THE ALASKA-YUKON EXPOSITION.

BY WILLIAM H. RAYMOND.

YUKON and Alaska will be commemorated this year in a brilliant exposition located on a site which was once a virgin forest of the Northwest, but which now presents an array of glittering palaces. In this city it has installed a more modern electric equipment than has the town of Seattle itself, a water system which is supplied by a glacier-fed lake high in the Cascade Mountains, and a splendid sewer system. A quarter million electric lamps light it by night, and 5,000 kilowatts electric power, generated by a plunging river in the hills, turns the multitude of wheels.

That the Northwest may give the Alaska-Yukon-Pacific Exposition to the world during the coming summer, it has expended in twenty-four months ten million dollars, and has performed such feats of engineering and construction that, in these features alone, it will be worth a transcontinental trip.

The site is upon the banks of two gem-like lakes which lie within the limits of Seattle. They are girt with woods of Douglas fir, and their banks, except upon the city side, merge rapidly into the snow-capped mountain ranges which are the city's ramparts. Almost overlooking the grounds, and forever in view, are Mount Rainier, the highest peak in the United States, Mount Constance, and the spire of Mount Baker, a magnificent ampitheater in which to hold a world congress.

The exposition is now more than ninety per cent complete, and the opening day is June 1st, which is ample assurance that, when the day arrives, the exposition will be finished to its most remote detail. It will be the only world's fair which has opened complete the day first promised.

Modern French renaissance prevails in the architecture, with the exception of the group of buildings erected by the United States government, which are in the Spanish renaissance. Construction has been carried on with every regard for the natural beauty of the grounds, and as much of the original forest cover as could be, has been preserved, with the result that domes and cornices and pergolas of glowing staff gleam through the intense greens of the native woods. Not less than three of the exposition buildings are of permanent concrete and brick, while four others are of brick, hewn timbers, and heavy frame and log construction.

When the State appropriated a million dollars for the fair, it was with the proviso that not less than $600,000 of the sum should go into permanent structures which, at the end of the exposition, should revert to the University of Washington, the exposition grounds being upon a portion of the magnificent estate with which the State college is endowed. Thus, while many of the exposition buildings are of the conventional construction of plaster staff, the most notable among them are fireproof structures.

