skill, the same familiarity with the theory and use of instruments of precision, the same readiness of analysis, and the same personal experience of the strength and elasticity of materials.

Equally the mechanical, electrical, and marine engineers are breaking all precedents and filling the world with new wonders. Machinery on land and on the sea, in the gorges of lofty mountains or deep in the earth at the base of a Niagara fall, the engineer is turning the stored-up energy of nature to the service of man, in manufacture, commerce, and social well-being. All this has come about through applied science as taught and illustrated in our engineering schools.

As mathematical analysis and the principles of physics, chemistry, and biology are applied to practical problems and good usage is established, engineering is differentiated more



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and more. Hydraulic engineering, sanitary, chemical, architectural, railroad, street railway, steam engineering, etc., indicate special lines of development, each opening up an important field of study and practice. Some institutions encourage early differentiation; others discourage it, preferring to lay a broad foundation upon which the young engineer may erect at will the structure of his choice and opportunity.

Modern engineering laboratories have greatly stimulated interest and promoted efficiency. The most expensive part of a modern engineering building is its collection of experimental and illustrative apparatus. Engines of all types, electrical machinery, so arranged as to permit of a great variety of quantitative tests illustrative of both theory and practice, hydraulic apparatus of every nature and degree—all these in connection with appliances for exact measurements in every field where precise results are desired.

Were I to mention the engineering schools of America where such advantages are to be had, the list would be a long one. Their name is legion, and in that fact lies the explanation of the remarkable success of American engineers, whether they build bridges in India, railroads over the Andes, or steel buildings in the hearts of London and New York; whether they plan and organize rolling mills, locomotive works, or water supplies. I have been asked by an English manufacturer to explain the success of American manufacturers and engineers. I answer, the explanation is

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to be found in our outfit of engineering schools and in their methods of rational training.

Let us stoutly maintain that no students are more high-minded, none more unselfish, none more patriotic, none more altruistic, than ours; that the measure of one's worth in the world lies in his usefulness to himself, his family, his community; and that no class of citizens are more honorable, more trustworthy, better fitted to serve the state and the nation, than the accomplished engineers.

The new education is a high and noble education, and we need not hesitate to champion it in all places and at all times with confidence and pride.

DIVISION CXXVI.

Physical Training as Exemplified at the Exposition.

Physical training has in recent years been added to the curriculum of nearly every college and is also making its way into high school courses, for appreciation has become very general of the coincident need of muscular and mental education. Fifty years ago, or even half that length of time, there was no association of ideas between physical training and what was called play, nor was there any thought of derivable benefit from a manifestation of exuberant spirit. Indeed, the old belief obtained, ingrained by immemorial experience, that the always studious boy must necessarily be the most prominent in the intellectual activities of after life. Exercise was not to be encouraged, and physical training was a term that had not yet entered our physiologies or dictionaries. At length, in the march of educational progress, Delsarte invented a system of grace training that might be called the eloquence of movement, which had great vogue for several years, to be succeeded finally by a higher expression of physical aspirings which had for its object not merely muscle development, but also brain stimulation, recognition being thus given for the first

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time to the now well-proven fact that a sound body is essential to a sound mind.

What has been said in the foregoing paragraph applies in a general way to the public at large, to the country as a whole, for if we choose to consider the subject of physical training from beginnings, it will be found that history scarcely antedates the birth of practice, of contest, of striving on athletic fields for championship honors. The origin of such effort is undoubtedly to be found in encouragement of exercises that promoted the combative spirit, since nations formerly lived quite as much by war as they maintained existence by the arts of defense. It is also a fact that though physical training, as we now understand the term, has only in recent years become a part of the educational regime of practically all colleges, it has been in force, to an extent, for more than a century in America, and was borrowed from European educational life, in which athletic training was made a part of the curriculum more than two hundred years ago.

At the Louisiana Purchase Exposition, where education in all its aspects, mental and physical, was discussed by highest authorities, and demonstrated by actual contests in a stadium established for the purpose, there were sessions of athletic congresses, in which conventions many valuable papers were read by professors employed in colleges to teach the gospel of physical training as an auxiliary and aid to mental discipline and improvement. It is from such a paper



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submitted to the congress by Edward M. Hartwell, late director of physical training in the public schools of Boston, and for a long while similarly associated with Johns Hopkins University, that I have condensed the information which follows:

Modern science bases its doctrine of the human body upon two fundamental conceptions: (1) That the organism is a structure which, by reason of the arrangement of its parts and the endowments of the living substances composing those parts, is capable of transforming and utilizing energy—in other words, it is a living machine for doing work; its smooth working we call health, its disordered working disease, and its stoppage death; (2) that the adult body is the product of organic evolution, to whose outworking it owes its rank among organisms and its efficiency as an individual organism.

At every stage, from birth to death, the body is a highly complicated machine, comparable to an army or a city rather than to such machines as windmills, clocks, or looms. It may be termed a communal mechanism or a federal union of organs, some of which—e. g., the digestive organs—subserve the welfare of the body as a whole, while others—e. g., the hands and vocal organs—subserve quite particular purposes. The first class may be designated general or somatic and the second subsidiary or special.

Exercise involving many muscles or large groups of them (leaving actual movements out of consideration) results

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in the increased circulation and ventilation of the blood. The effect of muscular exercise upon the processes of digestion, assimilation, and excretion, though important, is an indirect one, those processes being modified, so far as muscular activity is concerned, by the changes wrought by it in the volume, distribution, and quality of the general blood stream. The nutrition and growth of all the tissues are promoted by muscular exercise, though its most obvious and direct effects are exhibited by the master tissues themselves.

Bodily movements result from the combination or co-ordination of the actions of various muscles or groups of muscles. Our habitual movements are said to be represented in or by the central masses of nervous tissue, through whose stimulative action the related groups of muscles concerned are animated or innervated. Thus the movements of the right hand are represented in a particular region of the left hemisphere of the brain. The normal growth and development of the motor areas of the brain are conditioned in large measure on the normal exercise of the muscles whose movements are represented by them. It is not putting the case too strongly to say that the development of the neural mechanisms which represent our bodily movements is the most important of the special effects of "muscular exercise."

Exercises which appeal to the muscles of the trunk and limbs, because they do exert a direct influence upon the heart, lungs, and skin, and upon the fundamental portions



THE BLIND TWINS FROM KANSAS.

AMONG the defectives who were on exhibition at the Fair, several of whom gave demonstrations of their wonderful precocity and extraordinary training, none were more popular than two manly little fellows who are pictured in the accompanying photogravure. On account of their hailing from the same State and both being proficient performers on the violin, they came to be known as the "Blind Twins from Kansas." They gave musical recitals on several occasions at the Kansas model school for the deaf and the blind, and also took a prominent part in the exercises that marked the celebration of Helen Keller Day, October 18th.

to the maintenance and ventilation of the blood. The exercise which is exercised upon the processes of digestion, and upon the secretion, though important, is an indirect one, the process being modified so far as necessary by the changes wrought by it in the volume, temperature and quality of the general blood stream. The functions of all the senses are connected with the general circulation, though in most of them and direct effect is exhibited upon the senses themselves.

Body movements result from the combination of co-ordination of the actions of the muscles.

presented in the first section of the book, and whose development is described in the second section. The development of the nervous system is described in the third section, and the development of the sense organs in the fourth section. The development of the muscular system is described in the fifth section, and the development of the circulatory system in the sixth section. The development of the respiratory system is described in the seventh section, and the development of the digestive system in the eighth section. The development of the excretory system is described in the ninth section, and the development of the reproductive system in the tenth section.

development of the nervous system, and the development of the sense organs, and the development of the muscular system, and the development of the circulatory system, and the development of the respiratory system, and the development of the digestive system, and the development of the excretory system, and the development of the reproductive system.

Exercise is said to be the cause of the development of the limbs, and the development of the heart, lungs, and skin, and the development of the reproductive system.

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of the nervous system, constitute the core, or, rather, the bulk of every rational and well-approved system of physical training. Our first movements, even in utero, are instinctively of the generalized central sort. Creeping, walking, running, jumping, and dancing are compounded in varying degree of movements which are mainly central and appeal to the circulatory and respiratory organs, and so exert an influence on the bellows movements of the chest, which are typically central in character. All of these movements minister to general ends: First, of the hygienic sort, by reason of their influence upon nutrition and growth, and, second, to developmental ends, since they serve as the basis or starting point of more complicated movements, involving intermediate and peripheral movements, that cannot be performed with ease, efficiency, or skill, without practice or drill; e. g., catching, throwing, climbing, and bowling. Even the most frequent and typical of central movements—those of breathing—are capable of discipline, as is attested by the assiduous care with which the trainers of runners, pugilists, and oarsmen, as well as of singers, actors, and elocutionists, strive to teach their pupils to acquire special forms of control over their breathing organs.

Stuttering is a spastic nervous disorder whose most obvious symptoms are minor convulsions in the articulatory apparatus, but the initial fault is in the execution of the breathing movements. If the ordinary teachers of reading (who are responsible for so much of school-produced

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stuttering) understood their business as fully as the coach of a boat's crew usually knows his, they would recognize the beginnings of stuttering and prevent its development by teaching the child then and there to acquire proper control over his central breathing movements. Many a clerk or copyist might have been saved scrivener's palsy had his writing teacher taught him to use his arm and forearm in coordination with his hand and fingers in plying his pen, and the skill with which a violinist handles his bow depends quite as much on his ability to control the muscles of his shoulder as to control those of his fingers.

To illustrate the practical value of systematized muscular exercise as a means to quickening and improving mental faculty the experience of the State Reformatory at Elmira, N. Y., may be cited. The reformatory is distinctively a school, and scarcely to be counted among prisons as prisons go. In many respects it is one of the most original and successful schools in the country. Its pupils are male felons between sixteen and thirty years of age serving a first sentence. All sentences to Elmira are indeterminate—that is to say, a prisoner may be held for the maximum time provided by law for the crime of which he has been convicted, but it is possible for any prisoner to secure an absolute release in less than two years. To accomplish this is not an easy thing, for the conditions of release (which is on parole for at least six months in the first instance), are: That the prisoner shall earn perfect marks for twelve

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consecutive months in "conduct," "labor," and "school," that he must gain the confidence of the general superintendent and managers, and that upon his release "some definite, permanent, suitable employment" shall be found for him either by his friends or the management of the reformatory. If a paroled prisoner gives satisfaction to his employer and the authorities of the reformatory throughout the term of his parole, he becomes entitled to an absolute release and the restoration of citizenship. Nine is a perfect mark for a month. Failure to earn a 3 in either conduct, labor, or school work entails a new start, as no one who has not 9 twelve times consecutively to his credit is admitted to parole.

In June, 1886, at the suggestion of the superintendent, Mr. Z. R. Brockway, Dr. H. D. Wey, the physician of the reformatory, formed an "experimental class in physical culture." The class was composed of dullards who for a year or more had made no appreciable progress in their school work and were likewise behindhand in shop work. The object of the formation of the class was "to ascertain if physical culture, as comprised in frequent baths, massage, and daily calisthenics, would not result in a partial awakening and stimulation of dormant mental power. Increased mental activity rather than muscular development was to be the gauge of the success or failure of the experiment." Eleven men, ranging from nineteen to twenty-nine years of age, were subjected to the treatment. They were released

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from shop work, but were given careful instruction in school. The class was required each day to practice two hours or a little more in "setting-up" exercises and in dumb-bell drill, and each man was given three baths a week, followed by bath massage. The members of the class were not sickly, ill-nourished specimens, nor could they be classed with those who are technically termed "weak-minded;" they were simply coarse, stupid, insensitive, unambitious dullards imprisoned for felony.

The experiment continued for five months and proved a striking success. The men improved in mental power and self-control as well as in physique and carriage. The average marking of the class, according to the school register, was, for the five months in question, 74.16 on the scale of 100, whereas the corresponding mark for the five months immediately preceding the experiment had been 45.25. Comparison of the record of the class for the six months preceding the five months of physical training with its record for the six months succeeding that period showed that the improvement was not of a transitory character. In the first six months the general average on the scale of 100 was 46 and 76 in the second, while the average mark in school work, on the scale of 3, rose from $1\frac{3}{2}$ in the first period to $2\frac{9}{10}$ in the second.

Owing to the satisfactory results obtained with the experimental and subsequent classes, the New York legislature appropriated funds sufficient to provide the Elmira Reforma-



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tory with a suitable gymnasium and bath house in 1890. The gymnasium "became, for certain classes of defectives, a place of preparation for the schools of trades and letters and an auxiliary to the hospital." Since 1890 facilities for the physical training of defectives, including the insane, blind, and feeble-minded, have been notably increased and improved in various parts of the country.

Growth and development characterize the stage of immaturity, but, since development waits upon growth, the two vary in amount and rate in different parts of the stage, considering the body as a whole. Nor should it be forgotten that the several somatic and general mechanisms of the body differ in respect to the order and rate of their growth and development. Unless the significance of that order and rate is recognized and heeded, the education of children and youth cannot be thoroughly natural and rational.

The period of evolution or immaturity is of paramount importance in education, since the formal education of the great majority of the school population ceases before maturity is reached. The period may be divided for convenience into three equal periods of eight years. Growth and development proceed during each period, but growth preponderates in the first and second and development in the third period. The salient features of each period may be grouped as follows:

First period, from birth to the end of the eighth year.—There is rapid increase in height and weight in the earlier

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part of this period, particularly in the first twelvemonth, but what has been termed the "immense" growth of the brain, which attains, within a few ounces, its full weight in the eighth year, signalizes this period most markedly. In respect to development, the sensory organs lead and reach a high degree of perfection, though certain neuro-muscular mechanisms, by which movements concerned in balancing, locomotion, and vocal utterance are effectuated, also undergo rapid development. Sensory education may safely be more specially emphasized than motor education in this period. Strenuous and exacting drill, at least of the accessory mechanisms, is contra-indicated for the child. Simple games and elementary gymnastics, if not pushed too far, best answer the ends of physical training during this period.

Second period, from the beginning of the ninth to the end of the sixteenth year.—This is distinctively the period of accelerated growth in height and weight. The muscles play the leading part in the increase of the weight of the body. Motor coordinations attain a higher degree of development than was possible during the preceding period, though they are not fully perfected till adolescence is fully established. The establishment of puberty exercises a profound effect on the development of body, mind, and character. On the whole this appears from the hygienic standpoint to be the most critical of the periods into which we have divided immaturity. Exhausting constitutional disease, excessive mental or bodily strain, underfeeding, undue deprivation of mus-

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cular exercise may readily lead to irremediable stunting or enfeeblement. If physical education be neglected or misdirected during this period, if it be mistakenly deferred to a more convenient season, it cannot accomplish its perfect work, either as regards the promotion of health or the development of the motor functions of the brain.

The principal departments of general physical education should be systematically availed of, i. e., both gymnastic training and athletic pastimes should be given prominent places in the school curriculum, and the forms of exercise adopted should be more varied, complicated, and difficult than those employed in the preceding period. But the time for engaging in feats or contests that demand extraordinary strength, endurance, or skill is not yet.

Third period, from the seventeenth to the close of the twenty-fourth year.—This, the period of established adolescence, is distinctively a period of development—of development of character no less than of bodily and mental faculty. The life of the race begins to be reflected in the life of the individual, to whom a higher and wider range of interests and activities is opened through the development and perfecting of his higher fundamental and accessory neuromuscular mechanisms. Emotion becomes coordinated with self-chosen aims and ideals, and the individual is prepared by special kinds of technical training to enter upon his life work as an independent, adult member of the community.

The muscles, which are to serve as the executive instru-

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ment of the brain, do not attain full growth till toward the end of the second period. Then, when both brain and muscles are fully grown, motor development enters upon its most active and important stage, i. e., in the third period. During each and all of the three periods hygienic and educative ends should be kept in view, but throughout the first and the first half of the second period hygienic forms of exercise should preponderate, while during the latter half of the second and the whole of the third period educative forms of exercise should be assigned the leading rôle; provided that practically normal growth and sound health have been secured to start with.

Attempts at tours de force, trophy winning, and record breaking, which would be ill judged at an earlier stage, may now be profitably encouraged under reasonable restrictions. Valid objections there are to rampant athleticism. Nevertheless the predilection of youth for athletic sports and contests may be justified as natural and worthy on pedagogical grounds, if we admit that the development of mind and character, as well as that of the brain and muscles, is subject to the laws of evolution. The average collegian, if a healthy animal, is apter at expressing himself fully in terms of muscularity than in terms of mentality. Intellectual maturity comes later, unless arrested development supervenes. It is hardly a misfortune that, in the heyday of youth, the sons of civilized men tend to exhibit in their games something of the hardihood, daring, and contentiousness



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which characterized the principal pursuits of their primitive, beast-hunting, war-making ancestors.

No system of physical training is worthy to be pronounced sound or rational unless its procedures are purposely adapted to the peculiar and changing needs which arise in differences of sex, age, health, and mental capacity in the persons to be trained. The results of comprehensive and systematic physical training should be ease and gracefulness of carriage, whether in repose or action; square shoulders and a straight back; a deep and capacious chest, in which the heart and lungs, developed to their normal size and strength, shall have free and full play; symmetrically developed and firm muscles both of trunk and limbs; the power to execute with ease, precision, and economy of force not only all necessary habitual movements, but also such as are involved in the simpler exercises of strength, speed, and skill, and in the performance of ordinary gymnastic and athletic feats; and, above all, that equanimity, patience and self-confidence, which disciplined self-knowledge and habitual self-control tend to produce in persons endowed with normal gifts and propensities. Given a pupil who has had the advantage of thorough and judicious physical training in childhood and youth and the technical teacher is able to accomplish vastly more than he otherwise could, whether his business be to turn out a skilled fencer or artillerist, an actor or an acrobat, a singer or a wood carver, a watchmaker or an elocutionist.

Of popular sports we may say in general that they promote

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the more massive bodily virtues of strength, endurance, and speed, while dexterity, address, and finesse require more specialized and complicated forms of exercise for their development. In other words, athletic sports are insufficient for the purpose of giving adequate training to both the fundamental and accessory motor mechanisms, and should be supplemented by such forms of practice and drill as are afforded by the systematic gymnastics of the Swedes and Germans.

The most primitive forms of physical training are the plays of children, whose natural impulses to run and shout soon prompt them to engage in the spontaneous, dramatic imitation of the pursuits of their elders, particularly in respect to hunting and warfare, e. g., tag, catch, chasing and throwing games, and playing with weapons. Such forms are still found among most children and savages, and occupy a prominent place in the more primitive popular sports of hill folk and islanders. If we attempt to trace our typical systems of physical training to their original forms, we find their beginnings either in childish plays or in games closely akin to them. Greek gymnastics and athletics developed from such pastimes as Ulysses and Ajax engaged in around the funeral pyre of Patroclus, which Achilles instituted in honor of his playmate and comrade. Jahn adopted several of the ancient German games in his training system, and Ling, as became a leader in the Gothic party, exalted the sports of the ancient Norsemen, though he gave them no

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very prominent place in his gymnastic system. British sports are the most highly developed modern expression of the play instinct. In the United States the most common and popular forms of physical training belong to the athletic species.

The British and Grecian types of bodily education, though strikingly different from each other in most respects, are alike in being devoid of any considerable admixture of elements acquired through conscious imitation or borrowing. British sports reflect more fully, perhaps, than any modern system of physical training the national spirit of their devotees. They have been followed chiefly for their own sake and have undergone but slight modification at the hands of educational reformers, in which respect they present a marked contrast to German turning and Swedish gymnastics, which, though they bear the impress of national feeling, have been developed largely of set purpose, either as a means of national regeneration or as a remedy for overrefinement and the deteriorating effects of sedentary and urban life. Though teachers and governing boards are helpful and sympathetic as a rule, British athletics as an institution have been shaped mainly by successive generations of boys and "old boys." The British boy, who, according to continental standards, "plays at his work and works at his play," has forced his masters to give him time and space for his games, often at the expense of the course of study.

