is 5 feet longer, 3½ feet broader and of about the same draught. Its displacement is 400 tons, and its engines of 7,000 horse power drive it at a speed of 30 knots an hour. The three boats are, therefore, two-thirds the length of the big cruisers and are good seaworthy vessels capable of going anywhere with the fleet. They are heavily armed, carrying two 12-pounders, two 6-pounders and two 1-pounders, and would be capable of sinking any torpedo boats they might overtake.

Such is the Cape Verde fleet, whose speed and wide radius of action have already earned for it the title "elusive." Incapable of meeting our battleships in action with any hope of success, its admiral appears to be content with threatening our communications and giving assistance to the beleaguered island by acting as a diversion to the fleets of Admiral Sampson and Commodore Schley. The question of the capture or destruction of the Cape Verde fleet is first and last a question of coal supply, for it will be the scarcity of this that will ultimately drive the Spanish admiral to an active engagement or send him back to Cadiz.

Science Notes.

M. Vallot's observatory on the top of Mont Blanc is to be moved from the Rochers des Bosses, where it now stands, to a rocky point at the same altitude, as the piling up of the snow in its present position interferes with scientific observations. The removal will be difficult, as the whole structure will have to be taken piece by piece on the backs of workmen to the new site at a height where any physical exertion is exhausting. It is hoped that the transfer will be completed in one season.

According to the Bulletin de la Société Française de Physique, M. Crémieu has devised an ingenious means of producing elliptic sound vibrations in air. By the interference of the longitudinal vibrations of two organ pipes, placed at right angles, and vibrating under the influence of two diapasons with the proper difference of phase, an elliptic motion was set up at the intersection of the tubes, and its existence was made evident by means of delicate quartz fibers which followed all the movements of the air.

Prof. Theobald Fischer contributes a short paper to Petermann's Mittheilungen on the "moraine-amphitheater" of the Lake of Garda, says Nature. The form of the moraine deposits on the inner or Italian side of the Alps differs markedly in type from that on the outer or German side. In the former type, of which the Lake of Garda affords an excellent example, the deposits are laid down in concentric ramparts which turn their convex side to the plains; while in the latter we find the familiar expanded fan shape at the mouths of the valleys. Dr. Fischer avails himself of the very excellent maps and models furnished by the Italian service.

A rather remarkable accident with chloroform is reported from the Catholic Hospital at Herne, Westphalia. It appears that a man had to be operated upon at once for a gunshot wound, and the operation being difficult, the time extended to about four hours. The illuminant in the room was gas, and it is supposed that it decomposed the chloroform with evolution of chlorinated vapors, with the result of incapacitating the two surgeons and so seriously injuring the sisters in attendance that one died on the second day, and the lives of the others were in great danger. The matter is of special interest, because operations have to be performed occasionally without preparation, and it would seem, from this experience, that only the incandescent electric lamp can be safe.

At a meeting of the New York Academy of Sciences, on January 24, Mr. E. L. Thorndike, of Columbia University, gave an account of a long series of interesting experiments on comparative psychology. These experiments were made upon cats, chickens, dogs, monkeys and other animals, and were supplemented by the experience of professional animal trainers. According to a report in Science, cats were placed in boxes with doors so arranged that they could be opened from the inside in various ways, in one set of experiments by pressing a latch, in another by pulling a cord, by pulling a hook attached to a cord, or by turning a button. Again the arrangement was more complicated, and two or three separate movements had to be combined in order to release the door and let the animal out to reach the fish placed outside the cage. Curves were given showing the rate at which the kittens learned the various tricks, the time taken to get out becoming gradually shorter. The trick was always learned by accident; one lucky hit would prepare the way for another. There was no trace of rational inference. Seeing another animal do the trick a hundred times was no help. Nor was it possible to teach the trick by taking the kitten's paw and putting it on the latch, and so opening the door, no matter how often it was repeated. A habit once formed artificially will overpower natural instincts. A chicken that had been compelled to jump from a box to the floor in a roundabout way by a cardboard placed in its way, felt unable to jump down to its food directly when the card was taken away.

Electrical News and Notes.

Prince Victor Emmanuel of Naples is said to be an expert electrician. He experiments on all its applications to light, sound, motive power and photography, and was one of the first persons in Italy to investigate the Roentgen rays.

It is reported that a huge central station will be constructed in Saxony to supply electricity throughout the kingdom; 168 towns will be connected with the station. —Electrotechnische Rundschau.

Twelve thousand mail cars of the German railroads are now lighted by electricity, storage batteries being employed. The light has given full satisfaction and is also said to be cheaper than the gas light used hitherto.—Uhland's Wochenschrift.

