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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are sharp, the articles short, and the facts authentic, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

FOUR LEADING FOREIGN EXHIBITS AT THE WORLD'S FAIR.

In any comparison, no matter upon what it may be based of the display made by the various nations at the St. Louis Exposition, the magnificent exhibit made by Germany easily takes the place of honor. At the same time, when we remember that the effort of Japan was made under the shadow of an ominous war-cloud, that foretold for that gallant nation a life-and-death struggle, there will be many to whom it will seem that the scarcely less varied and voluminous exhibit of that wonderful race is entitled to equal if not greater consideration. The world has heard very much of late years about the remarkable advance that Germany has made in practically every branch of the arts and sciences. To-day we have the record of that advancement spread out before us at St. Louis, in concrete form. The display is arranged on an orderly plan so well conceived and carried out that not only is the greatness of Germany thrust upon one at the very first glance, but the story is told in marvelous detail and with most fascinating and picturesque effect throughout all the great buildings of the Exposition.

Germany.

It is not too much to say that to the Emperor William himself is to be attributed, more than to any other agency, both the breadth and detail of this exhibit. The Germans themselves readily and affectionately admit this. In the first place it was he who conceived the happy idea of placing the executive offices of the German Commission in a large separate building, which should be an exact reproduction to scale of a considerable portion of the Royal Castle of Charlottenberg. Had Germany done nothing more than this, she would have been well represented; for the castle itself is filled with some rare and characteristic specimens of German art, and is enriched by much of the actual furniture and furnishings brought over from the royal residence for exhibition in this building. A distinct advance has been made over previous expositions by placing the architectural features (in the way of inclosures and inside pavilions for the aggregate exhibits in separate buildings) in the hands of an architectural commission, and the work that they have done is not only highly meritorious and becoming, but it bears the broad stamp of modern German art and serves at once to collect and unify in the eye and mind of the visitor the various separated elements in the German display. Another striking feature, resulting from the orderly and discriminating plan on which the exhibit has been laid out, is that there is a most refreshing absence of the ordinary and commonplace—what might be called the stock or shop-window order of display. Everything is of the very best and most distinctive. Moreover the exhibits have been chosen with a view to illustrating those particular phases of German industrial and artistic development which are most characteristic of the Germany of to-day. This is true of the superb exhibit of German arts and crafts in the Varied Industries Building; of the extraordinary rich and elaborate scientific and technical apparatus in the Educational Building; of the large collection of apparatus for the testing of foods and for laboratory research in the Agricultural Building; and of the more limited display in the Machinery and Transportation Buildings. Any thoughtful student of what Germany has done at St. Louis will, after making the tour of her exhibits, be well able to understand the secret of the marvelous growth that that country has made during the past three decades in the worlds of art, industry, and commerce.

Japan.

Next in order of merit comes the extensive display made by that other great industrial country—Japan. It is rendered the more remarkable by the fact that it was cheerfully undertaken and carried through, first under the shadow, and now under the actual stress, of one of the greatest wars in history. The commercial and industrial rise and progress of Japan, like

that of Germany, is a story that loses none of its interest in the telling. What the student has learned from government statistics, from magazine and newspaper literature, and from books of travel devoted especially to the theme, he may here behold spread out before him in picturesque profusion, both in the charming Japanese garden where the Commission makes its home, and in the many acres of space which Japan requested, and promptly filled up with the products of the Island Empire. That Oriental Garden with its picturesque pavilions, its tiny lakes and waterfalls, its grottoes, its miniature trees and characteristic shrubberies, its quaint statuary, to say nothing of its tea houses where the westerner may drink Japanese tea handed to him by Japanese girls in their picturesque attire, was bound to become one of the choicest and most popular resorts of the fair. Here one may meet the chief commissioner, who with characteristic Japanese courtesy will give a brief summary of what Japan has aimed to do in bringing over 500 native Japanese to care for and exploit the \$1,500,000 worth of display which tells of Japanese industrial life and commercial greatness.

And, by the way, there is a remarkable parallel in many respects between the two great nations that have given such distinction to the St. Louis Fair. The Japanese exhibit, like that of Germany, is distinguished by its comprehensive and orderly arrangement. Come upon it when you may, it is surrounded by distinctive Japanese architecture, not indeed so distinctive or elaborately carried out as that of Germany, but still sufficiently defined to render a Japanese exhibit recognizable at first sight. Then, moreover, the exhibits are arranged evidently with a view to producing a definite educational result upon the visitor. In whatever department of industry one may happen to find himself, the exhibit almost invariably commences with the raw material and carries the interested observer up through the successive stages until the finished product is reached.

It is impossible to go into details; but mention should be made of the exhibit in the Agricultural Building, which is devoted chiefly to the great tea industry of Japan; also of the very extensive display in the Transportation Building, showing the remarkable development in the past three decades that Japan has made of postal, railway, telegraph, and steamship enterprises. Here one may see a huge relief map, 100 feet in length by 50 in width, showing the whole Japanese empire, including Formosa, and indicating by various colored lines every mile of railroad track, and telegraph or telephone wires, and the routes traversed by the great steamship companies. In the Varied Industries Building is a bewildering display of all that is rich, rare, grotesque, or beautiful in Japanese art. Bronzes, porcelains, silk embroideries, richly-chased and engraved silver and gold work, characteristic carving on wood and ivory, enamel work on silver, gold, and bronze, and a thousand dainty objects of the kind that are dear to the heart of the connoisseur. Lastly, there is the instructive display in the Palace of Manufactures, where one may learn everything about the manufacture of silk goods in the Island Empire, from the hatching of the silkworm eggs up to the weaving of the silk into the finished fabric; while adjoining it is a splendid display of Japanese matting, 600 rolls in all, which by the way is only one-fifth of the 3,000 rolls that Japan brought over but had not room to display. The educational display also of Japan, though not by any means so large as that of Germany, is equally illustrative of the very up-to-date methods of the Japanese educational system. Here one may see the work turned out by the Imperial School of Art at Tokyo, or he may study samples wrought by tiny fingers in the Japanese kindergarten schools; while near by are some delicate instruments for measuring seismic disturbances, that are reminiscent of that great scourge of Japan—the earthquake.