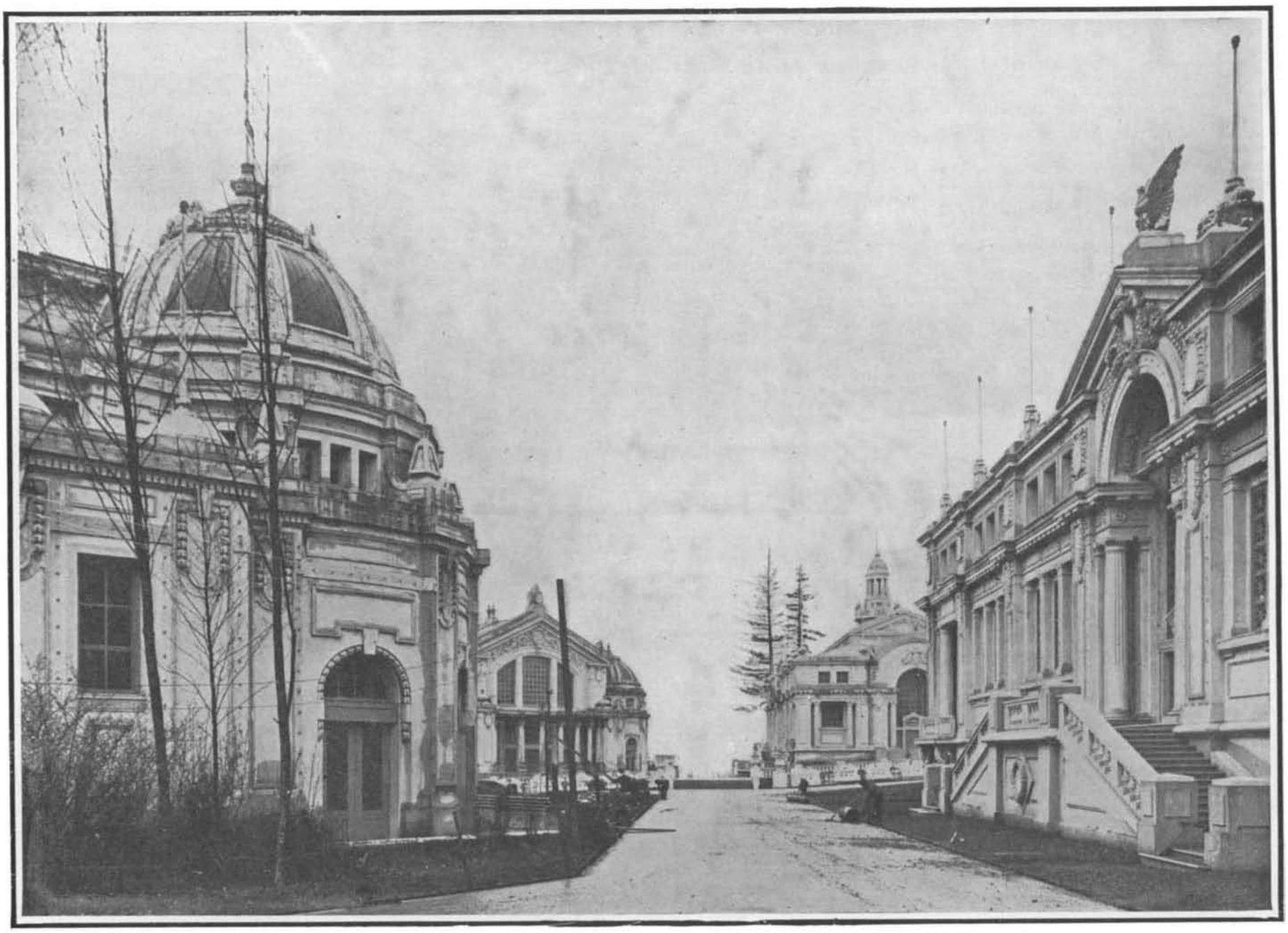
Of all of these permanent structures, probably the auditorium is the finest. It has a reinforced concrete foundation and brick walls. While its floors are of hard woods, it is otherwise fireproof. It has a seating capacity of 4,000 on the main floor, with half as many more in its balconies. During the exposition it will be used for all extraordinary indoor gatherings and special day celebrations. It will later be used by the University as a general assembly hall and lecture room. So large is it, that it will more than supply all of the needs of the University in this line for the next twenty years.

The Fine Arts Palace of the exposition is to become the school of chemistry of the University. It is absolutely fireproof in construction, the floors being of reinforced concrete and the walls of brick. Its sills and all courses are of pressed steel. During the exposition it will house the most notable art display ever made by an exposition, France and Italy having been more than generous in the way of loan exhibits, and artists the world over having competed for entry.

Machinery Hall, when the exposition has passed, will become the University School of Engineering. It is another of the fireproof structures very similar in its essentials to the Fine Arts Palace. These three buildings are finished in terra-cotta brick. Indeed, terra cotta will be the exposition color, in so far as all exteriors are concerned. All of the staff structures will be of this tone, the eye-racking white of other expositions having been done away with.

The Washington State building and a pumping station which will provide 8,000 gallons of water per minute for the Cascades and Geyser Basin, with a huge structure of fir logs, none of them of a less diameter than five feet, complete the list of permanent buildings. The log building will be used during the exposition for the forestry exhibit. At the end of the fair it will become the forestry school of the University. It is a stupendous pile; in many respects the most remarkable structure on the fair list, and, for the thousands of pre-exposition visitors who daily flock to the grounds, it is the chief point of interest.

The central feature of the exposition scheme is the Cascade Court. Down it for a distance of 500 feet, thousands of gallons of water plunge over a series of dams, which break the stream into a raging, crystal torrent. At the foot of the fall is a huge basin, in which is reproduced "Old Faithful," the geyser which has contributed most largely to the fame of Yellowstone Park. The exposition's "Old Faithful," like the original, sends jets of water high into the air at one-minute intervals, and presents a truly splendid spectacle.



Looking down Yukon Avenue.

By night, the cascades are made to glow by powerful electric lamps placed under the water at the lips of the dams, where they are amply protected by heavy hoods. The lamps are behind glass of the prime colors, and the shading is from the lighter tones, in the center, to the darker tones on the edges. Geyser Basin is similarly illuminated.

