

PROGRESS OF THE PAN-AMERICAN EXPOSITION.
BY EDWARD HALE BRUSH.

It is scarcely six months since the real construction work of the Pan-American Exposition was begun, yet most of the buildings in the main Exposition group stand to-day practically complete, and in a few weeks will be ready for the installation of exhibits. At the present time the Pan-American grounds present a most interesting scene. The buildings fronting upon the Esplanade and the Court of the Fountains are

all under roof. Most of them have been covered with staff, and the staff of several has received its coat of many colors. The admirable character of the arrangement of buildings adopted can be very well appreciated, now that the structures are so far along toward completion. Grouping the principal buildings about the two great intersecting courts, each as large as the main court at any previous exposition, secures a splendid effect and ministers also to the comfort of the visitor, who will have comparatively little walking to

do in reaching different parts of the grounds. The permanent buildings in the classic style, the \$400,000 Albright Art Gallery and the New York State building, both in white marble, will stand among the trees of beautiful Delaware Park, the State and foreign buildings will be to the east of the Triumphal Bridge, and the Midway buildings will be in the northwest portion of the grounds, while opposite, across the Plaza, will be the great structure of the Stadium. But about these two main courts will nevertheless be the



North Towers of Machinery and Transportation Building seen from the Roof.



The Burial Mound—A Reproduction of the Work of the Mound-Builders.



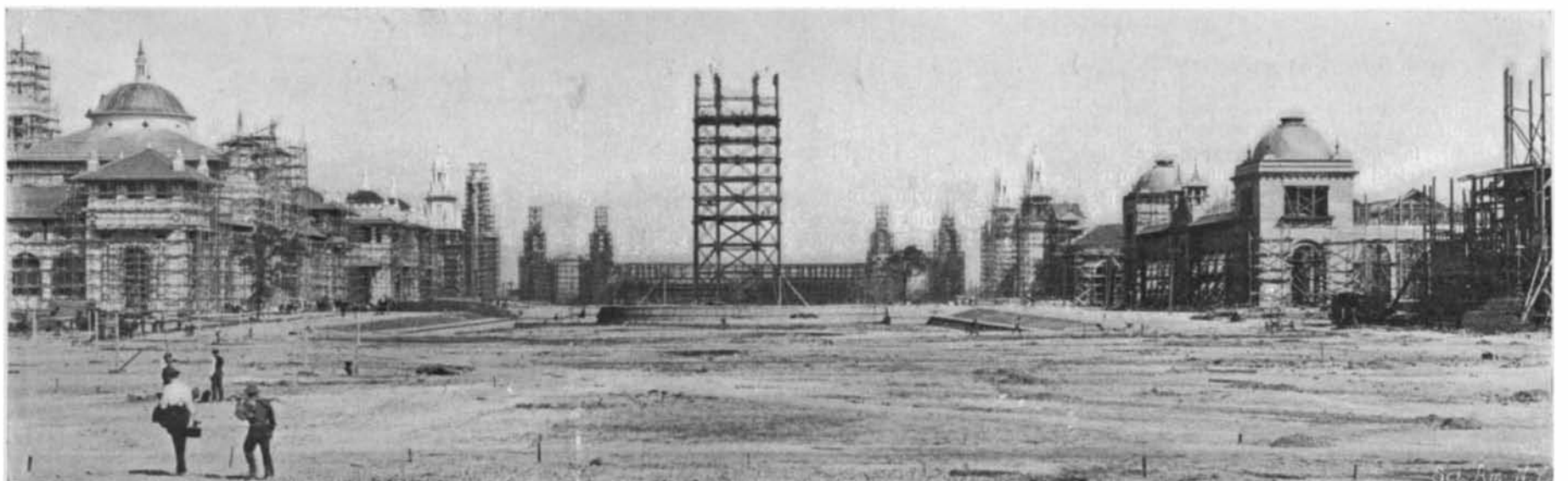
The Exposition Viewed Westward of the Service Building.



The Machinery and Transportation Building.



United States Government Building from Grove on Mirror Island.