The Western Electrician has paid great attention to the electrical aspects of the war and has published several columns each week devoted to this subject. A report from Hong-Kong brought by the steamer "Gaelic" states that the night before this vessel left Hong-Kong, Commodore Dewey gave an exhibition of electric light signaling. The Commodore is particularly interested in this branch of naval tactics, as he was at the head of the naval commission which authorized and formulated the method and code. The signals of the war vessels in the harbor of Hong-Kong were answered almost instantaneously from the other ships anchored at various distances.

It would be suicidal for a vessel to enter New York Harbor at night under the present regulations. All the channels of the harbor are planted with contact mines, which, while harmless in the day time, would explode at night by contact. Patrol boats enforce the orders of the authorities and protect the mines and cables from the knives and nets of the shad fishermen or those who are disposed to destroy the mines out of sympathy with the Spaniards. A large number of mines have been placed in our harbors on the Atlantic and the Gulf coast. One or two of the mines which have been cut away from the cables by the propeller of a boat or otherwise have been blown up by the engineers as an object lesson, and the result showed that they are in perfect order. Mines have also been placed in Long Island Sound.

The lack of a trans-Pacific cable under American control was greatly felt after the victory of Manila. The ordinary rate from Chicago to the Philippine Islands is $2.41 a word.

During the bombardment at Matanzas, on April 27, the electrical ammunition hoists and the turning gear of the New York worked admirably. This news is specially gratifying to those who contended that the electrical transmission of power on shipboard is as reliable as it is convenient and economical.

An elaborate signal service system along the southern coast of New England, with thirty-four stations, is manned by New York militia. If a patrol boat should sight one of the enemy's ships approaching Long Island Sound, she would immediately put in under full steam for a coast life saving station on the southern Long Island shore and signal the militiamen stationed there of the approach of the invading ship. The news would at once be sent on by telephone to Fire Island, Quogue or Montauk Point, whichever station was nearest. These stations are in direct telegraphic communication with the Navy Yard at Brooklyn. As soon as the message was received by telephone at one of the three signal stations named, it would be immediately transmitted to the Navy Yard.

It is said, for the first time in the experience of an army in actual service, the commanding officers of the United States troops will have complete outfits for maintaining telegraphic communications with the various brigades and regiments that go to make the divisions and corps of the army. General Greely also has equipped and has ready for service his field telegraph outfit.

The War Department has decided to erect sets of the "telephotos" at the fortifications at Boston, New York, Fort Monroe, Key West and San Francisco, so that news, instruction and general communications may be transmitted by night as well as by day between the army fortifications which will be in telegraphic communication with Washington and the fleets or vessels of the navy which may be under the guns of the forts or in adjacent waters. It is the intention of the government to equip other stations along the coast with these signals. The inventor has devised a small automatic auxiliary engine connected to a dynamo of sufficient size to supply the lights of the "telephotos." This could be installed at a small cost and could be run without requiring the services of a skilled engineer or attendant.

The great 60-inch search light which was used at the World's Fair now guards the approaches to the harbor at Norfolk, Va., the latter being protected by means of submarine mines. A modern battery of rapid-fire guns for use against torpedo boats and light-draught gun-boats have greatly increased the efficiency of the fort.

THE TRANS-MISSISSIPPI AND INTERNATIONAL EXPOSITION AT OMAHA.

The greatest exposition of America's resources and the products of a nation's thrift ever witnessed, with the single exception of the World's Fair at Chicago in 1893, will take place on the banks of the Missouri in the summer and fall of 1898, at Omaha, Neb. It was at first intended to make the exhibition a regional one, devoted to the products, arts and industries of the States west of the Mississippi River, but this plan expanded as the work progressed, and all the States were invited to take part in it. Then there was some attempt to make it international in character, the foreign flavor being dear to American hearts at American fairs, as is just and natural, and this attempt has been quite successful, as several countries will participate. The work of preparation is well under way, and there is satisfactory assurance that every building will be completed and every exhibit in place when the gates are opened to the public on June 1. The exhibition will continue open until November.

Anyone who visited either of the Paris expositions will readily concede that, although no nation surpasses the French in artistic capacity and perhaps none equals that country in the development of landscape gardening, it is a fact that from an exterior point of view all of the exhibitions held there have been singularly unattractive. The first two expositions were held in the Palais de l'Industrie and were completely housed under a single roof, and there was no special attempt at beautifying the grounds immediately about the Exposition building. And the same was true, in a degree, of the World's Fair in 1889. The space was so valuable that the whole thing was crowded, and there was little opportunity for any display of landscape gardening.