The scope of modern systems of physical training is wider

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and their aims more truly popular than was the case with the mediæval and ancient systems, since only members of the privileged classes were allowed to participate in the Grecian games or the mimic warfare of the tournaments and jousts of the middle ages. Team matches and class exercises are distinctively modern inventions, the prizes in most forms of ante-modern contests being offered for individual prowess. To be sure, there were among Grecian youth certain games in which "sides" contended with each other, and in the chivalric tournaments squadron charged squadron in the lists; but these, like the ancient football and hockey games, in which parish fought against parish or neighborhood against neighborhood, were rather mass than team contests, since the sides were at best very loosely organized, there being little if any subdivision of labor among the contestants. Team athletics have reached their highest development in cricket, baseball, football, and rowing, compared with which the class exercises of the Swedes and Germans, though they often involve the simultaneous action of large numbers of persons, are relatively simple and unspecialized.

The training of aspirants to the Grecian games was carefully regulated in respect to diet, bathing, hours of rest and practice, etc. Frequently it was severe and prolonged. Professional athletes, through their special training, finally became a class apart—proverbial for their stupidity and brutality. Much less attention was given to preparatory exercises in the middle ages than among the Greeks and Romans,



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and training in the sense in which it is employed by those addicted to British sports is scarcely known in Germany or Scandinavia outside the ranks of professional acrobats and a few Anglomaniacs. Though training usages of the present day, particularly in matters of diet, are, on the whole, less foolish than they were thirty years ago in this country, the preparatory training for match games among collegians is frequently carried to ridiculous extremes.

The Greeks used but little apparatus, either in their preparatory exercises in the *palestræ* and *gymnasia* or in their championship games, which usually took place in the stadium or some other open place, and such apparatus as was used was of the simplest sort. The spear, the discus, possibly the vaulting pole, the halteres, and himantes (the prototypes, respectively, of the modern dumb-bells and boxing gloves) very nearly exhaust the list of Greek gymnastic machines. Machine or apparatus gymnastics are mostly of modern origin. Jahn invented the parallel bars and the horizontal bar. The stall bar, the swinging ladder, and the "bom" are Swedish devices. Most of the ropes, ladders, and poles used in climbing, though of ancient origin, have been modified and adapted to their present use in recent times, but they cannot be classed as generically or distinctively German or Swedish. The physical training of page and squire aimed chiefly at making him a good horseman and in rendering him skillful in the management of sword, lance, and maul when mounted. The aspirant to knighthood prac-

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ticed with his sword at posts and the Saracen's head, and learned to use his lance by tilting at the ring and the quintain. Beyond these he had little need for fixed apparatus. The gymnastic horse of wood, so generally found in modern gymnasia, was originally employed as a substitute for the living horse in leaping exercises. Mention is made of it in sixteenth century writings. Indian clubs are said to have originated in Persia.

As regards length of days, British sports probably stand next to the Grecian games, whose history extended over a thousand years, i. e., from the Homeric age till the last Olympiad. At any rate, tennis, football, quoits, casting of the stone, and skittles were so popular in the last quarter of the fourteenth century that a law of Richard II bade "servants and laborers to leave off playing them and other such importune games" on "Sundays and holydays" and "use bows and arrows" instead. The mediæval jousts and tournaments lasted hardly four hundred years. German turning took its rise in the last quarter of the eighteenth century, and Swedish gymnastics are hardly a hundred years old. Ling's career as a teacher began in December, 1804, when he was appointed fencing master in the University of Lund.

Friedrich Ludwig Jahn (born in 1778, died in 1852) is known as the father of German turning. Jahn, a man of much more aggressive nature than Guts Muths, though a teacher, was singularly adapted to popular agitation and leadership. Jahn was the son of a country clergyman in one

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of the Prussian provinces. He began his preparation for the university in 1791 and entered the University of Halle as a student of theology in 1796. He soon gave up theology, desultory reading in history and philology being more to his taste. Of a restless and turbulent disposition, he wandered from university to university, being usually at odds with his fellow-students as well as his teachers. He associated much with the common people, whose speech and customs strongly interested him. In 1800 his first pamphlet on the Promotion of Patriotism in Prussia bore witness to his dominant sentiment. In 1803 he achieved some success as a tutor in a private family. Besides directing his pupils' studies he took an active part in their sports and exercises. In 1806, as a volunteer, he joined the Prussian army just before its overthrow by Napoleon. For the next three years he was a wanderer, consorting with men who vainly sought to rouse the people to revolt against the French and working on his book on German Nationality, which appeared in 1810, when he was a private teacher of boys in Berlin. He had already become imbued with the idea of making bodily training a factor in national regeneration and education. Beginning in the spring of 1810 with holiday excursions, he led his pupils into the woods near the city. His efforts to awaken interest in national sports attracted attention and brought him followers.

In the spring of 1811 he opened his first turnplatz in the Hasenheide. In the interval between 1810 and 1816, the

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date of his *Deutsche Turnkunst*, Jahn accomplished the main work of his life. His efforts to promote bodily education commended themselves to teachers and government officials, as well as to the boys and young men who resorted to the turning ground, and interest in turning spread throughout Germany. In 1812 the number of turners in Berlin rose to five hundred or more. From the first, vigorous games which aroused the emulation of the players were assigned a leading rôle. As a means to awaken community of interest and patriotic feeling a special costume was adopted, ancient forms of Teutonic speech were cultivated, and special efforts were made to identify the revival of turning (which term was supposed to be akin to "tourney") with the ancient German tournaments. Jahn was also instrumental in establishing a "German Union" hostile to the French rulers of Prussia, and in infecting the students of several of the German universities with sentiments like his own.

Jahn was the father of *volksturnen*, which was under the ban of the Prussian Government from 1820, when some ninety turning grounds were closed, for nearly a generation.

Meanwhile the interest in gymnastics which had spread throughout the German States led to the development of school gymnastics. German *schulturnen* owes its distinctive peculiarities to the Hessian, Adolf Spiess (born in 1810, died in 1858). As a boy he was trained in gymnastics, partly after the methods of Guts Muths and partly after those of Jahn. While a student in the University of Giessen Spiess

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organized a class of boys and made a beginning in teaching class or "common" exercises in standing, walking, running, and leaping. From 1833 to 1848 Spiess was a teacher in Switzerland and became prominent by reason of his labors and writings in the department of physical education. He worked out a system of class gymnastics, i. e., the simultaneous performance by a squad or class of prescribed exercises (with or without apparatus) at the word of command, and was the first to teach gymnastics to girls, for whom he invented appropriate forms of free movements, dumb-bell exercises, and exercises on the suspended ladder and the see-saw. The methods of Spiess, who was devoted to order and system, were much better adapted to the conditions of school life than were those of Jahn, whose classes were only loosely organized, so that their members might follow in succession the example of a leader or vorturner.

In 1848 Spiess returned to Germany to accept a high post in the department of education of the Grand Duchy of Hesse. Till his death, in 1858, he was engaged in organizing and supervising school gymnastics throughout that State. Spiess strove to base his theory of bodily training on the laws of anatomy and physiology, and grouped and ordered his exercises in conformity with his understanding of those laws. He applied his principles of common exercises (*Gemeinübungen*) to the apparatus gymnastics of Jahn as well as to free and concerted movements, which were sometimes accompanied by music. His principal books, which had a wide

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influence, were *Lehre der Turnkunst*, 1840-1846, and *Turnbuch für Schulen*, 1846-1851. His distinctive work was to render German gymnastics more orderly and scientific and to adapt them to educational purposes and methods. He exerted a wide and permanent influence upon both popular and school gymnastics throughout Germany and Switzerland.

In 1836 the charge of overpressure was brought against the Prussian schools, more especially the gymnasium, by Doctor Lorinser, whose paper, published in a medical journal, aroused much discussion and ultimately gave rise to a renewed interest in school gymnastics. In 1842, six years before the return of Spiess to Hesse, King Frederick William IV. of Prussia gave his assent to the recommendation of two of his ministers that "bodily exercises should be acknowledged formally as a necessary and indispensable integral part of male education and should be adopted in the education of the people." The King authorized the establishment of "gymnastic institutes" in connection with the "gymnasien," the higher middle schools, the training schools for teachers, and the division and brigade schools in the army. On the basis of the royal cabinet order of 1842, step by step the generous and enlightened policy of the Prussian Government toward physical education has been developed.

Since 1890 there has grown up a very widespread and active movement in Germany to supplement the customary instruction in school turning by means of outdoor games and



IOWA'S EDUCATION EXHIBIT.
IOWA SECTION, EDUCATION BUILDING.

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popular sports, which remind one of British athletics, and public playgrounds have increased greatly in number in consequence, though the games do not replace the more formal gymnastics. They are usually regulated and directed by teachers of gymnastics, who in acquiring their professional training have taken "courses in games" (spielkurse).

Every gymnastic lesson should include order and free movements as well as apparatus exercises. Free movements in place should interchange with similar movements involving change of place. Care should be taken that during the period of exercise the trunk and the lower limbs are exercised. During the hour of instruction the single exercises should follow one another quickly and without delay. Explanations and criticisms by the teacher should be concise and conclusive. Free and order movements, as well as exercises with hand apparatus, should always be made as common movements, i. e., simultaneously and in concert by all the pupils in the division at the command of the teacher.

Physical training constitutes an organic part of the course of instruction in the German elementary and secondary schools and is not looked upon as a substitute for recess or free play, whose valid claims are otherwise provided for. Fortunately for the German schools, the notion of abolishing recess or replacing it by gymnastics has not led German teachers or educational authorities astray. Furthermore, the aims and interests of school hygiene and school gymnastics

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are not confounded in thought or muddled in practice. Turnlehrer are not expected to act as health inspectors or school hygienists or vice versa, consequently school gymnastics and school hygiene are better organized and more effective in Germany than is commonly the case in this country.

Until comparatively recently school gymnastics in Switzerland, Austria, Belgium, Denmark, Italy, England, and even in France, have followed or resembled German school gymnastics in the main; but latterly in France, Denmark, and England, as well as in some parts of the United States, a tendency to adopt or assimilate Swedish methods has been manifest. Both German turnen and Swedish gymnastik have their own peculiar excellencies and limitations which reflect the personal and national traits of their inventors and exponents. Each has undergone modifications and improvements and is likely to be still further modified to suit new conditions. It must be admitted that the leaders of German gymnastics have shown more aptitude than their Swedish rivals in adapting themselves and their art to new demands and conditions. Besides the German and the Swedish there is no modern system of gymnastics entitled to be designated as national as regards its characteristics and proportions.

The rise of physical education in the United States has been slow and fitful. Its history, which presents a general parallelism to the course of the development of physical education in Europe, may be divided into periods as follows:

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1. The period from the war of the Revolution to 1825. The claims of physical training received favorable mention from several critics of existing education in the earlier part of this period. Toward its close the imagination of educational reformers was actively stimulated by European experiments and examples.

2. The period from 1825 to 1830, which was marked by active discussion and enthusiastic but short-lived experiments in lines suggested by foreign experience.

3. The period from 1830 to 1860, a period of reaction and quiescence, for the most part, though a renewal of interest became manifest toward its close.

4. The period from 1860 to 1880. In this period the present widespread athletic movement had its beginning, and a revival of interest in gymnastics took place, particularly in colleges and preparatory schools.

5. The period from 1880 till the present time, which has been signalized by active growth and diversified expansion in all departments of physical training. More has been accomplished in this period than in all the preceding periods taken together toward securing a place for physical training in the curriculum of the elementary schools, and unexampled activity has been shown in the erection of club, school, and college gymnasia and the establishment of athletic fields and city playgrounds. One of the most characteristic and praiseworthy features of this period has been the establish-

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ment of schools and courses for the normal training of teachers of gymnastics.

Quite naturally the most comprehensive schemes proposed for the physical education of American youth were of a military character. In January, 1790, President Washington transmitted to the first Senate of the United States a report from General Knox, the Secretary of War, recommending the enrollment and military training of all men between the ages of eighteen and sixty. His plan, which failed of adoption, called for the formation of "annual camps of discipline" in each State. In these camps "the advanced corps," composed of the "youth of eighteen, nineteen, and twenty years of age," was to receive its schooling in the art of war. It was provided that "no amusements should be admitted in camp but those which correspond with war." Evidently the correspondence between football and war, which, in the eyes of certain of its modern admirers is one of its most laudable features, was not sufficiently clear in 1790 to elicit the commendation of General Knox, else he might naturally have approved it along with "the swimming of men and horses, running, and wrestling" as a means of rendering the bodies of his advanced corps "flexible and vigorous." Possibly he agreed with King James I. of England, who, in his "King's Book of Sports" had in 1618 characterized football as "meeter for lameing than making able;" but it is most likely that football "scrimmages" in 1790 partook less of the tactics of dismounted cavalry than in our



GERMANY'S SECTION, EDUCATION BUILDING.

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own day. It is noteworthy that since the Boer war some Englishmen have openly doubted the validity of the alleged statement of the Duke of Wellington that the field of Waterloo was won on the playing fields of Eton College.

In 1817, in response to a suggestion from President Madison, a report was made to Congress upon the reorganization of the militia, in which it was recommended "that a corps of military instructors should be formed to attend to the gymnastic and elementary part of instruction in every school in the United States, whilst the more scientific part of the art of war should be communicated by professors of tactics to be established in all the higher seminaries." This scheme did not receive the sanction of law, either in 1817 or in 1819, when it was brought forward again. The credit for the first considerable successes in combining physical with mental training in America should be awarded to the United States Military Academy at West Point and to certain schools modeled on it while it was still young. Physical training at West Point has a continuous history of nearly ninety years, since the administration of Maj. Sylvanus Thayer as superintendent, to whose shaping influence the West Point course of instruction owes its most salient characteristics, began in 1817.

Jefferson and Rush commended the use of tools as a form of exercise. Rush also favored gardening and agriculture as means of directing and training the rising generation. In accordance with the prevalence of such notions several farm,

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manual labor, and Fellenberg schools were started in various parts of the country prior to 1825.

In the early years of our second period a widespread interest in educational reform arose. In 1825 and 1826 physical education became a matter of almost epidemic interest in New England. Boston in particular was affected. The outburst was owing, in large measure, to contagion imported from abroad by exiles seeking asylum and employment; by scholars returning from foreign universities; by teachers fresh from pilgrimages to the wonderworking shrines of the new educational cult in Great Britain and on the Continent. Glowing accounts were multiplied by voice and pen of the revival of gymnastics in Europe, particularly in Germany, Switzerland, France, and England. At the same time physical education was vaguely conceived by many writers and lecturers as including pretty much everything that pertains to personal hygiene from the cradle to the grave. Physical education fired the imagination of reformers for a time, but so did monitorial instruction, manual training, vegetarianism, and phrenology.

Harvard College started the first American college gymnasium in one of its dining halls in March, 1826, and later in the same season a variety of gymnastic machines were put up in the playground known as the "Delta." Doctor Follen, an instructor in German and a German exile, who was familiar with the Jahn turning, was the instructor and leader in gymnastics. The Boston Gymnasium, opened in

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the Washington Gardens Oct. 3, 1826, with Doctor Follen as its principal instructor, seems to have been the first public gymnasium of any note in the United States. Dr. Francis Lieber, who was warmly recommended by Father Jahn, succeeded Doctor Follen in 1827, Jahn himself having declined the invitation from the managers to assume charge of it. The patrons of the gymnasium, about two hundred in number at its opening, rose to four hundred in the first twelve-month, but dwindled to four in the second, it is said. A contemporary observer declared "no talent could keep the gymnasium alive after the novelty had ceased, and some of the gymnasts had been caricatured in the print-shops." Gymnastic grounds were established at Yale in 1826, and at Amherst, Brown, and Williams in 1827, and fully a dozen schools, mostly in New England and New York, proffered to follow the example set by Round Hill and Harvard. Beck, Lieber, and Follen became college professors; the aims of gymnastics were not fully grasped, competent instructors were lacking, no one knew how to produce them, and so the whole movement lapsed into neglect and forgetfulness within five years of its beginning.

Between 1830 and 1860 there was no general or extensive revival of interest in gymnastics, and athletic sports led a feeble and inconspicuous existence; but a crusade for popularizing the doctrines of physiology and hygiene set in which served to perpetuate the essential spirit of the period 1825-1830 and to prepare the way for the gymnastic revival that

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occurred just before the war broke out. This crusade, which had its beginnings at least as early as 1825, was greatly stimulated by the books and lectures of the phrenologists Spürzheim and George Combe, who aroused much interest among teachers, parents, and even medical men in the claims of their pseudo-science as the foundation of a natural and health-giving system of education. Through the multiplication of popular manuals of physiology, which usually contained much hortatory matter on physical education and sometimes set forth rules for gymnastic and "calisthenic" exercise, the general public came to entertain the notion that serviceable and disciplined bodies were much to be desired and that some sort of school machinery ought to be provided for the purpose of securing them. Soon after the collapse of the gymnastic movement a considerable party, including many benevolent and influential persons, arose which favored manual labor in preference to gymnastics. Between 1829 and 1835 very many enthusiastic attempts were made throughout the Atlantic and the then Western States to provide college and seminary students with facilities for gaining health, amusement, and money by means of agricultural and mechanical labor. The movement did not lead to conspicuously encouraging educational or pecuniary results.

After the failure of the revolutionary attempts of 1848 in Germany, there was a large influx of German Liberals into this country. Wherever the German immigrants settled in



SWEDEN'S MANUAL TRAINING EXHIBIT.

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numbers turnvereins quickly sprang up. Thus a new factor, destined in later years to exercise a large influence in the development of American physical training, was introduced. In the North American Turnerbund, which for over half a century has been the largest, most widespread, and efficient gymnastic association in the country, we have a genuine and vigorous offshoot from the German stock, but American educationists practically ignored its existence for more than a generation.

The civil war checked educational reform, and the interest excited by the gymnastic revival soon spent its force or was transferred to military forms of drill and exercise. In the year 1860 the colleges of Harvard, Yale, and Amherst erected gymnasium buildings, but their example aroused but little emulation in other colleges until after the close of the war. Amherst College, in 1860, established a department of hygiene and physical education. Dr. Edward Hitchcock, Sr., has served continuously as professorial head of the department since 1861. He introduced a system of periodical physical measurements which served to excite the interest of the students and as a criterion of their progress in growth. The main feature of the Amherst system of physical education was, and is still, a memorized musical drill with light dumb-bells and marching exercises. Prior to 1880 Amherst's example in making gymnastics a compulsory part of college work had but little effect upon the other colleges of the country.

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The building of college gymnasias was resumed after the close of the war, when a large contingent of young men who had been subjected to strenuous physical training in the army entered the preparatory schools and colleges. The influence exerted by this contingent in reviving and developing an interest in physical training was far more potent in the department of athletics than in that of gymnastics. Baseball and rowing, followed by football, developed rapidly and led to the multiplication of intercollegiate contests. The inadequacy of the facilities afforded by the older gymnasias for the indoor training of crews, teams, and individual aspirants for athletic honors had much to do with inaugurating a new era of gymnasium building and with improving the organization and conduct of the departments of "physical culture" in the leading colleges for both sexes, and indirectly aroused an imitative spirit in some preparatory schools. This era opened in 1879-80 with the completion of the Hemenway Gymnasium at Harvard University. This gymnasium, for whose erection and equipment Mr. Augustus Hemenway, of Boston, a graduate of Harvard in 1876, had given the sum of \$115,000, surpassed in size, magnificence, and convenience any of the gymnasias then to be found in the country.