General View of Pan-American Exposition from the Triumphal Bridge.

great architectural effects of the Exposition. Looking from the Triumphal Bridge, the splendid monumental entrance to this portion of the grounds from the south, one sees looming up at the far end of the vista, at a distance of about one-third of a mile, the Electric Tower which has now reached a height of over 300 feet. Its total height is to be 375 feet. On either side of the Tower and of the Court of the Fountains are the buildings of Electricity, Machinery and Transportation, Agriculture, Manufactures and Liberal Arts, Ethnology and the Temple of Music. To the right, at one end of the Esplanade, are the three buildings constituting the United States government group and connected by colonnades, and to the left are the group for Graphic Arts, Horticulture and Mines, which are connected by conservatories that next summer will be luxuriant with the rarest and most beautiful plants and flowers. Here then are 13 immense buildings, all immediately within the view, and surrounding these two great courts, and all conforming in greater or less degree to the style of the Spanish Renaissance, which is now seen to be remarkably well adapted to the purposes of the Exposition, combining as it does so many features suitable to the expression of the fantastic ideas and buoyancy of spirit which harmonize with the mood of an Exposition multitude. All of the buildings are to be treated in color instead of left in the monotonous white. These two vast courts around which the buildings are mostly grouped, with the buildings and other architectural features surrounding, gave a splendid opportunity for embellishment in several respects.

The sculptural adornment of the grounds of the Pan-American Exposition will be more profuse and elaborate than has ever before been attempted in connection with a similar enterprise. And in saying this I make no exception of either the great World's Fair at Chicago with its Court of Honor or the Paris Exposition with its Alexander Bridge and other highly embellished architectural features. Practically all of the noted sculptors of Pan-America are at work on groups and individual figures which are to adorn and dignify the buildings and grounds of this Exposition. From the Triumphal Bridge on the south, embellished from end to end with symbolic figures and designs, and with its four stately piers, 100 feet in height, carrying mounted standard bearers, to the Electric Tower on the north with its elaborate sculptural scheme terminating 375 feet above terra firma in a figure of the Goddess of Light of hammered brass by Herbert Adams—from one end to the other of this vista, sculpture in the most bewildering variety will abound, the charming effect of these forms of beauty being enhanced by the garden embellishment, the fountains and cascades, and at night by the soft radiance of the electric lights. There will be sculpture expressive of the beneficence of Mother Nature adorning the fountain at the head of the Court of the Fountains, and at the end of the Esplanade where the horticultural group is situated. At the opposite ends of the Esplanade the sculpture, by such men as R. Hinton Perry and Herbert Adams, will typify man and his institutions. The groups in the Court of the Fountains will be allegorical representations of the ideas dominant in the surrounding buildings devoted to machinery and transportation, manufactures and liberal arts, music, ethnology, agriculture and electricity; and the sculpture of the Electric Tower and its beautiful colonnades will portray the ideas associated with the power of the elements, the mysterious force of electricity, the great waters amid which Buffalo is situated and which have made her so potent an influence in the world of commerce and industry.

There will be some 125 original groups of this sculpture, not including that in the fine arts exhibit in the Albright Art Gallery, and it is engaging the attention of some thirty-five sculptors, including such exponents of this branch of fine art as George Gray Barnard, Frederic Macmonnies, Daniel C. French, Edwin F. Elwell, J. Q. A. Ward, F. W. Ruckstuhl, Philip Martiny, E. C. Potter, Herbert Adams, John Gellert, Ralph Goddard, Isidore Konti, and Karl Bitter, the last named sculptor having been chosen to supervise the work of sculptural adornment of the Exposition. His success in carrying out the ambitious allegorical scheme of sculpture devised for the Pan-American, and embodying in the main his own ideas, marks him as a creative genius of high order. Now that so much of the sculptural work is already done and shipped to Buffalo, the magnitude and beauty of this feature of the Exposition is beginning to be realized, and the fact is appreciated that it will mark an era in the progress of this branch of art in Pan-America.

In another respect the arrangement of the main buildings of the Pan-American group, as they have been placed about these courts, lends itself admirably to the purpose of the architects to secure remarkable and fascinating effects. It renders possible the greatest and most artistic illumination by means of electric lamps and hydraulic effects ever conceived and carried out by human intellect and inventive genius. This illumination, which will be achieved about the Court of the Fountains and the Esplanade, will be a feature of

the Pan-American Exposition worthy of the *fin de siècle* enterprise, the story of which is to be told by the Exposition as a whole.