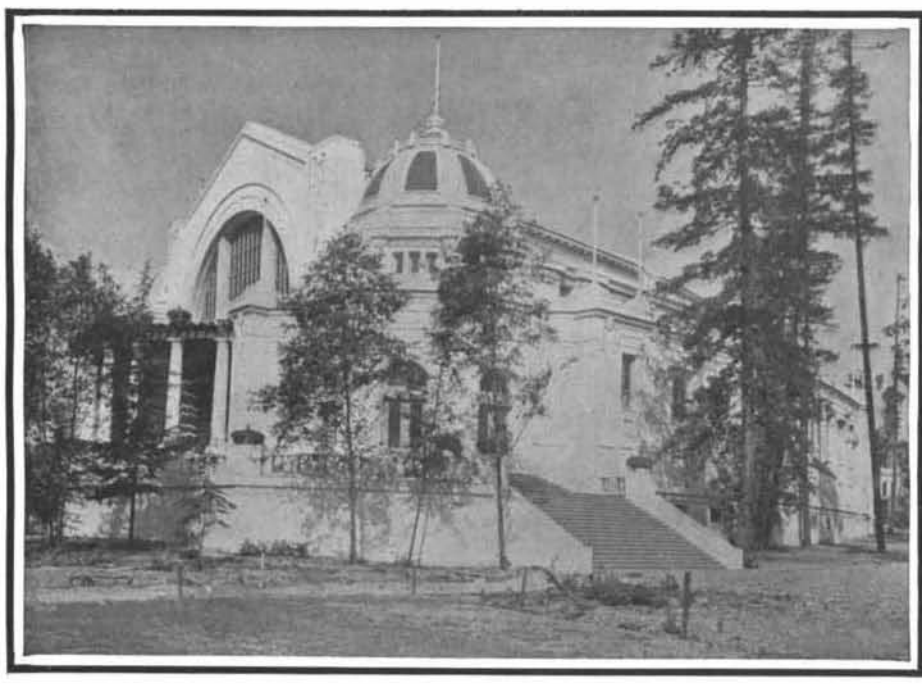
It is not to be taken from this that the Alaska-Yukon-Pacific Exposition will rely solely upon beauty, natural and enhanced, and upon theatrical effect, to attract. Quite the contrary. Nature has provided so much and at so little expense to the exposition that, magnificent as the scenic properties are, they are altogether incidental, from the exposition standpoint.

It is upon the unusual that Seattle places its chief reliance. The exposition will show more things and people that have never been shown before, than any other exposition has ever shown. It is not to be an exposition of "Vienna Praters," "Old Heidelbergs," Belgian laces, and Bohemian glass, although all of these things will be there.

At no world's fair has Japan made such an exhibit as it is now installing at the Alaska-Yukon-Pacific. The same may be said of China. The United States

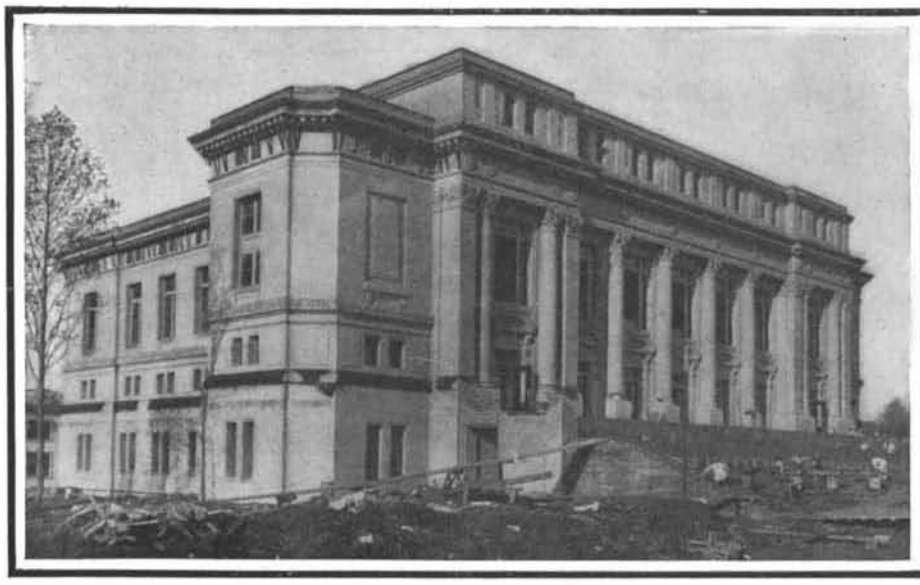
Oregon State building.

Machinery hall, one of the permanent structures.