Since 1880 millions of dollars have been spent on new gymnasias, most of which have been modeled more or less closely upon the Hemenway Gymnasium. To Dr. D. A. Sargent, the director of the Hemenway Gymnasium since its opening, we owe the invention of the system of "developing

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gymnastics" which bears his name, and has been adopted very generally in the gymnasia of the colleges, the Young Men's Christian Associations, and the athletic clubs of the country. The Sargent gymnastic machines, numbering nearly sixty, employ the so-called "pulley weights," in variously modified combinations, so as to call certain groups of muscles into action in a special way. By the use of these machines one can exercise the muscles of his back, loins, thigh, forearm, or hand as his own taste or the advice of his instructor may dictate. The director of every gymnasium conducted in conformity with the Sargent system habitually and repeatedly makes a careful physical examination of each person under his charge, on which he bases his prescription of such exercises as will tend to remedy defects and promote symmetrical muscular growth. In many respects the Sargent developing gymnastics resemble the system of "mechanical-medical gymnastics" devised by Doctor Zander, of Stockholm, in the early seventies. Like the Zander gymnastics (whose vogue is chiefly European), the Sargent gymnastics are dietetic rather than essentially educative in their aims, and most of the Sargent machines are not adapted to meet the requirements of class gymnastics; therefore most well-equipped gymnasia nowadays are furnished with heavy apparatus of the very kind that Dio Lewis professed to have driven from the field. The idea of scientifically directing and controlling gymnastics and athletic training is admirable and practicable; but the effect of using the Sargent

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apparatus stops short of muscular development in its higher sense, since by means of "pulley weights" it is possible only to enlarge and strengthen the muscles without teaching skill and discrimination to the nerve centers which animate the muscles. The innovations and improvements associated with Doctor Sargent's name and the growth of the custom of giving the direction of college gymnasia to medically trained men have done much toward securing a quasi recognition of physical education and its representatives from the exponents and devotees of "liberal studies."

The best interests of rational and effectual physical training have suffered much in this country and still suffer from the disproportionate influence exercised by athletic ideals upon scholastic and collegiate youth, from the undue prominence accorded athletic contests and contestants by an uncritical public and an injudicious press, and from the feeble and unintelligent policy of the responsible leaders in educational affairs.

Quite naturally, athletics constitute the most popular and obtrusive branch of physical training, and the athletic movement possesses greater power and volume than any of the allied movements which have been revived or originated since 1860. The American gymnasium is a semi-original creation that has been devised by the American architect to meet the expressed or fancied needs of the American athlete. All things considered, the athletic clubs, whose rapid increase in numbers has been one of the most notable features



GREAT BRITAIN AND IRELAND EDUCATIONAL EXHIBIT.

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of the recent history of physical training, constitute the consummate and peculiar product of the athletic movement. There is nothing quite like them outside of America. They have done much toward developing the insensate spirit of rivalry, bordering on professionalism, which has wrought such mischief in school and college athletics but comparatively little toward developing the educational side of physical training.

It is not my purpose to disparage athletic sports, which, when wisely regulated, afford invaluable means of mental, moral, and physical training for boys and young men, but the element of display and competition is so inseparable from athletic aims and methods and proficiency in athletic specialties demands so much time and thought and requires such costly appliances as to preclude the general adoption of athletic sports as the principal means of securing the hygienic and educational ends of physical training for the mass of the school population, especially in urban districts.

Gymnastics, if rationally ordered and properly taught during the early years of school life, afford the best preparation that an aspirant for athletic honors can have. Aside from the question of expense, there is no good reason for prolonging purely gymnastic drill to the exclusion of the higher forms of gymnastics and of outdoor sports after a pupil reaches the age of fifteen years. When the managers of our high and preparatory schools shall have learned their business as regards bodily training, they will, I believe, insti-

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tute courses of instruction in gymnastics analogous to their elementary courses in languages and mathematics, so that their pupils shall be prepared to choose their athletic and gymnastic electives in quite the same way that they now choose their elective studies when the opportunity offers. When the schools do their duty in the premises, the colleges can give up the kindergarten and grammar school styles of physical education, and it will then be easier for them to solve the athletic problem. That question cannot be solved satisfactorily till it is taken out of the hands of growing boys and professional or semi-professional trainers and coaches.

Neither the colleges nor the athletic clubs of the country have earned the right to decide the question of what constitutes a well-ordered and practicable system of physical education for elementary and secondary schools. The more or less successful introduction of school gymnastics since 1884 by the cities of Chicago, Kansas City, Cleveland, Detroit, Denver, Indianapolis, St. Louis, Milwaukee, Cincinnati, St. Paul, Baltimore, San Francisco, Providence, Washington, New York, and Boston, through the action of their respective school boards, has been chiefly owing to the zeal and insistence of the advocates of the German and Swedish systems of gymnastics, who were prepared to speak with knowledge and to act with intelligence. In most of the cities mentioned German free and "light gymnastics" have been adopted in the lower grades, and a large number of the directors having charge of the work have been graduates

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of the seminary or normal school of the N. A. Turnerbund. Latterly, as new buildings have been constructed, a tendency to provide high schools and even grammar schools with specially fitted gymnasia has declared itself. In Boston, Worcester, Gloucester, Brookline, Cambridge, and a fair number of other cities in Massachusetts and New England Swedish gymnastics have been introduced, more or less completely, into the public schools. In Washington, New York, and Providence, and in other cities too numerous to mention, "mixed" or "eclectic" systems are in vogue. All this is indicative of progress of a sort, though school boards and superintendents have not yet reached a clear consensus of opinion as to the essential aims of school games and gymnastics and the best methods of securing their ends.

The gymnasium of the Woman's College of Baltimore, which was opened in 1888-89, was equipped with Swedish apparatus at the outset and has always been managed in accordance with Swedish principles. This was the first successful experiment in the adoption of Swedish methods on a large scale in the physical education of American youth. But Boston is rightly considered the most influential center in the country of the movement for promoting Swedish educational gymnastics. This result, largely brought about in the years 1888-1891, is primarily due to the wisdom, generosity, and public spirit of the late Mrs. Mary Hemenway, of Boston, and secondarily to the adoption of the Ling gymnastics for the public schools by the Boston school board

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in June, 1890. Swedish free movements form a part of the daily instruction by the class teachers throughout the primary and grammar grades, and instruction in Swedish apparatus gymnastics is given regularly by special teachers in most of the Boston high schools for girls. The physical training of the high school boys of Boston is relatively undeveloped, owing to the preference shown to military drill.

On the whole, the advancement of physical education in America has been greater in the past twenty-five years than in any other period of its history. Obviously the most striking and rapid expansion has been in the department of athletics. Strenuous and contentious sports appeal directly and forcibly to the instinctive yearning of growing youth for publicity and applause. The recrudescence of barbarism which has manifested itself in manifold ways in this country in recent years, notably in the influence attained by the sensational press, has served to stimulate the spread of athletics and render them one of the most obtrusive and profitable forms of popular amusement. The growing addiction of all classes to outdoor exercise and recreation has also tended to enhance the interest of old and young in games and sports, and has proved an influential factor in a widespread movement to provide the children and youth of congested urban districts with playgrounds, gymnasia, and bath houses. The passionate asceticism exemplified by the élite of the athletic world when "in training" has unquestionably had a laudable effect upon the imagination of the mass of scholastic youth

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who cannot aspire to athletic prominence, and contributed to the dissemination among them of more sensible views and practices as respects regimen and exercise. As a result, student morals and hygiene have improved.

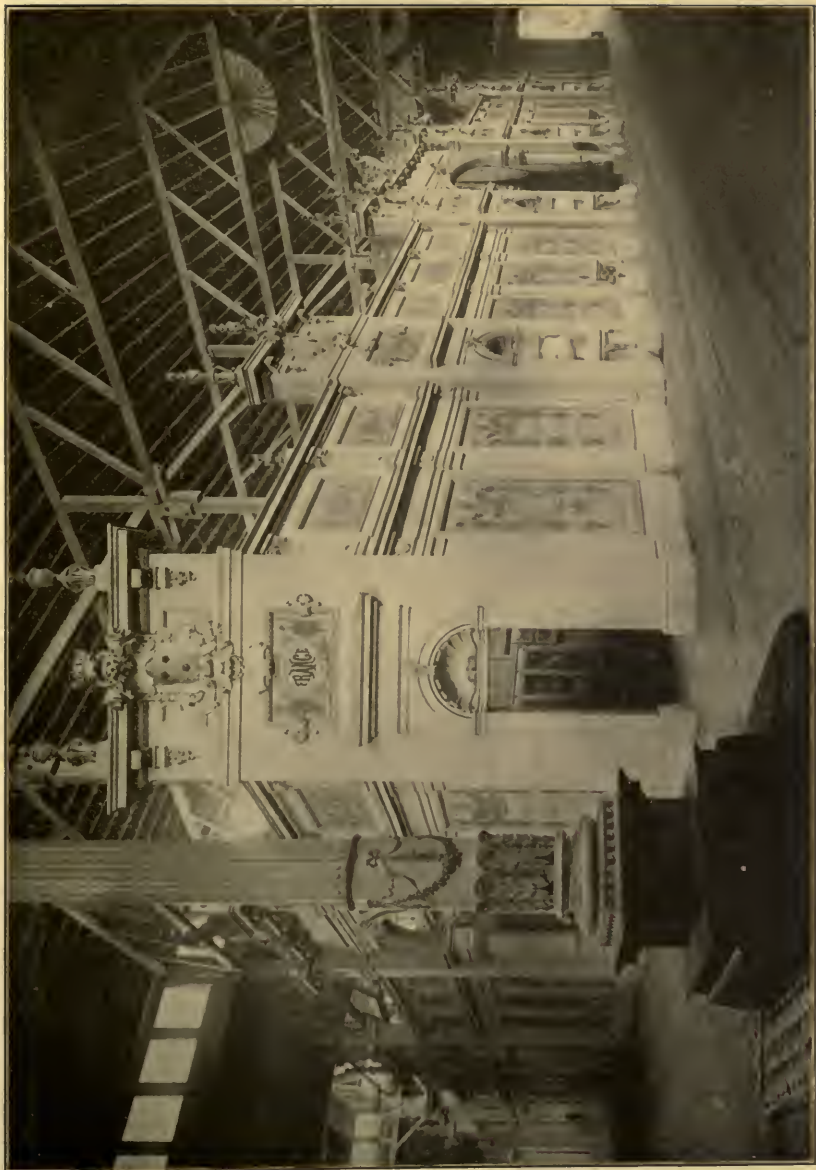
For the most part the athletic movement owes its characteristic features to its devotees and the public. Faculties and boards of trust have done comparatively little—and much of that little ill—toward shaping and guiding the movement. Hence the best interests of rational and effectual physical training have suffered much in this country, and suffer still, from the disproportionate influence of athletic ideals and customs upon schoolboys and collegians. Latterly, criticism of the evils of rampant athleticism has increased in force and volume. In certain quarters governing boards and “athletic committees” have shown courage and wisdom in their efforts to abate extravagance and professionalism. Should their example prove contagious, it is probable that a new and devoutly to be desired era of well-regulated athletics will set in and that the educational value of clean sport will be much more generally apprehended and effectively availed of than has hitherto been the case. When that day comes, gymnastics and athletics will reenforce and aid each other as they should and a long step forward be taken in the development of physical training.

Demonstrative and competitive tests of physical training were given in a series of athletic tournaments at the St. Louis Fair which extended from May 12th to the close

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of the Exposition. These exercises took place, in greater part, in a stadium erected for the purpose, the largest ever built in America, covering an area of approximately fourteen acres of ground. For the first time, too, in the history of Expositions physical culture was made a separate department, and placed under the directorship of James E. Sullivan, who is recognized as the ablest exponent and authority on the subject in any country.

Besides the stadium, built especially for equestrian polo, football, cricket, baseball, and other outdoor sports, there were a large gymnasium, a model playground for children, and an ideal camp for cadets and military organizations. The supreme feature, perhaps, of these athletic exhibitions was the Olympian games, which was an attempt to revive and transplant in America the famous quadrennial festivals of the Greeks which, being sacred to the god Zeus, were of so much importance that their celebrations established the Greek calendar, as explained in the fourth volume of this work. Participation in these contests included not only athletic organizations in America, but also of the best in England, France, Ireland, Scotland, Germany, and Australia. The Marathon races attracted the greatest attention as these were designed to test the physical endurance of competitors of many nationalities, over a course twenty-five miles in extent. Of the several contestants only two completed the course and at the conclusion of the ordeal were in such a state of exhaustion that the races were pretty gen-



THE FRENCH EDUCATIONAL EXHIBIT.

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erally condemned as requiring too much physical exertion. Notwithstanding this experience, however, similar contests have since been features of athletic tournaments and their repetition is likely to continue even because they furnish tests of endurance. These races, and especially those run at the Exposition, have proven that to meet the physical demands of such taxing struggles a system of individual practice will not suffice, but that the strength necessary to accomplish the ordeal of a twenty-five mile run can only be gained by long years of training; in fact, by transmission of muscular power successively from one generation of athletes to another, as was the rule among the Greeks. In America, or in any modern nation, such a system is not practicable for the reason that rewards do not justify continuous training. Among the Greeks the very highest honors conferable were obtained by winning trophies at the national Olympic festivals—honors that not only immortalized successful contestants, but which brought them immense riches also. To gain such renown and wealth all young men strove strenuously and persistently, until athleticism was almost a national pursuit, and the strength that was gained by one generation was inherited and improved by the next, by which the Greeks became a people distinguished above all others for their hardihood.

In modern life physical training is a matter of individual preference, a system that obtains in colleges and is often made a part of the curriculum, but it is not universal and, as

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a rule, is discontinued with the conclusion of the college course. A disadvantage may be found, too, in the over-exertion that too frequently marks the college career of those ambitious to win the fleeting honors of champion runners, hammer-throwers, swimmers, football players, rowers, wrestlers, and successes in other such sports as require the utmost muscular effort. The result, very often, instead of being beneficial is actually injurious, working permanent harm to physical development, as is shown by statistics of the average life of athletes. Against the rule of supreme exertion in the fields of sports, that characterizes the life of many young men not inured to physical effort before entering college, professors of muscle training have inveighed to small purpose; nor is the outlook very encouraging for a more intelligent conservation of energy in young men, and a higher appreciation of the need of gradual development. The swimmer, confident of his strength before it is expended, often ventures too far and loses his life in waves that look harmless from the shore; and this simile is equally apt when applied to the exertion that brings disaster to contestants in other strenuous sports. Progress in athletics is not to be made by leaps and bounds, but, as in all other things, by graduated upgrowth and accretion of strength and experience.

DIVISION CXXVII.

Educational Exhibits of States.

At no previous Exposition, that I can recall, was there a building set apart exclusively for education and social economy. I must confess, when first told of the determination of the directors to dignify education with a separate building, that my doubts were great as to the ability of any management to arrange an exhibit of this character that would sustain interest and possess a degree of curiosity for the masses. Nor did it occur to me that enough exhibits would be forthcoming to fill the space of a building covering such a really immense area as the one erected. These misgivings were quickly dissipated by a walk through the aisles, which disclosed to the visitor such an infinite variety of appliances, instruments, specialties, furniture, books, charts, pictures, models, etc., that I perceived how under "Education" might very properly be classed architecture, drawing, painting, chemistry, husbandry, agriculture, mechanics, astronomy, engineering, social science, economics, therapeutics, hygiene, insurance, banking, tenement-house problems, schools for defectives, charities and corrections, nursery, hospital, and, in fact, exhibits of what may be called

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the fundamental or underlying principles upon which society, industry, and health rest.

The general classification of the department was in eight distinct groups, as follows: Elementary, secondary, higher education, special education in fine arts, in agriculture, in commerce and industry, of defectives, and special forms of education, under which several heads there were two hundred and seventeen exhibits, a greater number of which were made by colleges and universities.

A subdivision of the general classification included collective exhibits of the colleges of Agriculture and Mechanic Arts, and Agricultural Experiment Stations, endowed by the States and general government, in which ninety-nine colleges were represented, that included every State and Territory in the Union, and also Hawaii and Porto Rico.

The greater space in Education Building was occupied by what may be classed as special exhibits—made by public schools, boards of education, and universities—which showed processes of instruction from the elementary branches to technological courses in specialized studies, intended to equip students for pursuing the mechanical arts and all the professions. There was very great interest to be found in the model schools in actual operation, and particularly in the handicraft work that was turned out before the eyes of visitors. It was, in fact, a bringing together, under one roof, of all kinds of schools, from the primary to the postgraduate, where the child was taught the simple branches, and the

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advanced student was instructed in the complex sciences, mental, manual, and special. And in this universal educational exhibit not only all the States and Territories, but practically all the great institutions, and also a majority of the county schools of the several States were in competition, so to speak, to show systems, demonstrations, and results, in painting, drawing, modeling, bead-work, cartography, carving, joining, taxidermy, engraving, wood-turning, laboratory work, photography, music, art, language, book-keeping, mechanical drawing, botany, sewing, designing, relief-map-making, kindergarten work, and manual training in all its branches.

To particularize the exhibits of any single State or institution would be to individualize an honor that really belonged to all, for though there were degrees of excellence, every school that was represented sent its best, and the universal effort to achieve was so pronounced as to fairly divide credit according to the advantages that each State or school possesses.

As an illustration, however, of the thoroughness of the exhibition in certain lines, the showing of one State may be described; not that there was superiority in the display over that made by other States, but as an example of the comprehensiveness that distinguished nearly every State.

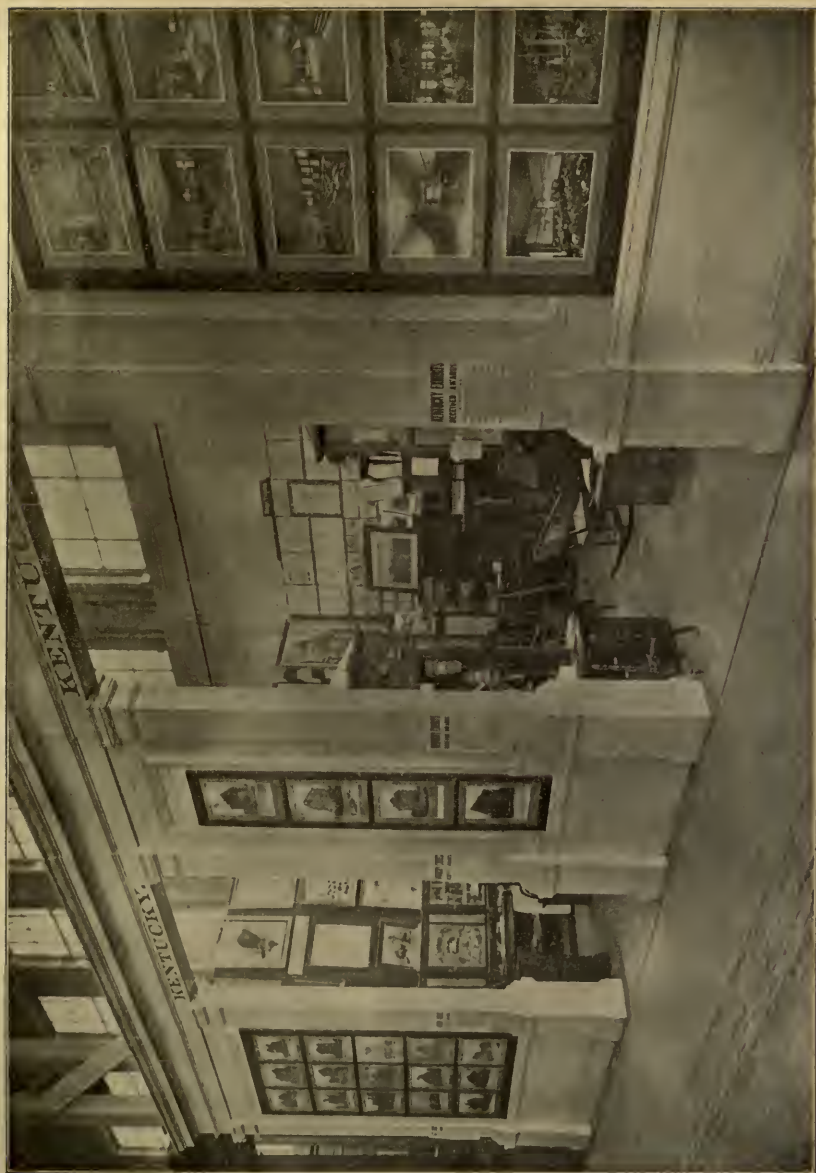
Kentucky's educational exhibit occupied 1,100 square feet of space, every inch of which was utilized to the fullest advantage. The special, commanding features of the display

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were in manual training, kindergarten, blind, and deaf and dumb work.