Great Britain.

If much of the success of the German exhibition is due to Emperor William it must also be admitted that the very fine effort made by Great Britain at the fair is largely indebted for its success to King Edward, who devoted much personal attention to the subject and secured the appointment of the Prince of Wales as Chief of the British Commission. Great Britain is one of the foreign nations that have expended much of their appropriation upon the pavilion which forms the headquarters of the commission. It was determined in making choice of the type of architecture to be followed that the Royal Palace of Kensington would be very representative of English domestic building at one of its happiest periods, and that the structure would serve as a tribute to the memory of that great architect, Sir Christopher Wren, to whom Great Britain is indebted for her great national cathedral in London. The Orangery, which is 170 feet long, has a long line of roof broken only by three brick parapets or pediments. Built of red brick with white stone relief, with its surrounding gardens illustrating the Dutch gardening which was brought in by William, Prince of Orange, the building admirably portrays one

of the best schools of architecture of a people who have ever been famous for the comfort and quiet dignity of their domestic homes.

The interior of the building is in part a reproduction of the furnishings and fittings of that day, and it contains several rooms that are illustrative of the best interior art with some of the leading firms in Great Britain. The British exhibit, although by no means so large as the two already mentioned, is nevertheless very extensive, and is indeed the finest ever made by that country at an international fair. The portion of it that perhaps is attracting most popular attention is the superb exhibition of the Queen's Jubilee presents, shown in one of the stone buildings of Washington University, which latter forms the home of the exposition administration. As befits the greatest maritime nation in the world, a large section of the Transportation Building is devoted to a display made by many of the leading British steamship and railway companies. The models of steamships are particularly fine, notably the historical group shown by the Cunard Steamship Company, in which is to be found a superb model of the 800-foot, 25-knot turbine steamers that are now under construction for that company. In the southwest corner of the Varied Industries is to be found a collection of British exhibits, every one of them of a very high order, showing the best work of Great Britain in various arts and crafts, and notably in that of interior decoration, in which she has won for herself such a well-earned repute. Large space has been taken up in both the Agricultural Building and the Liberal Arts with characteristic display; but it is in the Fine Arts Building that she has made her supreme effort; and here we find a rich collection of the very best work of the modern English school. In closing our notice mention should be made of a small building in the southeast corner of the grounds devoted to the exhibition of low-temperature experiments; in connection with which lectures are given bi-weekly and practical demonstrations made of the remarkable results that have been obtained in this field by the physicist during the past few years.

France.

France easily holds her place in all those lines of competition with the other nations of the earth at the World's Fair in which she has made exhibits, and in cases where special effort has been made the nation is rightly entitled to hold first place. Although her display is not comparable in size and variety with that of some of the nations, it is, as far as it goes, exceedingly fine and is surely entitled to take rank with that of Great Britain. Her greatest effort, however, has been expended upon the handsome pavilions and extensive and beautiful gardens which surround it. Copied after the Grand Trianon at Versailles the structure embodies all the beauty of French architecture in the Renaissance.

The pavilion is a reproduction of a chateau which was built by Louis XIV. for Madame Maintenon. All the government factories aided in furnishing and decorating the building, which, both within and without, is in itself an extensive exhibit of the best in French art and architecture. France is represented more or less in every section of the grounds, but her finest exhibits are the automobiles of which she shows some 40 or 50 of her very latest types in the Transportation Building; her superb line of costumes, high-priced gowns, furs, toilet articles of dainty design and exquisite finish; and last and perhaps finest of all, her rich and varied display in the Fine Arts Building. In the heavy engineering trades France has not done as much as in former national expositions; but what she has shown bears the characteristic excellence of material and beauty of finish to which we have become accustomed. A large vertical triple-expansion high-speed engine of 1,500 horse-power in the Machinery Building, and a handsome De Glehn express compound locomotive in the Transportation Building bear testimony to the skill of the mechanical engineer; but one could wish that France had done more in these lines where she has won such world-wide reputation.

THE PENETRATING POWER OF "N-RAYS."

Prof. Blondlot recently drew attention to a novel kind of N-rays, diminishing, instead of augmenting, the phosphorescence of calcium sulphide. These rays, called by him "N-rays," are given off from a Nernst lamp simultaneously with the N-rays, and are also produced by stretching out a copper, silver, or platinum wire.

In a memoir recently presented to the French Academy of Sciences, Mr. Julien Meyer describes some experiments with these N-rays, produced by an extended glass or copper wire or else by a closed glass tube in the interior of which the pressure is diminished. The glass of the tube, on account of the strain resulting from the difference in pressure, was in fact found to be a powerful source of N-rays. The brilliancy of a screen covered with sulphide spots and introduced into a glass bulb resting on the plate of an air pump would diminish when the machine was