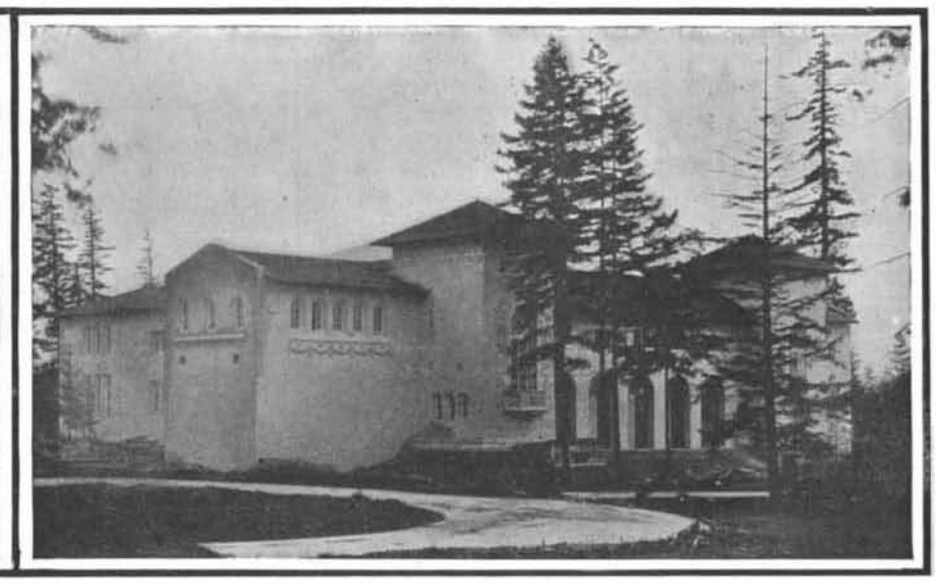


A view of the manufacturers' building.

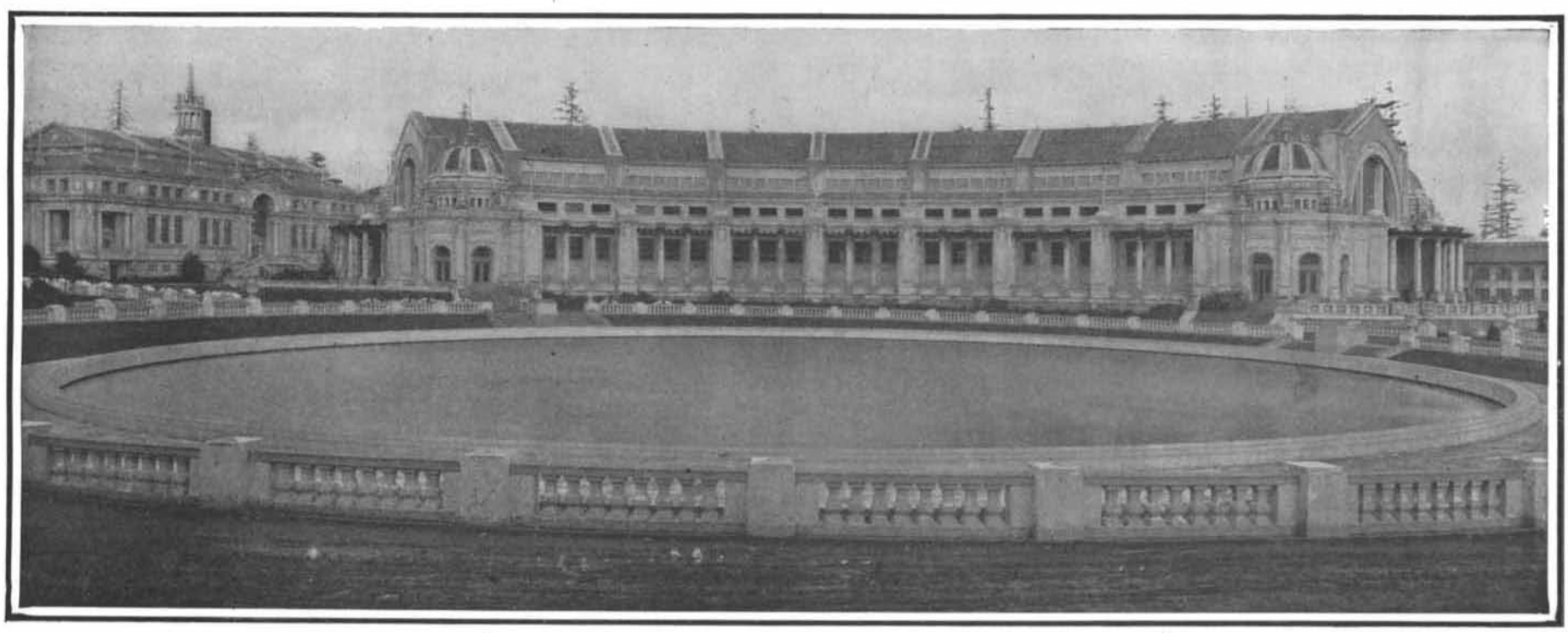
Lake Washington in the foreground; the Cascade Mountains in the background.