The entire exhibit was classified in a way that appealed to the Exposition student who sought for things specific rather than general. One side was devoted to public schools, another to the Catholic institutions, while the wall at the rear and back of the facade at the front afforded ample accommodation for the different lines of work not otherwise taken care of in specially designed display cases occupying positions on the floor space. Immediately on the inside—between the two entrances—were two cases given over to exhibits from the Kentucky School for the Education of the Blind. The purpose of the exhibit was to set forth the character and scope of the work of totally blind children at school, and the various appliances perfected through the American Printing-house for the Blind at Louisville, for their education.

The exhibit under the latter heading, together with one twice the size of that in Kentucky's general educational display, was located in the blind section in the Educational Palace. The latest made embossed books were contrasted with those made sixty years ago, while maps, frames for teaching reading, multiplication tables—up to twenty times twenty—script letter cards, sunk and in relief, to aid in teaching handwriting with a pencil, one of the most curious of the achievements of the blind, and various kindergarten material adapted to the sense of touch, coupled with beautiful relief maps, carved in wood, of the grand divisions of



KENTUCKY'S SECTION, EDUCATION BUILDING.

EDUCATIONAL EXHIBITS OF STATES

the globe, dissected into their respective political divisions and which the blind pupil learns to recognize by touch, take apart, and put together in order, all showed that the education of the blind is both a science and an art. This was the largest and most impressive piece in the entire aggregated exhibit of all the schools for the blind in the country united with those of the deaf. It consisted of a double-faced book-case of black walnut, five feet high and seven feet long, on a table four feet high, surrounded at the base by six relief maps about four feet square.

In the other cases the work of the middle grades was shown. Here were maps, pricked out by awls in brown paper over corrugated boards, whose outlines and details compared favorably with the pencil work of normal children, and more remarkable when one noted that they were drawn upside down, and had to be reversed to be made true. Alongside these were to be seen specimens of their abstracts of lessons in literature, their arithmetical and algebraic calculations, their compositions and their exercises in harmony, thorough bass and counterpoint, all dotted down with their indispensable awls or stilettos, with which they have to pick and point their way to an education.

Equally as interesting as the blind exhibit was the display from the Kentucky School for the Deaf at Danville, illustrating the work done in its manual training department. This school was the pioneer in the manual training movement in Kentucky, now recognized as such a desirable fea-

LOUISIANA PURCHASE EXPOSITION

ture in the training of the youth of the State, and for over half a century every graduate has left its halls equipped with a knowledge of some useful handicraft.

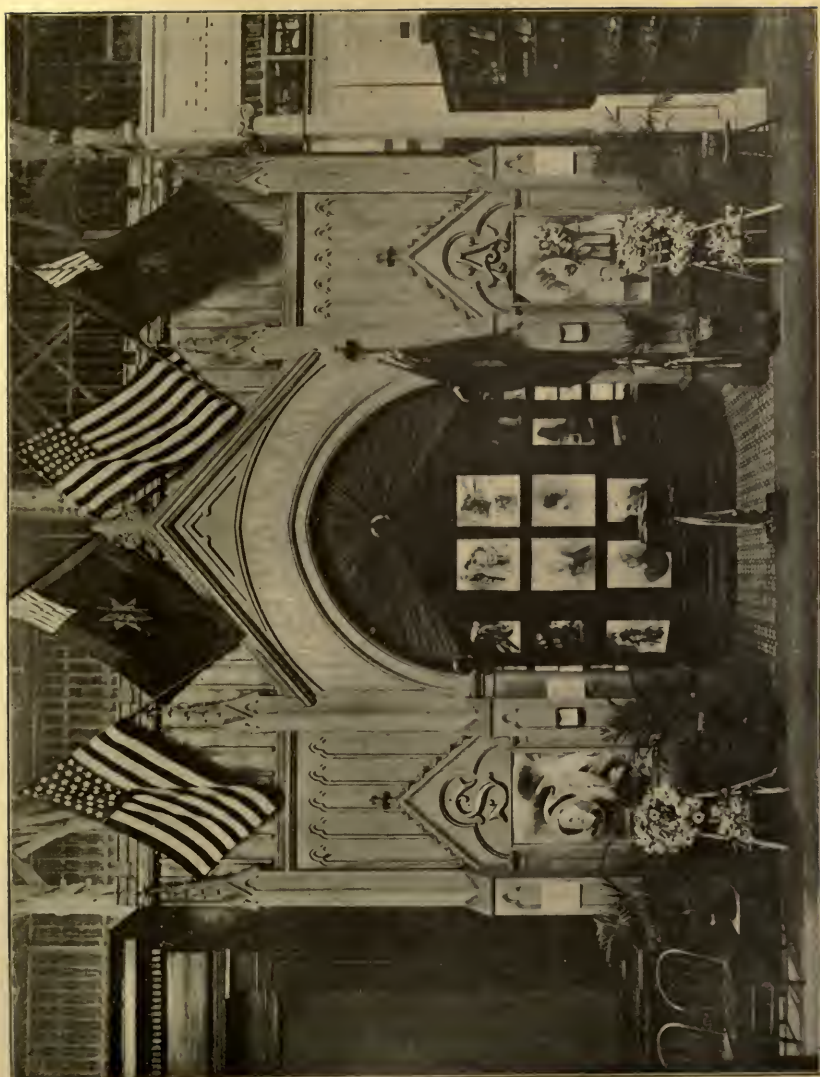
No more interesting display in the entire Education Building was made than that from the W. C. T. U. Settlement School at Hindman, in Knott county. It occupied a large show-case and was a credit both to the school and to Miss May Stone, of Louisville, who collected the material. There were various examples of weaving, sewing, basket work, and manual training, together with crops from the children's gardens.

Two very large cases, especially designed and constructed for the purpose, were given prominent locations near the center of the space and were devoted, one to the exhibit of the Louisville Free Kindergarten Association and the other to the Louisville Manual Training High School.

The exhibits made by Catholic schools of the State were specially excellent. Nazareth Academy, of Nazareth had five wall cabinets, an upright display case, and a table for showing off to advantage its paintings, sewing, mounted cards, and bound volumes of students' work, collections of grasses and flowers, laboratory work, catalogues, etc.

The Ursuline Sisters of Louisville had three wall cabinets and about one hundred square feet of wall space in which to show to the visitors, the photographs, drawings, paintings, and bound volumes of class work from their academy.

Sacred Heart Academy, of Louisville had photos, draw-



SALVATION ARMY SECTION, EDUCATION BUILDING.

EDUCATIONAL EXHIBITS OF STATES

ings, and paintings, while Mt. St. Joseph Academy, of St. Joseph, Daviess county, had pictures, drawings, paintings, geological work, and bound volumes of students' work. St. Mary's Academy, of St. Mary's, Marion county, had one cabinet with thirty-three leaves, giving photos, students' work, and literature.

In line with education, especially of moral training, which is really the basis of mental development, were exhibits made by the Salvation Army and the Women's Christian Temperance Union, two institutions that have done as much, if not more, for the reclamation, uplifting, and permanent relief of the fallen, as any organization that ever grew out of charitable impulse. To the former is due the infinite credit of founding and sustaining homes for the indigent; of sending ministers of relief and exhortation into the slums of great cities; of carrying the Gospel to those who would otherwise remain ignorant of its gracious influence, and of giving aid to the needy in order to more efficaciously preach to their souls. The exhibit could not contain examples of the good work accomplished, for this must be left to the rescued to display, but there were photographs of the Booths and of other philanthropic men and women who have dedicated their lives to the service of this noble army.

The Woman's Christian Temperance Union is a sister, in influence, to the Salvation Army, extending its scope, however, to promote health as well as to reclaim those bonded to sin. It was possible, therefore, for this truly maternal asso-

LOUISIANA PURCHASE EXPOSITION

ciation to make an interesting exhibition of the work which it is performing for the benefit of the race; not only in combating the evil of drunkenness, but also in correcting tenement-house abuses, and grappling with all manner of vice that is concomitant with poverty and ignorance. Statistics, pictures, pamphlets, reports, methods, and testimonials constituted the principal features of the display, which was creditable to the Union and interesting as demonstration of what the organization is accomplishing.

In the southeastern part of Education Building, as all visitors will remember, there were exhibits that held attention of the curiously inclined and shocked the sensibilities of those whose refined tastes abhor the things that suggest cruelty or criminality. This section was devoted to that phase of social economy usually classed under the general head of "Charities and Corrections." The St. Louis Police Department displayed a very large collection of weapons with which murder has been done, and there was a rogues' gallery large and varied enough to satisfy the craving of the criminologist, physiognomist, penologist, and socialist.

Across the aisle from the St. Louis police exhibit was a remarkable display made by Japan, illustrating means for the detection, apprehension, and detention of criminals. A century ago—happily the custom has long since ceased—it was a practice in Japan to literally harpoon fugitives, and also to detain less violent characters by means of a long-handled instrument somewhat like a shepherd's crook. While never

EDUCATIONAL EXHIBITS OF STATES

so cruel as the Chinese, perhaps, still the Japanese formerly had small regard for the humanities when it came to dealing with criminals, and, as the exhibit showed, the apprehension of a fugitive was usually attended with severity of manner and the rough use of a dreadful instrument. Such methods have not only disappeared, but the Japanese have substituted measures for dealing with criminals that exhibit the most enlightened and charitable disposition, and public health is safeguarded with even more scrupulous care than in this or any European country.

I believe Japan was the first nation to use silhouettes, which a hundred years ago were the only portraits, besides oil-paintings, in use. Before photography came into general service we had no better means of identifying rogues than remembrance of faces, and thus many criminals escaped justice for lack of a witness to establish identity. But long before that time the Japanese were fairly well prepared to keep the record of a rogue and to preserve the appearance of his features, to be sent in manifold to other cities of the Empire. In the display, at the Exposition, was an ancient rogues' gallery, composed of silhouette pictures, which, though not always a "speaking likeness," were a sufficient resemblance to enable identification of the person. Silhouettes commonly show only profiles, but it was a custom among the Japanese to present both profiles and full-face views, adding with the pen features that cannot be portrayed by mere outlines.

LOUISIANA PURCHASE EXPOSITION

Near the Japanese exhibit of charities and corrections was a display made by New York of the system now in effect for restraining and caring for the insane, and in an adjoining section were shown the very cruel means formerly employed. Among the latter was a crib in which violent patients were put to bed and so closely confined that barely sufficient space was allowed the unfortunate in which to turn over. In this strongly barred cage the victim was compelled to lie, almost unable to move, for weeks, even for years, except for a few moments when it was necessary to change the miserable bedding, for decency' sake. There were also straight-jackets, manacles, and other inquisitorial instruments that brought forcibly to mind the punishments of the dark ages. Under such conditions madness was promoted and recovery impossible. Opposed to these inhuman methods were shown the modern means that charity, fellow feeling, and experience have devised for improving the unhappy state of the insane. First of all there is cleanliness, enforced by bathing the person and purifying the atmosphere; and the environment is made very agreeable, with pictures, flowers, music, and everything suggestive of comfort and kindness. Attendants are at hand to mildly restrain any outbreak of violence and to soothe passion by sympathy and persuasion. These influences, which now characterize the treatment of the insane in all State institutions, have been of inestimable benefit, as statistics show, in restoring to perfect sanity a large



CHINESE SECTION, EDUCATION BUILDING.

JAPANESE DEPARTMENT OF CORRECTION, EDUCATION BUILDING.

EDUCATIONAL EXHIBITS OF STATES

percentage of those who have been committed as apparently hopeless.

Another very interesting exhibit in the southeast corner of Education Building was that of a model nursery, which was fully equipped with every accessory for the care of infants, upon a plan of hygienic attention, which involved sterilization of water, bathing, administering of foods, bedding, handling, temperature, fresh air, exercise, and treatment in cases of illness. It is by such care, now practiced in public asylums especially, that infant mortality is being rapidly reduced and the dread of the second summer is steadily abating.

The exhibits made by Indian tribes, wards of the nation, were confined to a separate building erected for the purpose upon a plot of ground devoted to the Anthropology display. In front of the Indian school were tents, dirt houses, bark tepees, and other styles of primitive dwellings used by various tribes scattered throughout the West. These represented the home life of uneducated Indians—the shiftless, indifferent, and improvident classes that hang upon the outskirts of civilization and persist in resisting the white man's influence.

In striking contrast with these was the Indian model school in actual operation, where boys and girls were studying and reciting their lessons; others were working at the trades taught at the Government schools, and several old men and women were pursuing the native arts handed down

LOUISIANA PURCHASE EXPOSITION

by their forefathers, and which are now falling into disuse, to wholly disappear, perhaps, in another score or two of years. It was really remarkable to see the effects of civilization as they were here exhibited. There were many Indians of the blanket tribes, and not a few who in appearance and habits were not so much as one degree advanced beyond conditions in which the early explorers found their ancestors. It was very interesting, therefore, to see, in direct contrast, Indian girls and boys, young men and young women, who bore no other resemblance to their forebears than a dark complexion and racial characteristics. Those who had been amenable to training and schooling were not only well dressed, active, alert, but in their faces stolidity, that distinguishes the Indian, had given place to mobility of countenance and an interested expression. Moreover, while a handsome featured, full-blood, uncivilized Indian is a rarity so great that very few persons have ever seen one, physical beauty is a common thing among Indians who have accepted the white man's ways. Education has, therefore, modified the physical, as it has changed the moral and mental character of the Indian, imparting gracefulness to features that were formerly irregular and unintellectual.

Besides the Indian school conducted in a building erected for the purpose, there was a supplementary exhibit in the Government pavilion, designed to illustrate the changes which have taken place during the past century among the Indians located within the territory covered by the Louisi-



OLD AND NEW METHOD OF TREATING THE INSANE.



EDUCATIONAL EXHIBITS OF STATES

ana Purchase. The statistics which were a part of the exhibit show the following :

| | |
|---|---------|
| Indian population in the United States (excluding Alaska)..... | 270,000 |
| Indian population now within the Louisiana Purchase..... | 144,000 |
| Allotments of land made to Indians (since Allotment Act of 1887) | 50,226 |
| Employed in the Indian service—agents, teachers, physicians, mechanics, Indian police, etc. White, 2,264; Indian, 1,969, | 4,233 |

ANNUAL EXPENDITURES FOR INDIAN EDUCATION.

| | |
|---|-------------|
| Appropriations by Congress..... | \$3,000,000 |
| Tribal funds | 1,040,000 |
| Contributions by missionary societies..... | 425,000 |
| State of New York (for New York Indians)..... | 25,000 |
| Total..... | \$4,490,000 |

SCHOOL STATISTICS FOR 1903.

| | |
|---|--------|
| Indian pupils enrolled in— | |
| 117 boarding schools under Government control..... | 19,860 |
| 140 day schools under Government control | 4,500 |
| 65 mission schools..... | 5,000 |
| 43 public schools..... | 923 |
| 415 schools supported by five civilized tribes..... | 14,500 |
| Total..... | 44,788 |

GROWTH OF INDIAN EDUCATION.

(Excluding Indians in New York and Indian Territory.)

| | |
|------------------------------|--------|
| Pupils enrolled in 1870..... | 3,095 |
| Pupils enrolled in 1880..... | 7,240 |
| Pupils enrolled in 1890..... | 17,477 |
| Pupils enrolled in 1903..... | 28,411 |

The statistical showing was a surprise to many, the general impression being that the number of Indians is much larger than that given; but these figures confirm the often repeated statement of observers that the red man is fast disappearing before the advance of his conquerors, to whose manner of living there is apparently impossibility of healthy adaptation.

LOUISIANA PURCHASE EXPOSITION

In the Government Building was a large display of Indian workmanship, with an exhibition of primitive examples contrasted with specimens of trained handicraft, by which degrees of progress were perfectly shown. For example, under the heading "One Hundred Years Ago," the case on the main aisle contained in one end a miniature birch bark wigwam and canoe from Minnesota, showing the old mode of life of the Indians in the land of forests and wild rice. At the other end a miniature skin tepee surrounded by prairie grass with a bag of pemmican near (buffalo meat dried and pounded and mixed with fat and wild fruits), stood for the life of the buffalo hunting tribes of the Great Plains. Near this case was a model grass house such as the Wichita Indians in Oklahoma build, one of the most picturesque and comfortable of aboriginal habitations.

The earth lodge of the Mandan Indians on the Missouri was portrayed in the first oil-painting on the left wall, and near it two types of bark houses in Iowa and Oklahoma were shown in a framed group of four photographs.

The baskets in the next case were loaned by Mrs. Sidney Bradford, of Avery Island, Louisiana, who found among the Chetimaches Indians—a vanishing remnant of a Louisiana tribe—only one old woman with whom yet lingered any knowledge of the fine single and double weaves of these baskets. By inducing younger women to learn of her and by finding a market for their wares the art was barely saved by Mrs. Bradford from extinction. In the same case was a



A MODEL NURSERY, EDUCATION BUILDING.

EDUCATIONAL EXHIBITS OF STATES

woman's dress with the old time decoration of the milk teeth of the elk, a precious heirloom loaned by a Cheyenne Indian in Oklahoma.

Under the classification of "To-day," a small wagon and harness, a pair of shoes, uniform, brooms, samples of joinery, and a completely furnished bed represented the training in trades and domestic industries given at Haskell Institute, Lawrence, Kansas, and were the handiwork of its pupils.

The model of a hay baler was made by a Pottawottomi Indian, a graduate of Haskell Institute, and now government blacksmith at the Shawnee School, Oklahoma. The other schools represented in this case were as follows: Sewing: Grand Junction, Colo.; Fort Sill, Okla.; Leech Lake and Morris, Minn., and Shoshoni, Wyo. Cobbled shoe and ax handle, Fort Berthold, No. Dakota. Leather work, Fort Peck, Montana. Baskets, sewing, and knife work, Pine Ridge, So. Dakota. Iron and wood work, hayrack and bobsled, Rosebud, So. Dakota.

In the lace and embroidery case the collar of "real" Milanese pillow lace was made by Sioux women in the Sybil Carter Lace School at Birch Coulee, Minn. The other articles of Renaissance lace, embroidery, and drawn work were made by pupils of the schools at Chilocco, Cantonment, Rainy Mountain, and Seneca, Okla.; Fort Lewis, Colo.; Fort Berthold, No. Dak.; Leech Lake, Minn.; Pine Ridge, So. Dak., and Shoshoni, Wyo. The wheelbarrow and tool

LOUISIANA PURCHASE EXPOSITION

chest on the floor under the cases were the work of Rosebud Sioux boys, and the blacksmith tools on the wall under the maps were from Haskell.