The progress made by electrical science and the harnessing of Niagara within the last decade, make possible this supreme achievement. With the great Falls plant, which within a short time will be generating over 100,000 horse power, within twenty miles of the Exposition grounds, and linked with the Exposition by a transmission line, it is fitting that electricity should receive especial prominence at the Exposition, and that the electrical illumination should surpass all precedents set in this respect. The illuminating area of the courts already described and of the Plaza to the north of the Electric Tower, is three times as large as that at Omaha and two and one-half times as large as that at Chicago, while the character of the buildings, the fantastic outlines many will possess, and their grouping about the courts, will give a peculiar beauty to their penciling in incandescent lights. With the sky lines of the buildings traced in fire against the heavens; with the basin of the Court of the Fountains golden with thousands of floating lights, the cascades resplendent with mysteriously changing fiery hues, and rising above all the stately Electric Tower, one mass of shining splendor from the plashing fountain at its feet to the dazzling Goddess of Light upon its topmost pinnacle,—with such a scene to portray, the most skillful word painter will be at a loss where to begin and where to end his task.

The statement that 200,000 electric lamps will be used in this illumination conveys some idea of its extent, although it is difficult for the average mind to grasp what it means when such a statement is made. There is scarcely anything with which such an illumination can be compared, and the visitor must come to see it in order to appreciate the marvelous brilliancy and beauty of the scene which will be created. The incandescent lamps to be used in this illumination will give a peculiar softness and agreeableness to the quality of the light. Arc lights will be used to light the interior of the buildings, and rows of these lights will border the grounds; but the great illumination will be given through the incandescent lamp, which will be introduced in the fountains and hydraulic features in many novel and startling forms to give a bewitching character to the scene. The electrical experts of the Exposition are now studying on a novel method of turning the light on and off, so that this operation in itself may be one of the wonderful features of the electrical display.

"The Progress of Invention in the Nineteenth Century."

Edward W. Byrn, A.M., has done a signal service to the history of invention in writing a dignified and authoritative treatise upon the evolution of the arts and sciences during the last hundred years, entitled the "The Progress of Invention in the Nineteenth Century," which has just been issued by the publishers of the SCIENTIFIC AMERICAN. The author is admirably qualified to deal with the subject, having been for a quarter of a century engaged in the examination of inventions for patents and having, withal, an ardent interest in all things that make for scientific progress. He has presented a most excellent bird's-eye view of the progress achieved, and he has given in concrete form the great scientific and engineering achievement of the century. The author presents his subjects with a pure and rhetorical diction, conveying the thought in a terse and lucid way, while still holding true to the technical nomenclature of the arts. The chapters of this book give a most comprehensive, compact, and coherent account of the progress which distinguishes this as the "golden age" of invention, and which has resulted, especially in the United States, in an unprecedented industrial and commercial development.

Standing on the threshold of the twentieth century, and looking back a hundred years, the nineteenth century presents in the field of invention a magnificent museum of thoughts crystallized and made immortal, not as passive gems of nature, but as potent, active, useful agencies of man. The period has been a brilliant campaign of allied brains and energy, conducted by the strongest and best equipped minds. The great works of the ancients are in the main monuments of the manual labor of myriads of workers; not so with modern achievements. The present century has been practically an age of ideas which find expression in labor-saving inventions, often the product of a single man. To appreciate what has been done, the conditions of to-day must be briefly contrasted with those of a hundred years ago. This is no easy task, and Mr. Byrn has admirably accomplished it in "A Perspective View," a short introduction which forms the first chapter of the book. The second chapter is entitled "Chronology of the Leading Inventions of the Nineteenth Century." Each year has listed under it the important discoveries and inventions, together with their authors, which enables the reader to ascertain at a glance the most important inventions and discoveries of any particular period. Thus, it will be seen that in 1815 Sir Humphry Davy invented the safety lamp;

that in 1821 Faraday converted electric current into mechanical motion; that in 1895 Cowles introduced the electrical process of manufacturing aluminium; and that in 1896 Marconi devised his system of wireless telegraphy.