The Auditorium, one of the permanent buildings.



California State building.



The manufacturers' and mines building and geyser basin.

THE ALASKA-YUKON EXPOSITION.

government is expending $600,000 that the Philippines, Hawaii, and Alaska may be shown for the wonderful lands they are, instead of the very queer and unprofitable places contemporary romancists have made of them.

Oceanica and the South Seas, which means Tahiti, Samoa, and the other picturesque and prolific isles, will be shown for the first time in their history. One idea is obtained of these countries from a Midway "concession," and another from correct and comprehensive exhibits of their people and products. Seattle will offer exhibits, not concessions.

Canada, with its rich provinces, and its tremendous wealth-producing reaches to the north, will be given such exploitation as never before. The Dominion itself has appropriated $100,000 for this purpose, its railroads are spending an equal amount, and its provinces, individually, very much more. Taking advantage of the same opportunity are the Pan-American republics and South America generally.

Bringing the matter of exhibits down to the United States, no exposition in history has attracted such lively interest among manufacturers. Seattle has long been called the "Gateway to the Orient," for the reason that the route to Yokohama and Hong Kong is three days shorter by the northern passage than by any other. It is in the Orient that the Occident is preparing to do the major part of its business—make the most of its millions—during the centuries to come, wherefore America's captains of industry are more than eager to take full advantage of an opportunity to show the Orient what it has that the Orient needs, and learn at the same time what the Orient has by way of barter.

Some idea of the scope and volume of the resultant display is to be had when it is known that, by conservative estimate, the intrinsic value of exhibits now on the grounds of the exposition is $55,000,000.

But neither do trade and scenic beauty make the ideal exposition combination. When the world takes a day off, it is for the pleasure and recreation that are to be had of it. All trade would make anyone tired, and even the Alps grow stale, so, by way of leaven, the Alaska-Yukon-Pacific has given as much thought, almost as much money, and quite as much interest to its out-and-out amusement features as to any other consideration. In Chicago it was "The Midway," in St. Louis, "The Pike." In Jamestown it was the "War Path," and in Portland, the "Trail." In Seattle, it will be the "Pay Streak." The Streak as at present laid out is three-quarters of a mile long, and for every site upon it there were not less than ten applications. As a result, the concessions department has been able to choose only the highest class features that the world has to offer, and a cosmopolitan selection it has made of it. It will be fun as the Turk has it, as the Arab sees it, as it is in Canton and Singapore. The "cut-ups" of every nation have been conjured to make the Seattle show notable, and consequently there will not be an amusement feature shown, which does not at the same time offer an actual educational value. One Chinese concession is expending $15,000 on its staff buildings alone; while a Japanese company, which will install a typical Tokyo tea garden and theater, is spending 25,000 yen on its preliminary arrangements. It costs much money to move a bit of old Japan to Seattle, without losing any of its glamor.

So far as the Northwest is concerned, the exposition is no longer an experiment, and Seattle will be found hereafter a vehement exponent of the exposition idea. Were that to happen to-day which would stop every wheel and prevent the fair, the Northwest would none the less count an ultimate profit, although with much regret. The value of the advertising which the Northwest has received as a direct result of its exposition enterprise, is beyond computation. It has served more than all other advertising and exploitation of whatever nature to lead the East from its smug provincialism to a realization of the West's trade importance.

When the gates close upon the Alaska-Yukon-Pacific Exposition next October, the eminence of the Northwest in the world's future trade relations will be admitted, and no longer denied, and, in the mind of the Northwest, that's worth ten millions of money any day in the 365.