The fireplace (which with the table was also made at Haskell) was designed by Angel Decora, who used in the decoration native symbols of fire. Below the shelf in low relief of redwood was a conventionalized "thunder bird," the plumes of its wings flashing out into flames. On the side uprights and in a band around the upper part of the mantel, making a frame for the painting, were conventionalized forms of the sticks used in making the sacred fire by friction. The painting, also her work, was "a scene on the rolling prairie at sunset, suggesting the hour of gathering about the hearth; off to the left was a cluster of Indian tents, each one aglow from the bright fire within; while in front a little to the right stood a pair of lovers, the beginning of a new fireside." The design for the frieze around this room was taken from pre-historic pottery made by tribes of the Mississippi Valley.

Returning to the outer wall space, the oil-portrait was that of Thos. L. McKenney, who was commissioned by President Madison in 1816 as Superintendent of Indian Trade. In 1824 the Bureau of Indian Affairs was organized in the War Department and he was its head until in 1830, when he became one of the first victims of the "spoils system," being removed from office by President Jackson. All the other oil-paintings in the exhibit were loaned by the artist, Angel

EDUCATIONAL EXHIBITS OF STATES

Decora, a Winnebago Indian, who took the art course at Smith College, Northampton, Mass., and afterward studied under Howard Pyle. The settee was from Haskell, the case of sloyd from Genoa, and the tabouret from Cantonment, where the design was carved from free-hand drawings from nature.

The intellectual training given in government schools, its practical applications, and the ability of the Indians to assimilate the "book knowledge," as well as hand skill of the white race, was exhibited in cases of school room papers from the schools at Cantonment, Chilocco, Crow, Fort Berthold, Fort Lewis, Fort Peck, Genoa, Grand Junction, Haskell, Leech Lake, Pine Ridge, Rosebud, Seneca, Shoshoni, and Tongue River. This gave the actual work of the pupils, most of it uncorrected, from kindergarten through the eighth grade; also samples of their drawing.

DIVISION CXXVIII.

Educational Exhibits of Nations.

Foreign countries, as a rule, confined their educational exhibits to the sciences, more noticeably Germany and France, and for this reason they commanded very great attention. Germany's display occupied 39,000 square feet of space, in which there were exhibits that showed systems of instruction in public, normal, and high schools, somewhat advanced, it must be admitted, over the methods generally employed in the United States, for in Germany the pupil is given a training that almost irresistibly leads to scientific inquiry, and promotes ambition even in the most sluggish. This disposition of the Germans was strongly reflected in their educational exhibition, which comprised an elaborate collection of astronomical, geometrical, and optical instruments. There was also a lecture-room, built and equipped on the order of such auditoriums in all German universities, which was supplied with Roentgen Rays apparatus, and demonstrations of its use were made to all visitors.

A feature that attracted very marked interest was a model and charts showing the results of excavation work performed by German archæologists in Syria and Egypt, and a

EDUCATIONAL EXHIBITS OF NATIONS

reconstructed ancient Roman castle, the ruins of which were discovered at Saalburg. For the sociologist, however, greater attention was commanded by a showing of plans, pictures, books, and pamphlets explaining the organization and accomplishments of the German government system of working men's insurance, which has raised a question in America that may soon have an influence on the dispute between labor and capital, with a tendency to allay present differences.

Curiosity impelled the mass of Exposition visitors towards the pharmaceutic, therapeutic, biologic, and surgical exhibits, in which Germany surpassed all other countries. As the theory of germ infection had its birth in Germany, it is in that country the conception has had its greatest development under persistent experiments conducted by the boldest and most expert chemists and biologists in the world.

The pathological preparations and chiurgical models, with instruments displayed for performing the most radical and dangerous operations, possessed for the many a fascination quite as strong and indefinable as does a morgue. In this department were rows of jars and a great number of cases and glass tubes, in which were contained bacilli of all kinds of virulent diseases, such as bubonic plague, yellow fever, diphtheria, smallpox, cholera, typhoid fever, consumption, etc., with specimens of antitoxin found to be most effective for destroying the germs. There were also preserved parts of the human body, in jars of formaldehyde—

LOUISIANA PURCHASE EXPOSITION

hearts, kidneys, stomachs, and viscera, that showed the ravages of cancer, Bright's disease, tuberculosis, and other obstinate or incurable maladies. And there were wax models, very natural in appearance, of patients operated upon for tumor, cancer, appendicitis, brain lesions, heart affections, and other serious maladies, so that there was about the department all the accessories and gruesome repulsiveness of a dissecting-room.

But though an exhibition of the progress of wasting and tissue-destroying distempers is disagreeable to the sight, the benefit to humanity is infinite in being educated by such showings to distinguish the type, character, and pathology of malignant, infectious, and contagious diseases. In the German exhibit, therefore, were contained not only preserved parts excised from diseased bodies, but there were glass tubes in which were collected the bacilli that produced each separate kind of virulent disease, and placed beside these were phials that contained the specific antitoxin found, by experiment, to be most effectual for destroying the disease-breeding germs. Here, then, was a school in therapeutics and surgery which the lay mind was able to appreciate, and in which lessons of great practical value were learned; an exhibit that clearly, understandingly, illustrated what the most famous German specialists have ascertained respecting the cause, prevention, and cure of the most fatal ailments common to the human species.

But in all branches of social economy and education Ger-

EDUCATIONAL EXHIBITS OF NATIONS

many was represented elaborately, and in a manner that was both interesting and instructive to the uninformed quite as much as to persons who had made these subjects a matter of special study.

France made a showing in Education Building that occupied a surface area of 700 meters (2,400 square feet), which comprised fourteen groups, viz.: political economy; organized economics; industrial workers; methods of industrial remuneration; cooperative institutions; systems of insurance; workingmen's homes; temperance societies; general movements for social progress; charities and corrections; public health; municipal improvement; physical culture; official regulation of responsibilities of employers and employes. Under these classifications were exhibits that reflected the entire social, political, industrial, commercial, and economic life of the French nation, and also of the colonies. In this respect France confined her exposition efforts largely to social economy, and in doing so she surpassed all other nations in this particular field. Especially instructive was the exhibit made of organized means for regulating responsibilities of employers and employes, and the relation which the government bears to these when organized into associations.

The aim which animated France in presenting exhibits in this group was to place in evidence the work accomplished through national legislation to regulate employment and ameliorate the condition of labor. It may be stated that in

LOUISIANA PURCHASE EXPOSITION

France there are three large associations which have for their object the protection of child labor, and to provide insurance for workingmen against accidents. To accomplish these purposes the influence of the associations has caused to be enacted a law whereby inspectors are appointed for each factory, who report at stated intervals to the authorities upon actual conditions of their respective establishments, together with such suggestions as circumstances may appear to warrant. Through the operation of this law, as is shown by statistics, a marked improvement in wages and general condition of the French laboring classes has been made in the past five years. And it is noted also, by statistical information which forms a considerable part of the exhibit, that labor is better satisfied, that contention with capital is less common, and that disturbances between employer and employe are disappearing as the laws recently enacted are better understood and enforced.

England's educational exhibit occupied less space than Germany's or France's, but the showing made in special lines challenged comparison with all other countries. As each nation was distinguished for some specialty, that in which England surpassed was, probably, in technology and crafts. Practically all British universities participated, generally by publications pertaining to curricula, photographs of buildings, and by histories, many of which are interesting because of the age and vicissitudes of the institutions.



ITALY'S EXHIBIT, EDUCATION BUILDING.
ITALIAN SECTION, EDUCATION BUILDING.

EDUCATIONAL EXHIBITS OF NATIONS

England has a splendid system of public schools which was duly exploited at the Exposition, but she has supplemented the system with free kindergartens, as we have done, and has also added technologic, polytechnic, and manual training to the free school curricula, though the system is as yet tentative, being confined to the larger cities. It may also be explained that the polytechnic schools, of which there are twelve in London, are administered under schemes formulated by the charity commissioners, and that a majority of them have been in existence only since about 1893. Their maintenance is chiefly by annual grants from the City Parochial Foundation, the London County Council, and the Board of Education. In these schools nearly all the trades are taught, including even such heavy work as masonry, and such delicate craftsmanship as watch-making and the manufacture of the finest instruments. Examples of the work produced at these technical and polytechnic schools were not shown in actual objects, but in an extensive series of photographs, which were accompanied by statistical and historical information.

Besides the manual training schools of England, there are Christian Brothers' Schools in Ireland, established to provide a free primary and secondary education to the sons of the working classes. But the schools, of which there are seventy in Ireland and thirty in Australia, furnish also manual training, and thus equip their pupils for any occupation they may choose to follow after graduation.

LOUISIANA PURCHASE EXPOSITION

There is also the Great Ormond Street Workingmen's College, of London, where education is freely offered to any laborer who thinks it worth an effort and an hour or two each day taken from his leisure for study.

The Board of Education, England and Wales, has very recently extended its province, whereby a free distribution is made of examples of industrial art to schools of art and design throughout the United Kingdom. In many cases it is not practicable to distribute original art objects on account of their great value, so that reproductions are necessary, but these are always made with so much care as to be perfect facsimiles, a great many of which were shown in the English exhibit, and not a few excited the greatest admiration.

Thus it will be seen that England, Ireland, Scotland, and the provinces occupy an advanced position in the use of a free school system, which is being extended from year to year as experiments justify. At the same time the United Kingdom is giving attention to industrial questions and economic problems, while supporting schools for defectives in a spirit quite as liberal as is being manifested in America.

Similar exhibits, in a way, were made by Italy, Austria, Sweden, Holland, and Belgium, which did not differ materially in their respective showings of systems of both mental and manual training, but it is noteworthy that all countries made special demonstrations of methods of teaching the latter, which furnishes the proof that there is now a world-

EDUCATIONAL EXHIBITS OF NATIONS

wide appreciation of the practical utility and distinct advantage to be gained, of coordinating, so to speak, the hand and mind of pupils, whereby, in teaching, the two are educated in harmonious alternation, and in such a way that one reinforces the other, for training the hand to some form of craftsmanship furnishes relaxation to minds strained by study. And it has been observed also that persons who have acquired a trade in early life succeed better in professions later adopted, because of the education given the hand, which promotes praise, confidence, and judgment.

While greater displays in Education Building were made by European countries, it was gratifying to see that the representation of Mexico, Central America, and South America was quite as large relatively as that of the superior powers of both continents.

Brazil, of which we hear more or less, but certainly know very little, occupied 816 square feet of space with a carefully selected exhibit best calculated to demonstrate the systems and development of education among her people.

There were numerous and varied collections in kindergarten work, of professional and training schools, chemical and pharmaceutical laboratories, representing the elementary, secondary, and higher education. Mechanical education was shown in elaborate models of motor pumps, hydraulic presses, wagons, plans of building, hydraulic engines, and cabinet work of the highest quality. As examples of education in the more delicate arts, there were collections of needle

LOUISIANA PURCHASE EXPOSITION

work, embroideries, and laces from the most simple to that requiring special ability and longer time for their execution—such as curious articles made of wax, feathers, beads, small shells, fish-scales, etc. Special exhibits were made from the military, naval, and polytechnic schools, from the medical and dental colleges, from the schools of law, mines, fine arts, music, and agronomy, which were furnished by the educational institutions belonging to the general government. The State establishment in particular branches, such as asylums and schools for defectives, contributed largely to make the display seen in the section, in which respects Brazil was shown to be very little behind older and larger nations in the employment of efficient methods and generous endowments for relieving, caring for, and teaching unfortunates.

Cuba, considering her politically nascent state, made a really splendid showing, especially in the primary system of education now in use in the island. The exhibit was sufficiently complete to illustrate the advancement made in primary education from the kindergarten to the high school. But besides these larger displays that concerned the free schools now established throughout Cuba, there were exhibits of the different departments of the University of Havana and a demonstration of manual training school work. Equally interesting was Cuba's department of social economy, in which an exhibition was made of the systems employed and the results obtained by the Superior Board of



EDUCATION SECTION, GREAT BRITAIN AND IRELAND.

EDUCATIONAL EXHIBITS OF NATIONS

Sanitation in eradicating yellow fever and other diseases heretofore common on the island. In this exhibit were shown different varieties of mosquitoes and the methods of their extermination, since it has been positively demonstrated that yellow fever is spread by the bite of certain kinds of mosquitoes.

Porto Rico, one of our most recent acquisitions, while still in the reformative state, nevertheless participated with no small sense of pride in the Educational Exposition. Development of education since American occupation practically represents all that has been done in the way of free schools, though there is painful inadequacy in all departments which it will require several more years to supply. It was shown by statistics that in 1904 the total number of schools on the island were approximately 1,100, which is twice the number that were maintained under the Spanish government. Notwithstanding this increase the public schools of Porto Rico are able to accommodate only about one fourth of the children of school age, although twenty-five per cent of all the revenues of the island, both insular and municipal, are expended for educational purposes.

Besides the several elementary schools, there are now established four high schools. Teachers are both native and American and the English language is taught as far as it is practicable, but Spanish will probably remain the prevailing tongue in the country and remote districts for several years to come.

LOUISIANA PURCHASE EXPOSITION

Mexico's educational exhibit comprised eight groups in which displays were made of needlework, embroideries, bookbinding, carving, and other products of manual training of boys and girls; and of text-books, scientific instruments, reviews, apparatus, technical works, etc., that illustrated the means and processes employed in promoting higher education by the states that compose the republic.

The exhibition was one in which nearly every civilized nation participated, and in which every State of the American Union was represented, so that in the largest sense Education Building presented the aspect of a vast world university in actual operation, demonstrating, encouraging, and advancing education from the simple elements to the most complex deductions and experimentation, the training not only of mind, but also of muscle, of energies, of thought, and aspiration; in short, all nations in competition in an effort to reach the highest state of mental cultivation and physical endowment, that make for the peace and betterment, spiritual and material, of all peoples.

DIVISION CXXIX.

Catholic Participation and Educational Exhibits.

BY REV. JAMES J. CONWAY, S. J., St. Louis
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It was to be expected that the Catholic Church would figure very prominently in everything connected with the Universal Exposition commemorative of the Purchase of the Louisiana Territory. At the time of the purchase, Catholicity was, practically speaking, the religion of the Territory. The subsequent growth of the Territory in population and civilization, has been everywhere throughout the States and Territories of the Purchase marked by the parallel progress and spread of Catholic institutions, and by the activity of Catholic communities. The missionary work of the Church among the Indian tribes and the pioneer whites is, even to this day, a very prominent feature of Catholic enterprise in Montana, Wyoming, the Dakotas, Oklahoma, and the Indian Territory. Catholic educational institutions too have kept steady pace with the growth and progress of the Territory. From the modest "Academy for Young Gentlemen," established by the Rev. Mr. Neil in 1818, in St. Louis, these institutions, the pioneers of education in the West, have grown

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into schools of higher, intermediary, and primary education which, in their large number, practically occupy the entire Territory. Besides her universities, seminaries, colleges, academies, high schools, parish, industrial, reform, and Indian schools, the Catholic Church has covered the entire Louisiana Purchase with a network of convents, monasteries, asylums, orphanages, hospitals, homes, refuges, bookstores, libraries, halls, missionary and catechetical stations, confraternities, sodalities, clubs, associations, societies, and circles of all kinds, to such an extent that the Church is to-day, and will be much more so in the future, the greatest factor that exists in the Territory of the Louisiana Purchase, outside the mechanism of the civil organization itself.

The Catholic Church has been, and is to-day, reckoned with in every event of public importance within this great extent of American territory. Great Catholic names have all along marked the progress and illustrated the history of the Purchase. Marquette, De Soto, Bienville, Hennepin, De la Salle, Joliet, Tonti, Du Lhut, La Hontan, and De la Verendrye discovered and explored the country of the Louisiana Purchase in various directions. Allouez, Mambré, Mermet, de Beaudouin, Meurin, the founder of Christianity in St. Louis, Gibault, the friend of Col. Geo. Rogers Clarke, Du Bourg, Verhagen, Kenrick, De Smet, Lamy, Miege, Ryan, Damen, and Ireland, are the names of some of the illustrious Catholic churchmen who have been

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identified at one time or another, with the historical periods and events of the Louisiana Purchase. Among the distinguished soldiers, traders, river-men, jurists, legislators, civil officials, and business men of the Purchase, occur the names of Iberville, O'Reilly, McEnery, White, Beauregard, Senimes, Laclede, Chouteau, St. Ange, Mullanphy, Lucas, Sarpy, Shields, Donnelly, Creighton, Carter, Maguire, Fenlon, Corrigan, Flynn, Kearns, Mullens, Maher, Prim, Sheedy, Bakewell, Kerens, Hopkins, Foley, Garesché, Labarge and Rosecrans. These names represent, in the States and Territories of the Purchase to which they belong, or in which their careers were run, not only some of the most distinguished citizens of the Territory, but equally prominent members of the Church in which they worshiped. It was, therefore, to be expected that the movement to celebrate the transfer of the Louisiana Territory to the United States by an International Exposition would meet with the cordial support of the Catholic Church. That it did so is abundantly attested by the part taken by Catholics in every stage of the World's Fair.

Naturally enough all World's Fair ideas started in St. Louis, which is claimed to be even more Catholic than the very Catholic cities of New York, Boston, Baltimore, Chicago, New Orleans, and San Francisco. The first informal and formal suggestions towards a fitting celebration of the Louisiana Purchase Centennial originated with Mr. Pierre Chouteau, of St. Louis, at the meetings of the

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Missouri Historical Society in October, November, and December, 1897. Throughout the inception and development of the movement to commemorate the Centennial anniversary of the Purchase, the names of prominent Catholics were always in evidence. At the first executive meeting, held in the rooms of the Missouri Historical Society, Jan. 11, 1898; on the Special Committee of Six on Centennial Celebration appointed at this same meeting; on the Conference Committee of the Business Men's League appointed April 20, 1898; on the Nominating Committee of Fifteen for Preliminary Organization; on the Committee of Fifty on Preliminary Organization; on the delegation from Missouri appointed by the Governor to the Interstate Convention held in St. Louis, Jan. 10, 1899; on the Committee of Eleven appointed, January, 1899, to select a committee of two hundred; on the Committee itself of two hundred; finally, in the Louisiana Purchase Exposition Company, incorporated April 24, 1901, and among the Directors of the Exposition, we everywhere find the names and observe the important positions occupied by members of the Catholic Church. Among the original World's Fair workers, few devoted more time and enthusiasm to the creation and perfecting of the great project than Festus J. Wade, W. J. Kinsella, W. H. Lee, J. F. Lee, D. C. Nugent, Pierre Chouteau, Alex. N. de Menil, Seth W. Cobb, J. A. Reardon, F. Gaienne, J. B. O'Meara, Edw. Devoy, J. Boyce, L. J. Hornsby, J. B. C. Lucas,

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F. A. Drew, R. G. Frost, J. M. Franciscus, Jr., P. Griesedick, J. M. Hayes, F. D. Hirschberg, F. White, Julius Walsh, J. Scullin, V. Reyburn, and others to the extent of twenty-five per cent of the honorable roll of original World's Fair workers. Mr. Charles W. Knapp, editor of the St. Louis Republic, prepared the original scope and plan of the Exposition. Pierre Chouteau was Chairman of the temporary organization in charge of the Convention of States, and Festus J. Wade, Chairman of the Finance Committee of the same organization. On the Committee of Three, selected to mark out the programme for the Convention, and among the Group Chairmen who engineered the final canvass for the launching of the great enterprise, we find as enthusiastic workers a large number of the most prominent Catholic citizens of the World's Fair city. The President, Thomas H. Carter, and the Vice-President, Martin H. Glynn, of the United States National Commission, are members of the Catholic Church. On each of the twenty-nine committees administering the various functions of the Fair, there were from one to four of the Catholic members of the Board of Directors, seven of whom—W. H. Lee, F. J. Wade, J. S. Walsh, W. J. Kinsella, S. W. Cobb, Pierre Chouteau, and F. D. Hirschberg, were chairmen of the very important committees of Finance, Ways and Means, Transportation, Mines and Metallurgy, Fish and Fisheries, History, Reception, and Entertainments. J. E. Sullivan, Director of the Depart-

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ment of Physical Culture, John Scullin, Director of the Department of Transportation, Major William H. Johnston, U. S. A., in command of the Filipino Scouts, are all well-known members of the Catholic Church.