A sample year or two may prove interesting:

1804. Rhodium and Palladium discovered by Wollaston. First Steam Railway and Locomotive, by Richard Trevithick. Col. John Stevens Applies Twin Screw Propellers in Steam Navigation. Winsor Takes Out British Patent for Illuminating Gas, Lights Lyceum Theater and Organizes First Gas Company. Lucas' Process of Making Malleable Iron Castings.

1893. Acheson's Process for Making Carborundum. The Yerkes Telescope. Edison's Kinetoscope. Production of Calcium Carbide in Electric Furnace by Willson.

These are a few examples taken at random from a list which covers a hundred years of invention. This list must not be confounded with the general classification of the subject matter which comprises the principal part of the book. The third chapter is devoted to the Electric Telegraph, and in it will be found a photograph of Prof. Henry's original electro-magnet and a number of other engravings which admirably serve to elucidate the text, including one showing Marconi transmitting the news of the yacht race of 1899 by wireless telegraphy. The next chapter is devoted to the Atlantic Cable, and this is in turn followed by one on the Dynamo and its applications, accompanied by a number of excellent engravings.

The Electric Motor, the Electric Light, the Telephone and Miscellaneous Applications of Electricity follow. The Steam Engine occupies three chapters, one devoted to the Steam Engine including turbines, another to the Steam Railway, and a third to Steam Navigation. The chapter on Printing gives in the most comprehensive manner the development of the printing press from the time of Benjamin Franklin to the latest octuple press. It also includes the manufacture of paper pulp and the setting of type by the linotype. The chapter on the Typewriter, Sewing-machine and Reaper are fascinating and show that the story of invention is not without its romantic element. In the chapter on Vulcanized Rubber, in which the struggles of Charles Goodyear are described, this is even more pronounced. The chapters on Chemistry, Food and Drink, Medicine, Surgery and Sanitation give a vast amount of information which is not readily accessible. The Bicycle and Automobile are treated at considerable length, and the chapter is well illustrated. The Phonograph, Optics, Photography, X-Rays, all have chapters devoted to them. Gas-lighting, Civil Engineering, Wood-working, Metal-working, Firearms and Explosives, Textiles, Ice Machines, Liquid Air and minor inventions are all treated in most interesting chapters. The book is admirably illustrated and is attractively printed and bound.

Latest News of the Peary Expedition.

Further details of the Peary expedition have now come to hand. Dr. Leopold Kann was the only member in that party who arrived on the whaler "Eclipse" from Davis Strait. Dr. Robert Stein, of the United States Geological Survey, decided to wait for transportation which would land him in America, and Mr. Samuel Warmbath of Boston wished to remain at Cape Sabine for a time. Lieut. Peary passed the winter at Etah on Smith Sound, near the spot where Dr. Hayes had his winter quarters in 1860, and not far from the scene of the Greely disaster. In February and March Dr. Kann's winter house at Bedford, on Pym Island, was visited three times by members of the Peary expedition; the last time Lieut. Peary himself commanded the sledging party. The Lieutenant stated that about ten months previously he had met Sverdrup in the Kane Basin, north of Smith Sound. The Sverdrup party had fully explored Ellesmere hinterland, mapping out a region that was hitherto a blank on the charts. When the Peary and Sverdrup parties separated, it was Sverdrup's intention to explore the vast area of land and water in and around Jones Sound beyond Cape Eden. Dr. Kann believes that Sverdrup, on the "Fram," is now wintering in Jones Sound. The autumn has been very tempestuous, and the ice was such as to render navigation next to impossible, and it is not thought that the "Fram" will come home this year. Lieut. Peary had two hundred dogs and twenty-seven sledges, but underrating the difficulties of the journey, and not having a sufficiency of food, most of his dogs died. Dr. Kann considers that it is certain that Lieut. Peary is now wintering at Fort Conger. When Dr. Kann left Cape York on the "Eclipse" on June 9, the "Windward" expected to touch there about the middle of July, where orders from Lieut. Peary which Dr. Kann had brought were left with the Esquimaux.

The Russian government has decided to make the metric system of weights and measures compulsory, and the Minister of Finance is now engaged in considering the time and manner of introducing this reform.