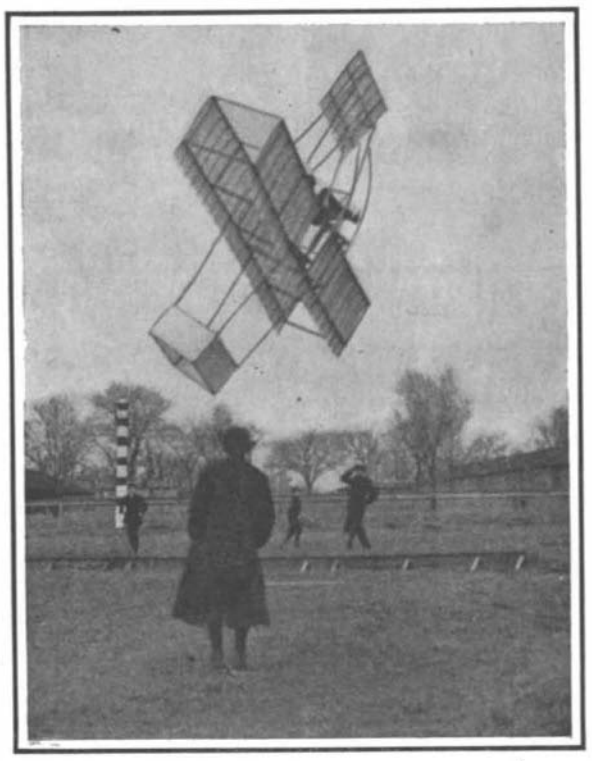
The Museum of Safety and Sanitation.

The Museum of Safety and Sanitation has its office at the United Engineering Societies Building, 29 West 39th Street. The objects of the Museum are to study and promote means and methods of safety and sanitation and the application thereof to any and all public or private occupations whatsoever, and of advancing knowledge of kindred subjects; and to that end to establish and maintain expositions, libraries, and laboratories and their branches, wherein all matters, means, and methods for improving the general condition of the people as to their safety and health may be studied, tested, and promoted, with a view to lessening the number of casualties and avoiding the causes of physical suffering and premature death; and to disseminate the results of such study, researches, and tests by lectures, exhibitions, and other publications.

Announcement has just been made of the election of the following officers of the Museum of Safety and Sanitation: Acting president, Philip T. Dodge; vice-presidents, Charles Kirchhoff, T. C. Martin, Prof. F. R. Hutton, and R. W. Gilder; treasurer, Robert A. Franks; Plan and Scope Committee, Prof. F. R. Hutton, William J. Moran, Dr. Thomas Darlington, H. D. Whitfield, and P. T. Dodge; director, William H. Tolman. Among the charter members are C. H. Dodge, Elbert H. Gary, Richard Watson Gilder, Dr. Thomas Darlington, Charles Kirchhoff, T. Commerford Martin, Philip T. Dodge, Prof. E. R. A. Seligman, Irving Fisher, William J. Moran, Henry D. Whitfield, A. R. Shattuck, and Prof. F. R. Hutton.

AN EXPERIMENT WITH A GLIDER.

At Morris Park recently Mr. Wilbur R. Kimball, the secretary of the Aeronautic Society, tried a Chanute-type glider in a new way. Instead of hanging from the machine and jumping off an elevation, as is usually done with a machine of this kind, Mr. Kimball tried launching it upon a starting rail by means of a catapult consisting of a dropping weight like that used by the Wright brothers. This catapult and starting rail was built by members of the Aeronautic Society last fall, but it had never been used before. The glider to be tested was fitted with runners and was mounted upon two small wheels, so that it could run



KIMBALL'S GLIDER TURNED UPWARD BY A WIND GUST WHEN SHOT FROM THE CATAPULT AT MORRIS PARK.

along the rail. The rope from the catapult ran around a pulley at the end of the rail and then back to the glider. A loop in the end of the rope was slipped over a hook so placed on the glider that when it reached the end of the rail, the rope would slip off automatically and allow it to soar.

When all was ready, Mr. Kimball seated himself in the glider and grasped the handle that worked the horizontal, or elevating, rudder. Just as the weight fell, a sudden gust of wind struck the aeroplane and lifted it in front. The rope slipped off, and the machine shot skyward, as shown in our photograph, Mr. Kimball being unable to regain control of it by means of the horizontal rudder. It quickly fell again, while remaining in the position shown, and was reduced to a mass of broken sticks and cloth. Mr. Kimball sprained his back, but was otherwise uninjured. Had it not been for the sudden wind gust and the detaching of the rope, it is probable that a good glide would have been made. Nevertheless, it is preferable, in making gliding experiments, to run down an incline against the wind, rather than to be projected suddenly forward.