It is needless to mention that on the Commissions from foreign countries the positions occupied by Catholics were as prominent and even more numerous than those filled by their co-religionists in the United States. In this connection I might mention representatives from Argentine, Austria, Belgium, Brazil, Chili, Colombia, Costa Rica, Cuba, France, Guadeloupe, Guatemala, Honduras, Hungary, Italy, Mexico, Nicaragua, Peru, Portugal, San Salvador, Spain, and Venezuela. Many members, too, of the various State Commissions, and the Matrons and Curators of the State and Foreign buildings were Catholics of prominent standing at home, and devoted to the interests and prestige of the Church at the Fair.

Among ecclesiastics, Archbishop Kain was throughout the nascent and constructive period of the Exposition one of its most public-spirited advocates. His successor, the Most Rev. John J. Glennon, D. D., was, after the President of the Fair, the most conspicuous presence at all the great functions of the Exposition. Either alone, or in company with one or more of the great prelates of the United States or other countries, His Grace of St. Louis, rarely, if at any time, omitted to take his part in any and all the events which the prolonged occasion of this

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marvelous enterprise created. Moreover, in all his public utterances, his sermons at the cathedral chapel, his addresses throughout the city and the State, at public meetings, religious functions, on social occasions, and in his published interviews, Archbishop Glennon was second to none even of the accredited Fair workers themselves in his zeal for the promotion and success of the Exposition. Other prominent Catholic ecclesiastics who lent their support to the great Fair, and who took part in its functions and events, were Archbishops Harty, of Manila; Ryan, of Philadelphia; Messmer, of Milwaukee; Ireland, of St. Paul; Moeller, of Cincinnati; Gillow, of Antequera, Mexico; De Merino, of San Domingo; Bishops Maas, of Covington, Ky.; Mearschaert, of Guthrie, Okl.; Burke, of St. Joseph, Mo.; Cunningham, of Concordia, Kas.; Scannell, of Omaha, Neb.; Hennessy, of Wichita, Kan.; Spalding, of Peoria, Ill.; Jansen, of Belleville, Ill.; Lillis, of Leavenworth, Kas.; Muldoon, of Chicago; Abbot Gasquet, of England; Abbot General Seraphini, of Monte Cassino, Italy; Abbot Vatter, Buckfast, England; Monsignors Nugent, of Liverpool, England, and O'Connell, of Washington, D. C., and a very large number of the Catholic clergy of the United States. For no body of citizens within the boundaries of the Louisiana Purchase did more in the way of patronage and support of the Exposition, within their sphere, than the Catholic clergymen of the Territory. More than four fifths of them spent a week at least at the

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Fair, many two or three weeks, and they were always there in so great numbers that it was an ordinary thing, in a walk through the grounds, to meet with Catholic priests at almost every turn. The great Catholic events which took place during the Fair were occasions which brought numerous bodies of the clergy from all parts of the world to St. Louis, and others found it profitable and pleasant, during the very auspicious World's Fair summer, to spend their vacations within the gates of this greatest of world's educational opportunities. The religious orders were well represented at the Exposition. The Jesuits, the Christian Brothers, the Benedictines, the Lazarists, and the Sisterhoods had educational exhibits at the Fair, and their members were present during the Exposition, either in the capacity of exhibitors, students, or sight-seers. The Jesuit Fathers were prominently identified with the educational department, the anthropological exhibit, the Philippine Reservation, and, through their ministrations, with the Visayan village, the Constabulary, and the Filipino Scouts, who, besides, had an accredited Chaplain, Rev. J. C. Granville, U. S. A. The Holy Sacrifice of the Mass was offered up every Sunday and holiday of obligation in the Church of St. Rose of Lima in the Visayan village, and often in the Inside Inn, by the Rev. E. A. Casey, Pastor of St. James' Church, in the city. The sacraments were administered publicly on several occasions.

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As we enter upon the period proper of the Exposition, many very Catholic features, or events, occur in connection with it.

The dedication exercises of the Fair were marked by two very public and essentially Catholic events. These were the Grand Act at the St. Louis University, and the opening of the dedication exercises by Cardinal Gibbons. The Grand Act, as it is called in schools of Catholic divinity, is a public defense of the entire body of Catholic divinity, formulated in the shape of propositions, or theses, by a student of divinity who elects to defend his doctrine against any and all opponents who choose to break a lance with him. On this occasion, the Rev. Joachim Villalonga, S. J., a Spaniard from the Philippines, was the young divine who maintained this defense. Apart from the general body of the learned who were invited to the disputation, seven Doctors in Theology, representing the principal schools of divinity in the United States, were requested to challenge the young theologian to debate. They were the Rev. Benedict Schmidt, O. F. M., Professor of Theology in the Franciscan Monastery, St. Louis, Mo.; Rev. Dr. Ryan, Professor of Theology in the Kenrick Seminary, St. Louis; Rev. Dr. Selinger, Professor of Theology at St. Francis Seminary, Milwaukee; Rev. Dr. Wirth, Rochester, New York; Rev. Dr. Ayrinhac, St. Mary's Seminary, Baltimore; Rev. Daniel Kennedy, O. P., Somerset, O.; Rev. Dr. Hanna, Rochester, N. Y. The debate was in Latin. It lasted four hours, and was

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divided into a morning and afternoon session. Towards the close of the afternoon session, President Roosevelt was announced, and presently entered the hall with an escort of some twenty gentlemen, members of the diplomatic body, the cabinet, senators, and representatives of the United States. After greeting Cardinal Gibbons, who was presiding, and bowing to the audience, the President took his seat beside the Cardinal. The Rector of the University then advanced and welcomed the President to St. Louis in an address which was frequently interrupted by applause. He said in part: "Your Excellency, In the name of the faculty and the friends and the alumni of the St. Louis University, and in my own name, I bid you welcome to St. Louis University. You have come to inaugurate a great Exposition commemorative of the purchase, one hundred years ago, of the Louisiana Territory. As brethren of the intrepid explorer, Marquette; as members of a college whose influence has extended throughout the whole extent of the Louisiana Purchase, from Louisiana itself to the furthest Northwest; whose professors have gone out and founded therein churches, stations, and schools almost innumerable, and six associate colleges; whose missionaries established the first Indian missions, and followed the Indians in their wanderings even to Idaho and Montana, we think we may well be the first to welcome you on this memorable occasion to the Louisiana Purchase Territory.

* * * As we look back with pleasure to far off days



EXHIBIT MADE BY CATHOLIC UNIVERSITY OF AMERICA.
EXHIBIT MADE BY CHRISTIAN BROTHERS COLLEGE.

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when our University was visited by such men as Dickens, Clay, Webster, and Van Buren, so this visit of President Roosevelt, accompanied by distinguished friends, shall go down as a red-letter day in the calendar of the St. Louis University."

The President rose and replied as follows: "Rev. Father, Cardinal Gibbons, and Gentlemen—It is indeed a pleasure to be received here as the guest of the first and the oldest University founded in our country west of the Mississippi River in this Louisiana Purchase. I know your work. I have myself been much in the West, and I have come across the traces of your work, both among the communities of our own people and among the Indian tribes; and it is indeed a pleasure to be here to-day in this historic University, to greet you, and to listen, as I shall, to this well-nigh unique ceremony in this part of the country. I thank you personally for your kind allusion to me; I would hold myself recreant to the principles on which this Government is founded, did I not strive as Chief Executive to do fair and equal justice to all men without regard to the way in which any man chooses to worship his Maker. I thank you for your greeting, and I appreciate it, and I can assure you that you are not so glad to have me, as I am to be here."

The following day, at the dedicatory exercises of the Exposition, standing above the assembled representatives of the nations of the world, the venerable Primate of the

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Catholic Church in the United States, His Eminence, James Cardinal Gibbons, invoked the divine blessing on the rulers of the nations and the States, on the President and Directors of the Exposition, on the people of the Louisiana Purchase, and on the stupendous enterprise of the commemorative Exposition itself. His prayer will go down to posterity not only as embodying the aspirations and the thoughts of the great Communion of which he is the national head, but as voicing the heart and mind of the great people whose minister he was on this occasion. "We pray Thee, O God of might, wisdom, and justice, through Whom authority is rightly administered, laws are enacted, and judgments decreed, assist with the holy spirit of counsel and fortitude the President of the United States, that his administration may be conducted in righteousness, and be eminently useful to the people over whom he presides, by encouraging due regard for virtue and religion, by a faithful execution of the laws in justice and mercy, and by restraining vice and immorality. By the light of Thy divine wisdom, direct the deliberations of Congress, and shine forth in all its proceedings and in the laws framed for our rule and government, that they may tend to the preservation of peace, the promotion of national happiness, the increase of industry, sobriety, and useful knowledge, and may perpetuate to us the blessings of equal liberty. We pray for his Excellency, the Governor of this State, for the members of the Legislature, for all judges, magistrates, and other officers who are ap-

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pointed to guard our political welfare, that they may be enabled by Thy powerful protection to discharge the duties of their respective stations with honesty and ability. We pray for the President and Directors of the Louisiana Purchase Exposition, that their arduous labors may be crowned with success, and redound to the greater growth and development of this flourishing city on the banks of the Father of Waters. May this vast territory, which was peacefully acquired a hundred years ago, be for all times to come, the tranquil and happy abode of millions of enlightened, God-fearing, and industrious people engaged in the various pursuits and avocations of life. As the new domain was added to our possessions without sanguinary strife, so may its soil never be stained by bloodshed in any foreign and domestic war. May this commemorative Exposition, to which the family of nations is so generously contributing its treasures of art and industry, bind together the governments of the earth in closer ties of fellowship and good-will and of social and commercial intercourse. May it hasten the dawn of the reign of the Prince of Peace, when national conflicts will be adjusted not by hostile armies, but by permanent courts of justice. May this international Exposition, inaugurated in the interest of peoples and commerce, help to break down the walls of dissension, of jealousy, and prejudice that divide race from race, nation from nation, and people from people, by proclaiming aloud the sublime Gospel truth, that we are all children of the same God, brothers and sisters of the

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same Lord Jesus Christ, and that we are all aspiring to a glorious inheritance in the everlasting kingdom of our common Father."

One was forcibly struck upon entering the Fair grounds, especially if he came in by the main entrance leading to the great central plaza, or the Plaza of St. Louis, with so much that reminded him of the Catholic traditions and history of St. Louis and the West. The name itself of the Plaza—St. Louis—was suggestive of the saintly crusader and king of the French, after whom this World's Fair city was christened by its French Catholic founders. At the extreme north of the plaza that bore his name, and directly in line with the Hall of Festivals and the Louisiana Monument, was the "Apotheosis of St. Louis." This statue was one of the principal decorative features of the Exposition. It showed the saintly monarch clad in mediæval armor half hidden by his tunic, and mounted upon a charger with flowing caparisons. Upraised in his right hand, the king held a cross-hilted sword. He grasped it by the blade, raising it aloft in such a manner as to exhibit the cross plainly to all the world around. It was an inspiration that thus placed the emblem of Christianity above the greatest achievement of human industry. Down the Plaza, looking south, and occupying a huge pedestal on the east side of the Plaza, opposite the west entrance to the Palace of Manufactures, was another immense equestrian monument of historical significance. The statue represented the famous *coureur des*

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bois, Joliet, the friend and faithful companion of Marquette, in the garb of an explorer. Just across the Plaza St. Louis and opposite the east entrance to the Palace of Varied Industries, was a companion equestrian statue of De Soto. This statue represented the great Spanish Catholic discoverer of the Mississippi upon a superb charger, as he appeared when for the first time his eyes looked upon the great Father of Waters. It was fitting that these two most daring of western explorers should stand guard before the temples of manufactory and industry which their adventurous careers had claimed from the buffalo and the red man. Going south along the Plaza St. Louis the visitor crossed the beautiful World's Fair Lagoon over two bridges situated at either corner of the Grand Basin, and leading, east and west respectively of the palaces of Education and Electricity, to the Cascades. There were twelve of these bridges, of which seven were dedicated to the memories of great Catholic pioneers of the western Territory; Hennepin, De Smet, La Salle, Bienville, Coronado, De Soto, Joliet, and one to Napoleon, emperor of the French at the time of the Purchase. Ascending from the valley of vast World's Fair Palaces, along the east approach to the Terrace of States, one passed by the magnificent portrait statues of Bienville, La Salle, Marquette, Bonaparte, and crossing over to the western approach, the descent led by the heroic figures of Narvaez, Marbois, Renault, and Laclede to the beautiful Plaza of St. Anthony, reminded all along this magnificent route of sculp-

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ture and architecture, of the very prominent part played in the history of the Louisiana Purchase by the great Catholic pioneers of the West. And yet it was not along the great plazas of the Exposition alone that visitors perceived how identified with the Fair is the history, work, and interest of the Catholic Church.

None of the great Palaces, it is true, exhibited in their direct aim and contents, the work, and the prevalence, of Catholicity in modern life. Yet one could hardly refrain from the conviction that forced itself upon him in the decorative sculpture of these vast emporia, of the supremacy of Catholic civilization in all the advances of human activity. Moreover, here and there among the buildings of the Fair we were constantly reminded of the presence and the work of the Catholic Church. By far one of the most interesting and historic attractions of the Fair was "Jerusalem." It was a series of archæological replicas of the places sanctified on earth by the presence of the Redeemer, and exhibited in miniature a very true reproduction of the Holy City. Everything in this exhibit reminded one of the cradle of the Church. Besides the magnificent panoramic pictures of the Mount of Olives, the Garden of Gethsemane, and Calvary, there were among the special features of "Jerusalem" many of those places that to the Christian visitor are full of the most supreme interest. There were excellent reproductions of the Holy Sepulchre, the Via Dolorosa, the Hall of Judgment, the Tower of David, the Temple of Solomon, the

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Golden Gate, the Scala Sancta, the Tomb of Christ, the Wall of Wailings, and a score of minor representations that carried the mind of the Catholic back to the days of the Founder of the Church.

In the Philippine Reservation there were so many features which identified the Catholic Church with the civilization of the islands and with the general impression of the exhibit, that it might, in a very true sense, be looked upon as the exhibition of the work of the Catholic Church in the Philippine Islands. Everywhere throughout the Reservation were signs and symbols of Catholicity. The sculpture, the painting, the literature, and the scientific labors exhibited were in almost every instance Catholic in tone, in subject, in history. The school work was that of a people whose thoughts, whose fancies, whose ideals, were in almost every feature of life and practice exclusively Catholic. The Visayans had their little church of St. Rose of Lima and their almost daily ministrations from the Jesuits of the St. Louis University; the Filipino Scouts had their Catholic chaplain, the Rev. J. C. Granville, of the U. S. A. In the Visayan village, Catholic plays were set upon the stage and Catholic songs and hymns were sung by the players. The crucifix, photos, and paintings representing the Madonna, the portraits of the great missionaries and prelates of the Philippines, pictures and scenes in the lives of the great Catholic explorers of the East, mottoes and symbols wrought into the displays and exhibits, all went to show that the visitor was in

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the midst of an exclusively Catholic atmosphere. Besides the fact that practically all of the care-takers throughout the buildings, the collaborators, and the men and women employed upon the Reservation, were Catholics, many, too, if not all of the exhibitors were Catholic; and their faith in some instances called forth the admiration of the thousands and thousands who daily poured over the Reservation. Among the features of the Reservation must be mentioned with the loftiest praise the Manila Observatory exhibit in charge of the Rev. José Algué, S. J. The leading excellence of this exhibit was the great Relief Map covering an area of 110 x 75 feet in the open. It was surrounded by a circular plank walk. This map may remain as a permanent feature of the park which was occupied by the Fair buildings. More than 2,000 islands are shown on this map in their proper shape and proportionate size. Inside the building raised beside the map, and which represented the Seismological Department of the Manila Observatory, were eleven other relief maps of the islands and conformations of the Philippines. These maps exhibited the mines, the hot and cold springs, the locations of tribes and races, the forestry, agriculture, and other physical features of interest in the Archipelago. In the center of the building was the Microseismograph which had been set up to record any earthquakes which might occur in the most distant parts of the earth during the Fair.

While the Irish Industrial Exhibition, and the Belgian, Austrian, Brazilian, Argentine, Ceylonese, Cuban, Italian,

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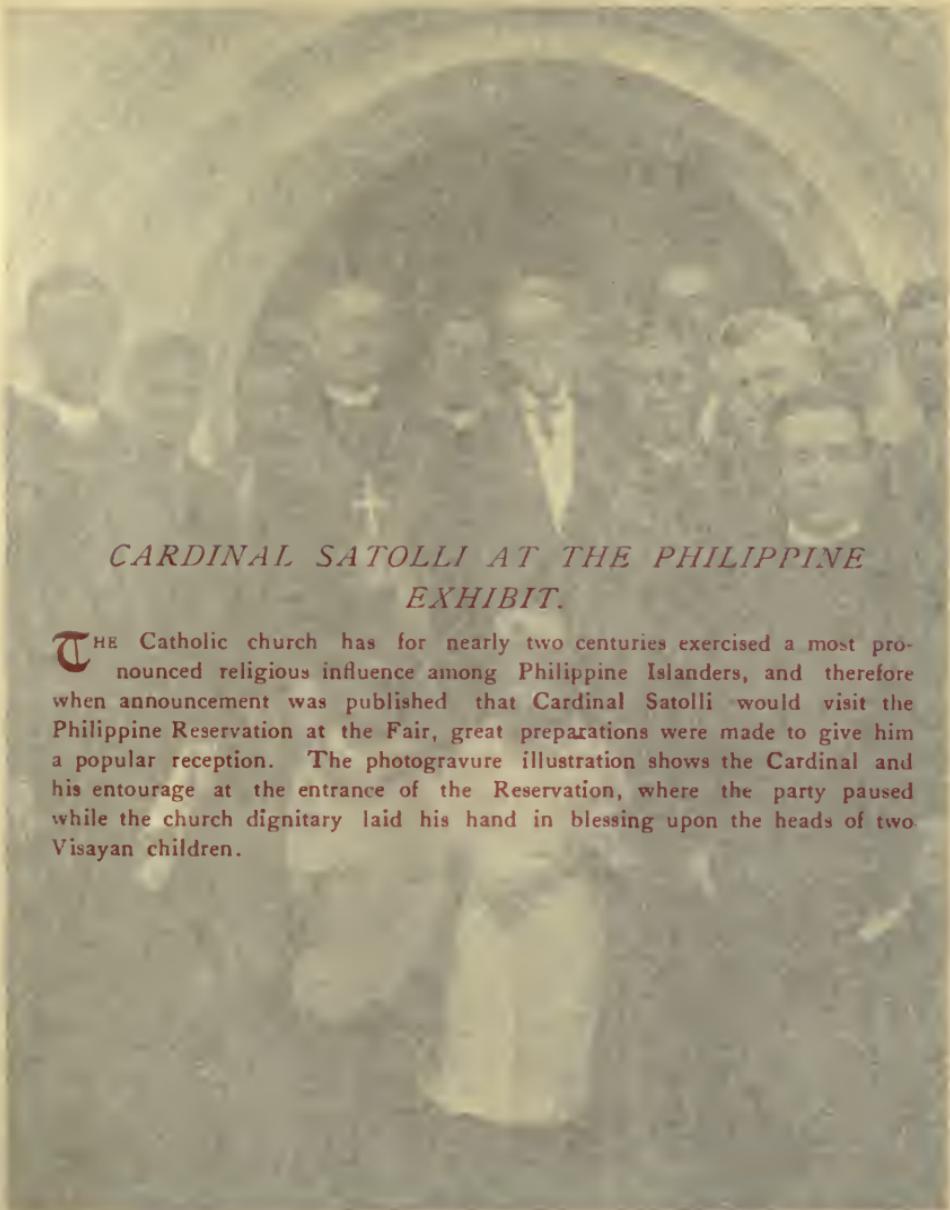
Mexican, Nicaraguan, and Porto Rican buildings could not be compared to the Philippine Reservation in the eminently Catholic character of everything connected with them, yet one felt in passing through these foreign contributions to the grandeur and beauty of the Louisiana Purchase Exposition, that he was in an atmosphere of Catholic thought and sentiment. It could not but impress one with the conviction that these buildings and the achievements of art and industry set forth in many of them, were the contributions of a Catholic people. This was true even of France with all her governmental hostility to the Church. It was more true of the Irish exhibit of antiquities, reproductions, relics, and historical remains, its school work, and its display of beautiful church goods and Catholic literature. The Celtic Cross, the Gate of St. Lawrence, Cormac's chapel, the mysterious Rood, were some of the evident features that emphasized the Catholic character of the Irish village. The Belgian Building was a distinctly Catholic headquarters, as indeed it should have been. Its commissioners, officers, and help, were all practical Catholics. Its paintings, its sculpture, its great universities, its school work in the intermediary and primary schools, its scientific work and expeditions indicated to the merely passing visitor at this magnificent pavilion that Belgium is not only one of the most advanced, but also one of the most Catholic countries of the world.