Death of Dr. William H. Edwards.

Dr. William Henry Edwards, the naturalist, died on April 3rd, 1909, at his home, Coalburgh, W. Va. He was 88 years old.

Dr. Edwards was born in Hunter, Greene County, New York, in 1822. He was graduated in 1842 from Williams College, which later gave him the degree of LL.D. In 1846 he made a trip up the Amazon, studying butterflies chiefly, but collecting other objects of natural history. He published "Voyage Up the Amazon," and later traveled over this country studying butterflies, and published in 1879, 1884 and 1897 three series on "The Butterflies of North America," which were so costly as to be used almost exclusively by reference libraries. He also contributed 160 papers on *Lepidoptera* to the Canadian Entomologist, and wrote entomological papers for other journals.

San Francisco Catches a Wireless Telegraph Message from Japan.

For four months past the operators of the United Wireless Company on Russian Hill, San Francisco, have heard indistinct signals, which they believed to come from some amateur operator trying to send messages. But when they were heard regularly on "good wireless nights," the operators thought that they came from some station on the Atlantic coast. On October 11th wireless telegraphic communication was established between San Francisco and Honolulu, the operators at which cities were in communication daily. Early in November a new receiving apparatus was installed at the Russian Hill station and the messages began to be heard with much greater clearness. The Honolulu operator had said that he believed them to come from Japan; and the San Francisco operator, finding that they were not in the International Code, began to be of this opinion also, Japan and China being the only two countries that use their own codes in transmitting wireless messages. At last a copy of the Japanese code was found, and some of the code words were translated. In the early morning of November 24th Lawrence Malarin, one of the operators at the Russian Hill station, felt certain that he heard one Japanese station in communication with another. As the nearest wireless station in Japan is Yokohama, the message must have come 5,761 miles at least. This is a world's record for receiving a wireless message. San Francisco wireless telegraphists are already discussing the possibility of establishing regular communication with Japan; but the small receiving instruments at present in use in Japan will prevent the Japanese from picking up a message from any great distance.. The latest receiving instruments are patented and are not on sale; so that Japan could have the use of them only by permitting the company that owns the patent to erect a station in Japan. As no one but a native Japanese may hold a patent in Japan, and the secrets of the wireless companies are said to be too well guarded to permit of the Japanese copying the instruments, it does not seem likely that there will be regular wireless communication between Japan and the United States for some time to come.

Lawrence Malarin says that, before picking up the Japanese message, he received one from the battleship fleet, 800 miles out from Honolulu, and one from an army transport that was 1,200 miles beyond the Hawaiian Islands. Malarin has received several letters of congratulation from wireless telegraph experts on his remarkable work.

Fluorine in Enamels.

Compounds of fluorine, including fluor spar and the fluorides of sodium and aluminium, separate or combined as natural or artificial cryolite, are now employed with advantage in the production of enamels, and especially of opaque white enamels. According to a French writer the influence of fluorine has been greatly exaggerated and misunderstood. In firing the fluorine is entirely eliminated in the form of the volatile fluoride of silicon and the resultant enamel should contain no fluorine if the original mixture is quite homogeneous. Hence the fluorine has no effect on the opacity of the enamel, which is due to alumina or silicates of alumina. Nevertheless, the fluorine compounds possess the merit of lowering the fusing point and facilitating the perfect fusion of the enamel, especially if they are very thoroughly and intimately mixed with the other ingredients.

The Japanese Telegraph Code.