Naturally enough the visitor to the Fair found in all the buildings of the South American States evidences of the

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prevailing religion of these people. This was particularly the case in Brazil, Costa Rica, Cuba, Mexico, and Venezuela. While the general exhibits from all these countries were of an industrial and commercial kind, yet in the religion of the great bulk of the exhibitors, in the school and art work displayed, in the symbolisms that characterized the exhibits in so many instances, and the air and atmosphere of their pavilions and booths, the Catholicity of these peoples stood out in so great evidence that even the superficially attentive would not fail to observe and understand it. In Austria, Italy, and even in France and Germany, there were many things—sculptures, paintings, tapestries, antiquities, great names and photographs, great discoveries, and achievements that had no meaning outside of their relation to the religion which promoted and cherished them. It is true that in many cases these reminders of Catholicity, these monuments of her work in the past, or the present, were exhibits inaugurated under one or other of the many great divisions and sections of the International Exposition. But the very multiplicity of these and their character, emphasized more universally and fully the extent to which Catholicity, in an Exposition which did not aim at, and even in many ways sought to omit and discourage religious exhibits as such was identified with every order of human activity.

The Vatican Exhibit was one of those much prized by the Fair authorities, not only for its intrinsic value, which was very great, but because it gave evidence in a splendid and



*CARDINAL SATOLLI AT THE PHILIPPINE
EXHIBIT.*

THE Catholic church has for nearly two centuries exercised a most pronounced religious influence among Philippine Islanders, and therefore when announcement was published that Cardinal Satolli would visit the Philippine Reservation at the Fair, great preparations were made to give him a popular reception. The photogravure illustration shows the Cardinal and his entourage at the entrance of the Reservation, where the party paused while the church dignitary laid his hand in blessing upon the heads of two Visayan children.



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a permanent form, first of the solicitude of the Exposition Directory to interest the Father of Christendom in the great work of the Fair, and in the second place, of the cordiality with which the Holy Father responded to the desire of the Exposition Management. The Holy Father in this exhibit thus proved in a peculiarly forceful manner how completely the great body of the faithful over whom his spiritual authority extends was in harmony with, and sought to promote to the utmost, the greatest social enterprise of modern times.

Upon the formal opening of the Exhibit and in response to a cablegram sent to Rome by Francesco Cagiati in charge of the Vatican Exhibit at the World's Fair, the following message was received from His Holiness, Pope Pius X.:

"To His Grace, John J. Glennon, Archbishop of St. Louis:

"The Holy Father, having received announcement of the inauguration of the Vatican Exhibit at the Louisiana Purchase Exposition, sends his blessing to those taking part therein.

(Signed)

"MERRY DEL VAL,

"Cardinal Secretary of State."

The Vatican Exhibit in the Anthropology Building was formally dedicated with a reception. Signor Francesco Cagiati, Papal Commissioner for the Vatican to the Exposition, received the guests, assisted by His Grace, Arch-

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bishop John J. Glennon of St. Louis. President Francis presented Signor Cagiati.

The Papal Commissioner said that he desired to express the greetings and good wishes of Pope Pius X. to the Exposition management, and to the American people in general. He spoke of the Pope's solicitude for "his children across the Atlantic," and said that he hoped that the exhibit which he had the honor to present to the people of the United States, would prove interesting and instructive to them.

His Grace, Archbishop Glennon, in responding, said: "The educational idea dominates the modern world; hence also it is—it must be—intimately associated with the Universal Exposition. Indeed, whatever of pleasure or increased comfort this Exposition may produce, it will, I believe above all, stand for the educative progress of the world. You, Mr. President, are especially to be congratulated in that you have succeeded in what to all of us seemed almost an impossible task. You know Rome is proverbially slow and conservative, yet, when we might write and wait for a decision, you, Mr. President, have, through your accomplished representative, been able to bring a new Pontiff who had as yet scarcely accustomed himself to the ways of the papacy to see that it was right for the Vatican to join with the nations in making up the grand Exposition. St. Louis feels now more than ever as if she were the Rome of America, as she is the Capitol of the Universe."

DIVISION CXXIX—Continued.

Catholic Participation and Educational Exhibits.

It is perhaps in education that we find the exhibits which make the Catholic Church one of the most extensive participants and collaborators in the work of the World's Fair. Apart from the magnificent and immensely valuable "Jesuit Historical Collections" and some archeological and scientific collections in the Department of Anthropology, from the archives of St. Mary's College, Montreal, the exhibits which were professedly Catholic were mainly in educational work of all kinds. This Montreal collection was not only set up by one of the oldest Catholic colleges upon the North American continent, but it placed upon exhibition, in the original documents, much, if not all, of the early history of Canada and the United States—a history which, as the world knows, was made and written by the Catholic pioneers of the World's Fair continent. In this collection we have the original letters of the missionaries, the acts of the American martyrs, the briefs of Sovereign Pontiffs, descriptions of lakes, rivers, mountains, seas; and of the manners and customs of the Indian tribes. We have treaties, maps, autographs, deeds of land, concessions of territory, narratives

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of voyages, biographies, dictionaries, grammars, treatises on philosophy, ethnology; we have claims and transfers of land, petitions to governors, pastoral letters, registers of births, marriages, deaths, signatures of early explorers, pictures of the first adventurers and missionaries, relics and archeological remains from ancient Indian towns and old historic sites.

On a par with this exhibit, although in a totally different order of research and activity, was the celebrated Bengiaut Museum of Antiquities. Much, of course, of this exhibit was valuable for its oriental and ancient origin. Yet in no collection in the world perhaps, outside of the British Museum, was there to be seen a richer and more exhaustive collection of the treasures and antiquities of old Catholic centers. Here, besides the loot from the churches of Cuba and the Philippines, were some of the very richest vestments from ancient Italy, from Spain of the Visigoths, from Africa under the Vandals. There were collected here the richest copes, dalmatics, antependia, altar laces, silver and gold utensilia, from Rome, Egypt, Syria, Greece; magnificent candelabra from Constantinople, specimens of altar and church architecture from old Catholic England and Germany, from Byzantium, Sicily, and Spain; rich mosaics from the eastern and western churches of pre-mediæval times, tabernacles, chalices, ciboria, canopies, ostensoria, pixes, dating in almost every instance to the mediæval ages of the

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Church, and in some instances carrying the visitor back to the Patristic periods of Catholicity.

In the Palace of Education, Catholic school work in various parts of the world was represented, although in no way whatever adequate to convey even the remotest concept of what the Church in the United States, or the Church in other parts of the world is actually doing, or has done, for the promotion and spread of every department of education. This was owing to the fact that religious institutions of learning, as such, were not invited to exhibit at the Fair. The invitation was to the Boards of public school education in the United States, to the State systems of other countries, and to individual institutions independently of their religious character, or the countries to which they belonged. Yet even under these restrictions, there were specimens of the educational work carried on by the Catholic Church in this country alone, which not only demonstrated the fact that the Catholic Church outstrips every denominational form of religion in her solicitude for education, but is everywhere in the United States and other countries a successful rival of the State in every department of teaching. These restrictions were to be all the more deplored in as much as the work of 1,250,000 pupils, one eighth of our school population, thus failed to be represented at the Fair, and a system of over five thousand schools of all grades, in the United States alone, was excluded from a merited appreciation and examination.

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Among the Catholic Colleges and Academies that sent exhibits from the various States of the Union, mention must be made of Worcester College, Mass.; the College of the Immaculate Conception, New Orleans; Holy Cross, Mass.; Manhattan College, New York City; St. Mary's College, St. Mary's, Kas.; St. Agnes' Industrial School, New Orleans; St. Patrick's Academy, Catskill, N. Y.; the Ursuline Academy, Louisville; Nazareth Academy, Nazareth, Ky.; Mater Dolorosa School, New Orleans; St. Alphonsus School for Boys and Girls, New Orleans; the Ursuline Convent, New Orleans; the Academies of the Sacred Heart, New Orleans; Holy Cross College, New Orleans; St. Cecilia's Seminary, Holden, Mo.; St. Mary's Academy, Salt Lake City, Utah; the Gesu School, Milwaukee, Wis.; All Saints' Academy, Sioux Falls, South Dakota; the Sacred Heart School and St. Wenceslaus Academy, Tabor, South Dakota. Among the principal exhibits of education in these few schools, academies, colleges, and universities which elected to send exhibits under the exclusive laws of the Department, were especially the exhibits of the Catholic University of America; that of the Christian Brothers' College, St. Louis, Mo.; the St. Louis University, St. Louis, Mo.; Creighton University, Omaha, Neb., and the Manila Observatory, Manila, P. I. Besides the great number of exhibits of primary and intermediate schools in the Catholic countries taking part in the Exposition, particular mention must be made here of the Catholic University of Louvain, Belgium; the Catholic Uni-



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versity of France, Paris; Colegio de Belen, Cuba; Colegio Salesiano de Cuyaba, Matto Grosso, Brazil; the Universities of Wurzburg and Freiburg, Germany; Colegio Santissimo Coração de Jesus, Bahia, Brazil; Lyceo de Sagrado Coração, San Paolo, Brazil; Stonyhurst College, England; the Christian Brothers' Schools, North Monastery, Cork, Ireland, and El Colegio Salesiano, Santa Julia, Mexico.

The School of Social Sciences of the Catholic University, Washington, D. C., prepared and installed at the Exposition an exhibit of the Catholic charities of the United States. The work was undertaken with the approval of the Archbishops and Bishops of the United States, and the project was supported by the superiors of many religious communities and prominent Catholics active in charity work in the United States. While the exhibit, as it stood, was inadequate, owing to difficulties encountered in its inauguration, it outlined in some way the vast scope of Catholic charity in the United States, and was full of manifold suggestions for future work in this line. Prominent in this exhibit was (1) a series of six outline maps, 5 x 8, showing the increase, location, and character of the charitable institutions of the United States, embracing orphan asylums, insane asylums, hospitals, homes, reformatories, protectories, etc., that have grown up since 1850. (2) The work of religious communities was presented in a series of 150 frames, showing a brief summary of dates of foundation, location of mother-houses, character of work done, number of members in community,

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number engaged in charity, and list of institutions. This summary was followed by a series of photos picturing inside and outside views of property, views of work, the daily life, the inmates, and phases of institutional activity. (3) The exhibit contained also a list of the 556 Conferences of St. Vincent de Paul, data and work from the New York Protectory, the Guild of the Infant Savior, of New York, and that of the Queen's Daughters. The promoters of this work at the World's Fair were His Eminence, Cardinal Gibbons, Archbishops Farley, Glennon, Ryan, Quigley, Keane, Christie, Ireland; Rt. Rev. Bishops Harkins, Colton, Foley, McFaul; Rt. Rev. Mgr. O'Connell; Hon. W. Bourke Cochran, Messrs. Ehret, D. M. Riordan, W. F. Downey, J. N. Kirby, T. J. Thompson, the St. Vincent de Paul Society, and the John Murphy Company of Baltimore. The exhibit was in charge of the Queen's Daughters of St. Louis.

While the Christian Brothers were at the same disadvantage as the other Catholic schools in the scope of the educational exhibit, yet both their foreign schools and colleges, as well as their institutions in the United States, were represented in a manner that abundantly established their desire to take part, notwithstanding the handicap, in the educational object of the Exposition and that evinced in the Louisiana Purchase Exposition, as in the Columbian, New Orleans, and Paris Expositions, the superior excellence of their institutions in every line of educational work. At the Louisiana Purchase Exposition, the Christian Brothers in-

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stalled exhibits from the British Empire, France, Belgium, and the United States. Of these, particular mention must be made of the exhibit of the Christian Brothers' College, St. Louis, Mo. Besides the charts of mechanical drawing, engineering and mathematical specifications, which were a very distinguishing feature of Manhattan College, New York, and besides the photographs of the exterior and interior of their buildings, halls, laboratories, and museums, which were a prominent feature of their Irish exhibit, the St. Louis exhibit contained the yearly catalogues of the Institution, photographs of the campus, of their student clubs, of their alumni, distinguished patrons, an extensive display of student work set up in courses, a great variety of texts, theses worked out as class work, many samples of laboratory work and methods, and students' exercises in language work.

One of the greatest scientific exhibits at the Fair, both in its uniqueness, originality, and value to the navies and marine of the Orient and the Pacific, and in its completeness as a meteorological station, was that of the Manila Observatory, installed by the Rev. José Algué, S. J., the Director of the Observatory, and the inventor of the principal apparatus in the exhibit. Father Algué was one of the very notable figures at the Exposition. His achievements at the Fair alone would establish the fact that he is one of the world's foremost scientists. This exhibit was awarded a grand prize for the great relief map of the Philippine Archipelago of two thousand islands, for a model

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meteorologico-seismical station of the first class, for the barocyclonometer and refraction nephoscope. It was awarded gold medals for an improved microseismograph, seismograph pendulum, maps of Mindanao, geographical atlas and works, collections of Philippine woods, bust of Rev. Guerrico, S. J., collection of paintings on conchas, and two gold medals for two collections of very valuable works, besides a number of minor awards.

Another most interesting scientific exhibit at the Fair, contributing to the ability and glory of Catholic scientists, was the gigantic solar apparatus, invented by the Rev. M. A. G. Himalaya, a Portuguese priest and scientist. It consisted of a huge reflecting surface made up of 6,117 small mirrors, mathematically adjusted so as to concentrate the solar rays falling upon them into one united focus of about six inches in diameter. This produces a concave mirror of an area of 861 square feet, which by ingenious mechanical contrivances is kept perpendicular to the rays of the sun. That the heat reflected by such a simple apparatus should produce in the focus of the machine a temperature of over 6,000 degrees Fahrenheit, seems almost incredible. Yet it is a fact that the temperature of the electrical oven, the highest known up to the present time, has been exceeded by more than 500 degrees Fahrenheit, on clear days, when 6,800 degrees were registered. This wonderful result was reached in spite of the imperfect mechanical working of the machine, due to accidental causes. The principal objects of this ap-

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parently simple apparatus are the study of the nature and origin of the sun's radiation, the analysis of the properties of matter at high temperatures, and the practical utilization of the great and inexhaustible solar energy for industrial purposes.

A very complete and excellent educational exhibit at the Louisiana Purchase Exposition, and one, of course, Catholic in every detail, was that of the St. Louis University and Allied Jesuit Colleges of the Middle West. The space allotted to this exhibit was large and prominent, and the plan of the booth—open work throughout—and its guidon of "The Oldest College in the Louisiana Purchase," hanging out over the aisles on either side, placed it evidently before the thousands of visitors to the Palace of Education. Upwards of three thousand names were registered in the University Album. In this great Catholic exhibit were hung a number of historic paintings bearing upon the University and the city of St. Louis. De Smet among the Sioux, the Hon. Bryan Mullanphy, the first graduate of the University and the founder of commercial life in St. Louis, Count John A. Creighton, founder of, or chief benefactor of all the Catholic institutions in Omaha; photographs, paintings, crayons of several generations of illustrious Jesuit students, Marquette discovering the Mississippi, "The Missioner's Welcome," an episode in the life of Pere De Smet, were some of the chief art features of this exhibit. Among its historical antiquities were a celestial globe after the calculations of Tycho Brahe,

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and by one of his pupils; the De Smet cabinet of curios, coins, relics, skulls, and crosses found among the Indians; a Eucharistic monstrance used by the early missionaries of the Purchase; De Smet's diary, Gailland's Pottawattamie dictionaries, and literature; the Linton-De Smet album, and specimen panels of mesquit wood. Besides these notable paintings, statistical maps were hung upon partition-racks showing the educational and religious progress in the Louisiana Purchase in particular, and in North America in general from 1565 to 1904. These were supplemented by the De Smet cabinet of manuscripts, small maps by the missionaries, historical documents, and literary remains illustrating the latest period of religious and educational development in the Louisiana Purchase Territory and the Northwest from 1821 to 1904.

From the University School of Medicine—the Marion-Sims-Beaumont College of Medicine—there were exhibited a beautiful cabinet of natural and artificial crystals from the laboratory of chrystallographic chemistry, the chemical works of Prof. G. Hinrichs, Prof. Potter's charts of topographical anatomy, Mr. H. D. Kistler's cabinet of thirty-five anatomical cross-sections of a child at term, accompanied by drawings of same, Prof. A. C. Eycleshymer's original drawings in embryology, and Dr. C. M. Barck's cabinet of mounted specimens of pathological ophthalmology. From the Schools of Divinity, volumes of original study, theses, and a collection of works by professors and graduates were

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on exhibition. From the Undergraduate course, in the departments of literature, ancient languages, science, and mathematics, several volumes of type-written copies of stenographic reports of lectures, recitations, quizzes and explanations were shown, setting forth an exact chronicle of the excellencies, mistakes, crudities, and other features of class work, thus illustrating, as no other means can, the method pursued in every grade of teaching and lecturing. Among other features of the Undergraduate work of the University, was a Memorial Volume, dedicated to His Excellency, the Hon. David Rowland Francis, President of the Louisiana Purchase Exposition, containing three original odes in Greek, Latin, and English, commemorative of the discovery, development and present state of the Louisiana Purchase. The volume is illustrated by sixteen sketches in water-colors, and is handsomely inscribed to President Francis in a very dignified lapidary composition, as follows:

VIRO

amplissimo et illustrissimo

DAVID ROWLAND FRANCIS

urbis · S. · Ludovici · et · Status · Missouri · olim · rectori

Hujus · artium · scientiarumque · magnifici · muneris

optimo · atque · dignissimo · praesidi

urbis · patriaeque · decori

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SANCTI · LUDOVICI · UNIVERSITAS

ad · memoriam · perpetui · nominis

curantibus · alumni · junioribus

HOC · OPUS

TRIPARTITA · SCRIPTUM · LINGUA

artibusque · illustratum

laudis · honoris · monumentum

D. D. D.

THEODORO ROOSEVELT

Reipublicae · Americanae · Praeside

CIO. C. CIO. IIII.