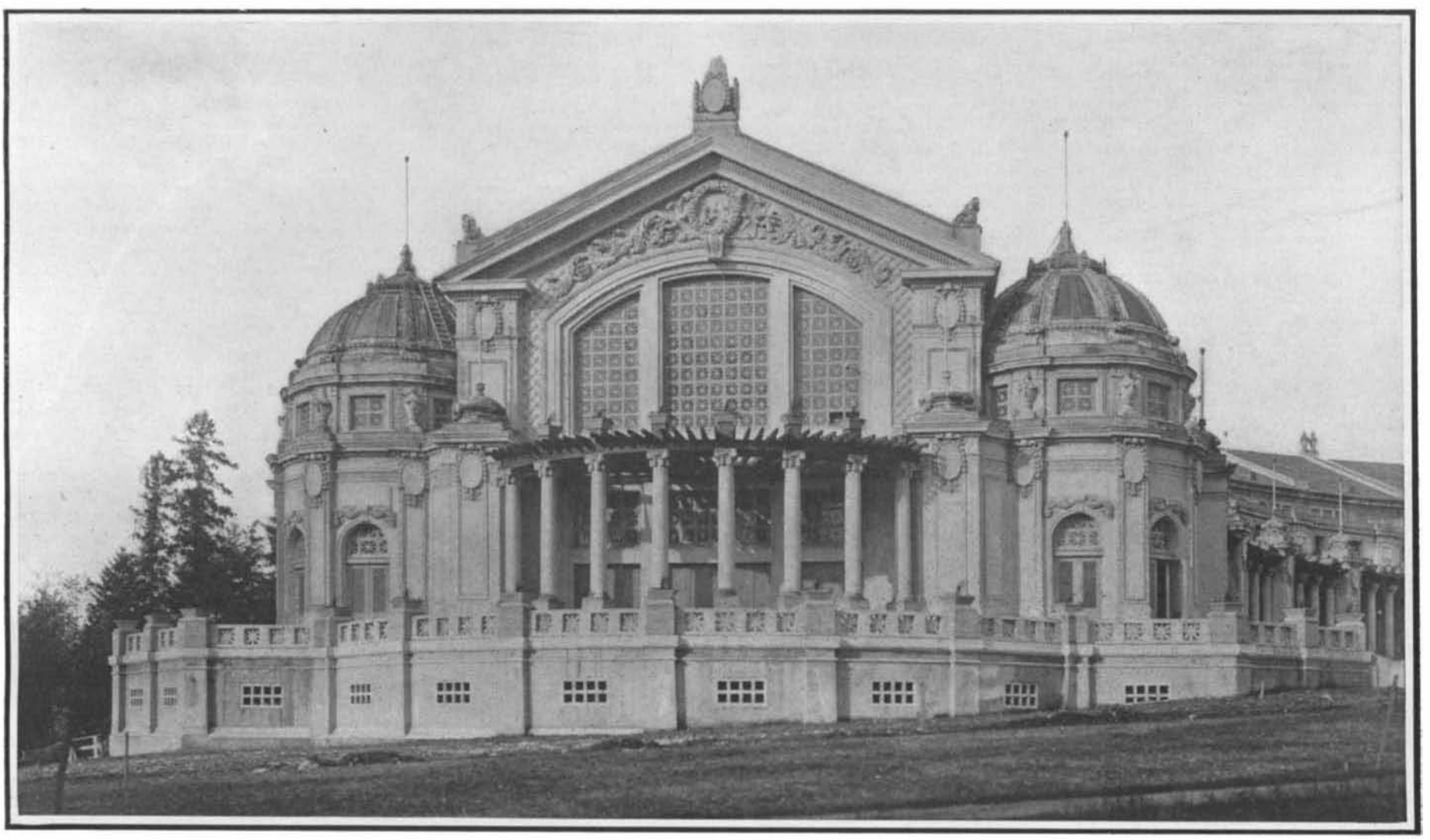
The Morse signals used in telegrams written in the Japanese characters are fifty in number, in addition to those representing figures and the signs of punctuation, etc., says a writer in St. Martins LeGrand. These signals are partly composed of those representing the Morse alphabet, and partly of additional combinations of dots and dashes.

Telegraphically speaking, about 3.65 Japanese letters are equivalent to one word in English, which on an average consists of 4.67 Morse letters, and therefore one Japanese Morse signal. It may be perhaps interesting here to note how Japan is related telegraphically to foreign countries. Of the whole number of foreign messages forwarded or received, and which amount to some 800,000 a year at present, about 40 per cent are credited to Korea, 28 per cent to China, 9 per cent to England, 7 per cent to the United States, 4 per cent to France, 2 per cent to Russia, and 4 per cent to all other countries.

SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class Matter. Copyright, 1909, by Munn & Co.]

Vol. C.—No. 16. ESTABLISHED 1845.] NEW YORK, APRIL 17, 1909. [10 CENTS A COPY $3.00 A YEAR.



A feature of the fair will be the display of flowering vines on many pergolas.

Looking across the cascade toward the foreign exhibit palace on the right.

THE ALASKA-YUKON EXPOSITION.—[See page 296.]