That this excellent exhibit was highly regarded is evinced by the fact that the Jury of Awards decreed to the St. Louis University alone three grand prizes, four silver medals, one bronze medal; and to the University and the Jesuit exhibits there were awarded seven grand prizes, thirteen gold medals, eight silver medals, two bronze medals, and one honorable mention—thirty-one prizes altogether.

It is impossible within the limits set for this contribution, to refer at any length, or with any fitting appreciation, to the other exhibits throughout the Exposition, which illustrated the universal and prominent part the Catholic Church took in the Exposition. Next to the Palace of Education, it was probably the Museum of Fine Arts that contained the greatest evidence of the spirit of Catholicity that pervades all the higher works, not only of the Exposition, but of mankind.

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It was impossible to pass through the galleries of the various countries, and fail to be impressed with the long catalogue of Catholic artists who sent their work to the Exposition. It was far more impossible not to be astonished at the universal fact of the Catholicity of painting itself and sculpture in this material rather than spiritual age; for it is much easier to observe the Catholic tone of a work of art than to know that the artist is a Catholic. And through these many galleries, filled with the best of the modern productions of the studio, visitors were delighted to come so frequently upon scenes in the life of Christ and His Mother, studies of the Madonna, paintings of the Apostles and the Saints, portraits and sculptures of prelates, priests, and religious; not only of those already enshrined in the history and sanctuary of the Church, but of those yet in our midst, as Manning, Newman, Lavigerie, Goosens, Didon, Leo XIII., Pius IX., Ryan, Glennon, Faura, Harty, Finlay, De Smet, Marquette, and Kenrick. In these galleries were gorgeous oils and water-colors representing old cathedrals, churches, monasteries, and convents of European and American origin. There were also manifold studies in the lives of historic penitents, confessors, and martyrs; in the mysteries of the Cross, of the Mass, of divine grace in its workings in the hearts and lives of men and women, and in artistic concepts of prayer, meditation, solitude and the cloister. There were hung on all sides scenes from the services of the Church; from the life and work of the religious on the battle-field, in the

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cloister, the schoolroom, the hospital, and the slums. Idealizations from the Psalms, Old and New Testament figures, scenes and mysteries from the Bible, missionary life in its many phases, the Crusades, the Coliseum, and other historic scenes and periods in the history of the Church were a frequent theme with this world of twentieth century painters. In truth, as at the Columbian Exposition, so too at the Louisiana Purchase Exposition, one was everywhere reminded that art in its higher themes, in all its loftier aspirations, is and must remain Catholic.

In the Palaces of Manufacture and Liberal Arts, Catholic church vestments, statuary, church furniture, stained-glass work, chalices, ciboria, ostensoria, and other rich and costly altar utensilia were to be found among the exhibits of the United States, Belgium, France, Germany, Ireland, Mexico, and Italy. Particular attention must, however, be called to the very superior exhibition of general church goods and Catholic publications by Wiltzius, of Milwaukee; Herder, of Freiberg and St. Louis; Pustet of Regensburg, Germany; Depelley, of Limoges, France; Desclee, Lefebvre & Company, of Tournai, Belgium; Beumers, of Düsseldorf, Germany, and Gill & Company, of Dublin.

DIVISION CXXIX—Continued.

Catholic Social Functions at the Fair.

From the review we have briefly made of the part which the Church had taken as an original promoter of, and as a partaker in, the upbuilding of the gigantic work of the St. Louis Fair, it was natural to expect that, during the progress of the Exposition, the Church in this country would do all in its power to make it as magnificent as possible. This, I believe, no other single organization succeeded so fully in attempting and accomplishing. For during the period of the Fair several very brilliant functions occurred, and reunions of many distinguished bodies were arranged, which preserved a spirit of Catholic ceremony and festivity from start to finish of the Exposition. It is impossible to detail them all. Yet we must refer to the brilliant reception tendered to the Most Reverend Archbishop, John Joseph Glennon, of St. Louis, at the Women's Club, on Thursday, May 5, 1904. The reception took place in the ball-room of the Club, on Delmar avenue. At the west end of the hall a low dais had been raised for the Archbishop and the Most Rev. Dr. Ryan, of Philadelphia, who shared the honors of the occasion with His Grace of St. Louis. At the opposite end was

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a grove of potted palms which hid the orchestra. Apart from the papal coat-of-arms, the tiara, and the keys, the magnificent hall was devoid of decoration. The receiving prelates were in their archiepiscopal robes. The other prelates present were: Rt. Rev. M. F. Burke, of St. Joseph, Mo., Rt. Rev. John J. Hennessy, of Wichita, Kan., and Rt. Rev. D. S. Tuttle, Bishop of Missouri. The event was all the more distinguished by reason of the dignitaries that attended it. All the notables accredited to the World's Fair were present, including their Royal Highnesses, Prince and Princess Hohenlohe; Prince Pu Lun and suite; Sir Lian Cheng Tung, Chinese Ambassador to the United States; Mr. Wong Kai Kai, the Chinese Commissioner-General to the Exposition; Cincinnato Da Costa, the Portuguese Commissioner; Giovanni Branchi, Commissioner-General from Italy; Jules Carlier, Commissioner-General from Belgium; Dr. Theodor Lewald, Commissioner-General from Germany; Colonel C. M. Watson, Commissioner-General from Great Britain; Mr. K. Sugawa, Commissioner-General from Japan; Mr. and Mrs. Piers, Assistant Commissioner-General from Ceylon; President and Mrs. Francis; Mrs. Daniel Manning, President of the Board of Lady Managers; the clergy of the Archdiocese and all the leading representatives of society in St. Louis, with a host of distinguished visitors from all parts of the United States and foreign countries accredited to, or visiting the Fair.

On June 8, the alumni, students, and professors of the

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Christian Brothers' Colleges, to the number of twenty institutions, held a World's Fair reunion, in Festival Hall, at the Exposition. It is estimated that over four thousand graduates and undergraduates were present on the occasion. Charles F. Ziebold, President of the Christian Brothers' Alumni Society, presided. Dr. A. N. de Menil, a Director of the World's Fair, introduced President Francis, who delivered the address of welcome. Other addresses were made by Archbishop Keane, of Dubuque, on "God, the Sanction of Law;" Lieutenant-Governor W. F. Sheehan, of New York, on "The Principle of Authority in Free Institutions;" Congressman Malcolm R. Patterson, of Tennessee, on "The Ethics of Political Rights and Duties," and Rev. John P. Chidwick, Chaplain of the "Maine," on "Religion as a Factor in National Life." The degree of Doctor of Laws was conferred upon Col. Valery Havard, Thomas H. Carter, William F. Sheehan, J. Cloak, President of the Buffalo Bar Association, Luke Stapleton, of New York, and Alexander N. de Menil, of St. Louis.

One of the leading events of the Exposition, and one which more so than the opening of the Vatican exhibit itself emphasized the powerful interest manifested by the Church in this international enterprise, was the visit of Cardinal Satolli. His advent had been heralded long before His Eminence landed in America. He was met at Carlyle, Ill., on his approach to St. Louis, by a body of the clergy and laymen of the city. On his arrival, escorted by a battalion of

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the city police, under the command of Chiefs Kiely and Desmond, he proceeded to the archiepiscopal residence, where he was greeted by a large concourse of citizens and World's Fair visitors. President Francis made a formal call upon His Eminence on the day of his arrival. The Cardinal remained a week at the Fair. During his stay, he was every day the central figure of the many functions which had been arranged in his honor. The day after his arrival, after celebrating Pontifical Mass at the Italian Church of St. Charles Borromeo, the Cardinal went out to the Fair to return President Francis' formal visit. He was entertained at luncheon by the Austrian Commissioner, Chevalier A. von Stribal, at the Austrian pavilion, over which the papal flag floated during the Cardinal's visit. In the afternoon a garden party was given in honor of His Eminence by Mrs. Francis D. Hirschberg, and at eight o'clock he was dined in state by the French Commissioner, M. Jules Boeufvé. The following day, which was Catholic Day at the Fair, the Cardinal celebrated Pontifical Mass at SS. Peter and Paul's Church, and, accompanied by the prelates and dignitaries of his suite, he spent the morning at the Fair. In the afternoon he was the guest of J. E. Sullivan, Chief of the Department of Physical Culture, at an exhibition of athletic sports at the stadium. In the evening a grand reception was tendered him by the citizens of St. Louis, and the ceremonies of the day were brought to a close by the Venetian Water Festival, a parade in gondolas upon the lagoons, in honor of the distinguished

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prelate from the Holy See to the Fair. It was an event of singular brilliancy in which the Cardinal, the Archbishop, President Francis, the Cardinal's suite, the Mayor, the Governor of Missouri, and the members of the foreign commissions and delegations participated.

During the remainder of the week the Cardinal spent his time partly at the Fair, where he appears to have aimed to see, under the direction of the different Commissioners, the various exhibits at their best; and partly at the religious institutions of the city. On the Fourth of July, His Eminence was entertained, on the eve of his departure, by the German Commissioner-General, Dr. Theodor Lewald, in the upper hall of Das Deutche Haus. After the courses had been served, Dr. Lewald spoke of the honor of having a high Roman dignitary present on an occasion when the American people were celebrating the birthday of their independence, and also of the honor his own country enjoyed of having him present at this banquet. Cardinal Satolli responded in English, dwelling mainly upon the importance of the event being celebrated, after which President Francis made an address in which he expressed his great appreciation of the Cardinal's visit.

Besides Catholic Day at the Fair, on which it is estimated that over 140,000 people were present in and around Festival Hall, the other events and functions which called to the Exposition great numbers of Catholic visitors, were: The Convention of the United Order of Foresters, July 18; the

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National Meeting of the Ancient Order of Hibernians, July 21; the German Catholic Central Verein, September 15; the National Convention of the Catholic Knights of America; the International Convention of the St. Vincent de Paul Society, September 26-29; the National Meeting of the Catholic Total Abstinence Society, October 11; the National Convention of Catholic Women's Benevolent Legion; the Reunion of the Nazareth Alumni of Nazareth Academy, Nazareth, Ky.; the Reunion of the Alumni of Loretto Convent, Loretto, Ky.; the Annual Meeting of the Association of Catholic Schools and Colleges; a Reunion of the Clerical Alumni of Maynooth Seminary, Ireland; the National Reunion of the Alumni of Louvain University among the Clergy of the United States; the National Convention of the Knights of Columbus, which took place on October 12. The day was one of great significance to the Knights, because it commemorated the date of the discovery of America by Christopher Columbus. After a round of festivities and eloquence at the Fair grounds, in which over 5,000 members of the Order participated, the occasion closed with a sumptuous banquet at the Jefferson Hotel. The events in the afternoon consisted of music and addresses at Festival Hall, athletics at the stadium, a drill by the Knights in the Plaza St. Louis, and a water pageant toward nightfall. The banquet was one of the most notable in the history of the Order, as it brought together all the chief dignitaries of the body from all over the United States, and all the high ecclesiastical per-

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sonages in the State of Missouri. It was late in the evening when the Supreme Knight rose to introduce the Archbishop of St. Louis, who paid a glowing tribute to the Knights of Columbus, and spoke of their history, and the good they were accomplishing for the Catholic Church in the United States. Addresses were made by the Supreme Knight, Deputy Supreme Knight, and others until long after midnight, when the guests dispersed after one of the most elaborate social events of the Exposition.

The last great Catholic event which marked the existence of World's Fair festivities was the Diamond Jubilee of the St. Louis University, the oldest institution of learning in the Louisiana Purchase. On Oct. 16, 1904, the St. Louis University completed seventy-five years of her corporate existence. The event was commemorated by the University in a triduum of ceremonies and celebrations. October 16 and 17 were observed as religious commemorations. On the 16th Pontifical Mass was sung in the College Church with Archbishop Messmer of Milwaukee as Celebrant. The Most Rev. Archbishop of St. Louis occupied the throne in the sanctuary and preached the Jubilee Sermon. The services were attended by a vast concourse of people and by the clergy and religious orders. The day following, in the presence of the student body, a solemn Requiem Mass was offered for the deceased professors and students of the Institution. The officers of the Mass were all alumni of the University.

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On Tuesday, October 18, public academic exercises were held on the World's Fair grounds in the spacious auditorium of Festival Hall. Four thousand persons, admitted by ticket, were seated in the hall for the Jubilee Exercises. Addresses, which were interspersed with organ recitals upon the great organ of the World's Fair, and music by the Alumni Quartette, were made by D. R. Francis, President of the World's Fair; Rev. M. P. Dowling, S. J., President of Creighton University; Paul Capdevielle, Mayor of New Orleans; Dr. Thomas P. Hart, Editor of the Catholic Telegraph, Cincinnati; Dr. Robert C. Atkinson, of the Marion-Sims-Beaumont Medical College faculty; Paul Bakewell, President of the Alumni Association, and by the Reverend W. Banks Rogers, S. J., President of the St. Louis University.

The addresses and speeches delivered on the occasion were full of reference to the Catholic Church and the University, particularly in their attitude toward the work of the World's Fair. In a neat informal address, Judge Barclay, chairman of the meeting, introduced President Francis. Mr. Capdevielle, Mayor of New Orleans, spoke of the Louisiana Purchase; Dr. Hart, of the Alumni in the By-Ways; Dr. Atkinson, of the Voice of a Physician. President Bakewell, in a published address, rehearsed the history of "The University," and President Dowling of Creighton University, read a published address on "Education." But special attention is due to the address of David R. Francis, President of the Louisiana Exposition.

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President Francis caught up and commented upon the remark in Judge Barclay's introduction, that "the World's Fair is the World's University," as the special object aimed at in planning the Exposition and constantly kept in view by its Management. He offered his warm congratulations to St. Louis University, and said that it had been a pleasure for him to mark October 18, in the calendar of the Louisiana Purchase Exposition as "St. Louis University Day." He had found that institution in its attitude toward the vast project of the Fair, persistently enthusiastic and responsive, and particularly solicitous for his own personal welfare and success. One of his first friends, he said, when he came to the city over a third of a century ago, then a student of the University, was the distinguished gentleman who had just introduced him, Judge Shepard Barclay. He treasured this loyal friendship as he prized the great ability of other men of the University associated with him in the World's Fair management, notably that of Mr. Julius Walsh, prominent in every great St. Louis enterprise, and Chairman of the Committee on Transportation; Festus J. Wade, President of the Mercantile Trust Company, and Chairman of the Ways and Means Committee; John Scullin, Director of the Department of Transportation; Pierre Chouteau, originator of the Louisiana Purchase Celebration; Mr. Charles W. Knapp, Editor of the Republic, and Mr. Isaac S. Taylor, Director of Works at the Exposition.

During the exercises, Academic Degrees were conferred

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upon the following distinguished Alumni and citizens: B. A., upon Laurence V. Cartan; A. M., upon Isaac S. Taylor; Ph. D., upon Brother Constantius M. Graham, F. S. C.; LL. D., upon Paul Bakewell, Dr. Young H. Bond, Shepard Barclay, Charles W. Knapp, Julius S. Walsh, Paul Capdevielle, Justice Edward D. White, and David R. Francis. All the recipients of these degrees were present except Judge White, who was prevented from attending by urgent business of the U. S. Supreme Court.

The Rector of the University, Rev. W. Banks Rogers, announced many messages of congratulation, and first of all those of His Holiness, Pope Pius X., who in a document written in his own hand, sent hearty greetings and his blessing to the University, the faculty, students, benefactors, and alumni. The document is in the Vatican exhibit, which has been presented by His Holiness to the University.

His Excellency, the President of the United States, sent the following telegram:

"Let me express my congratulations to the oldest University in the Louisiana Purchase on its Diamond Jubilee, and my earnest hope for its future welfare.

"Theodore Roosevelt."

Dr. Howard J. Rogers, Chief of the Department of Education, in a letter expressing his regret at not being able to be present, wrote to the Rector of the University: "In severing my connection with the Exposition, and leaving St. Louis, I beg to state that I shall have no more pleasant recol-

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lections of St. Louis institutions and St. Louis men, than those which I gained from my acquaintance with you and your faculty."

That same evening, the Alumni met at a banquet in the brilliantly ornamented dining-hall of the University. At the table of honor were Archbishop Glennon, Very Rev. Joseph J. Grimmelsman, S. J., the Provincial of the Missouri Jesuit Province; Rev. William Banks Rogers, S. J., the President of the University; Mr. Paul Bakewell; Dr. John Simon, Health Commissioner of St. Louis; Judge Shepard Barclay and Adiel Sherwood. The toastmaster was Dr. John H. Simon, and the speakers of the evening were: the Rector of the University, Rev. P. F. O'Reilly, Hon. Shepard Barclay, Dr. William G. Moore, Mr. Festus J. Wade, and Mr. Adiel Sherwood.

Without dwelling on any further features of the manifold connection of the Catholic Church with the Louisiana Purchase Exposition, it is but just and integral to this fact which we have sought in several ways to illustrate in our article, to advert before closing it, to the Congresses and Juries that were part of the World's Fair work. In all of these the Catholic Church was very largely and splendidly represented from the United States as well as from foreign countries. This was particularly the case in the numerous body of the Jury of Awards. There were, as indeed there should have been, a large number of Catholic jurors. To refer only to the Educational Jurors, we find, besides the many Catholics

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from abroad, two Catholic priests, the Rev. J. F. Quirk, S. J., of Baltimore, and the Rev. James J. Conway, S. J., of St. Louis, upon the Jury for Universities and Colleges; another, the Rev. T. J. Shealy, S. J., of New York, sat upon the Jury for Intermediate Schools, and the Rev. Brother Maurelian, F. S. C., of Memphis, was a Juror upon the Board of Awards for Primary Schools. Rt. Rev. John Lancaster Spalding, of Peoria, Very Rev. E. A. Pace, of Washington, D. C., Rev. John W. Hagen, S. J., of Georgetown University, Rev. William F. Rigge, S. J., of Creighton University, Omaha, and Rev. Thomas F. Treacy, S. J., of Detroit College, Detroit, attended or took part in the Congress of Arts and Sciences. To this number of Catholic clergymen, engaged in the work of the Exposition, we must add the names of Rev. William J. Kerby, who installed the exhibit of Social Economy, of the Catholic University, Washington, D. C.; Rev. W. Banks Rogers, S. J., of St. Louis University; Rev. John C. Burke, S. J., who installed the St. Louis University Exhibit; Brother Justin, President of the Christian Brothers' College, in St. Louis; Rev. Arthur Jones, S. J., of Montreal, Canada, who contributed the Jesuit Historical Exhibit, in the Anthropological Department; Rev. M. A. G. Himalaya, the inventor of the pyrheliophor; Rev. José Algué, S. J., Director of the Manila Observatory; Rev. John Charles Granville, Chaplain of the Filipino Scouts, and Rev. E. A. Casey, Pastor of St. James' Church, St. Louis. The work of these gentlemen ceased only with the Exposition.

CATHOLIC SOCIAL FUNCTIONS AT THE FAIR

Not only in jury work and the installation of exhibits, but also in the various Congresses which met during the period of the Fair, many and illustrious Catholic names appear upon the roll of those attending and taking part in the sessions. This is particularly true of the Congress of Arts and Sciences, the International Congress of Lawyers and Jurists, and the International Peace Congress; thus setting forth in the amplest expression possible, and in nearly every department of the great work of the Exposition, the fact that the Catholic Church was everywhere and at all times to be found identifying itself with this greatest of modern enterprises, and promoting this greatest of international, commercial, and educational triumphs.

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