It was reserved for Chicago, in 1893, to make landscape gardening a feature of the World's Fair; and no one who was privileged to see that dream of beauty will doubt the wisdom of the effort.

Profiting by the experience of the Columbian Exposition, Omaha proposes in the forthcoming Trans-Mississippi Fair to pay special attention to scenic effect. The situation of the grounds lends itself in a remarkable way to such an endeavor. There is a splendid plateau covering two hundred acres, breaking off sheer into the gorge which constitutes the valley of the Missouri River. The outlook from the top of this bluff, which has been provided by nature, is magnificent and inspiring beyond expression. Throughout a stretch of a mile the visitor may stand and with his eyes sweep that beautiful valley, with the bluffs of Iowa beyond, for a great distance. At his feet the river bank and stretching southward the busy outskirts of the city of Omaha are seen. Beyond sweeps the majestic river, laden with steamboats and all forms of passenger and freight craft —a typical scene—while in the distance are the marshland bottoms backed by the imposing mesas of the adjacent State.

But this is all natural and God-given. It is to that which art is developing—the exposition grounds proper —that the visitor will turn with chief interest. The landscape gardening on what is known as the Bluff Tract promises to be most imposing. A vast quantity of flowers, shrubs and trees will be set out so as to form a beautifully shaded garden spot. There will be labyrinths, graveled walks, the more conventional geometric flower beds, hedgerows and lovers' nooks, all in such profusion and with such a wealth of verdure that one may walk by the hour in the serene belief that he is far from the madding crowd in the fastnesses of Nature itself. But in sharp contrast will be the Court of Honor, over the way. Here the long lagoon, dotted by lazy gondolas, weaving in and out and under the graceful arches of the bridges; the picturesque fountains playing in the bright sunlight, the walled sides of the water flanked by the greenest of grass plats, with here and there a pedestaled Apollo or laughing faun, a Bacchus or the struggling Laocoon or the classic figure of the Venus de'Medici, backed by the imposing line of stately buildings and graceful arches and colonnades—all these will make up a picture of amazing beauty and impressiveness. It will not be a "White City." The artists have hit upon a color scheme which will relieve the scene from the hard glare of monotonous concrete, so trying to the eyes at Chicago. The buildings are to be done in neutral tints of Pompeian red and brown and ocher. This is daring and at first thought would seem incongruous. But careful tests have been made, and all now agree that it will be a great improvement. It will really be suggestive of Sienna marble, and will be most harmonious and effective.

The marvelous progress that has been made in the grounds has effectually dispelled any fears that the buildings would not be ready in time or that the opening might be delayed. The experience gained from former expositions has enabled contractors and workmen to erect and complete exposition buildings much more rapidly than was possible even five years ago, and the task of installing exhibits will be a comparatively easy matter, as every inch of space is shown on plans drawn for the purpose of facilitating the work. The governing board has acted wisely in employing a firm of Boston architects to make the general plan of the

grounds and to control the whole building scheme; the principal buildings have been divided among the best architects of Western cities.

The beautiful building of electricity, simple, but effective in design, stands nearly finished. Its ornamentation, symbolic of its exhibits, shows clear designs in cogwheels and electrical machinery. The most complete and elaborate display of everything pertaining to the infant yet ever-developing science will be shown. Tesla, Edison and Prof. Thompson will have individual exhibits.

In the section devoted to machinery will be found a splendid and complete collection of agricultural mechanism, the finest ever exhibited at any exposition.

The Agricultural Building will command much attention and the Temple of Ceres is well fitted to exhibit the agricultural products of this wonderful Western country. Facing it and across the lake, is the Fine Arts Building. It is constructed in form of two Greek crosses, which are connected by a court. A splendid art collection is being made and new exhibits are promised every day. The building itself will be one of the most beautiful on the grounds. It will be finished in ivory, but a frieze five feet high, which surrounds the building, will be artistically colored, and will add a contrasting bit of beauty to the whole conceit.

The Government Building, which, with its huge dome and immense wings which flank it on either side, reminds one so strongly of the national Capitol at Washington, will stand facing the lake and overlooking the main court. Curving colonnades which stretch away on either side connect it with the Agriculture and Fine Arts Buildings. Surmounting the dome will be a reproduction of the famous "Liberty Enlightening the World," and from the ground to the torch in her hand the distance will be 178 feet. The statuary which will adorn these different buildings is well nigh completed. That which will ornament the Government Building was made in Washington, D. C., while that of the Electricity, Manufactures, Fine Arts and other buildings has been made in Chicago, St. Louis, Nashville and other cities.

Across Sherman Avenue is a viaduct which connects the Main with the Bluff tracts. The latter will contain the State Buildings, the Horticultural Building and the Midway.

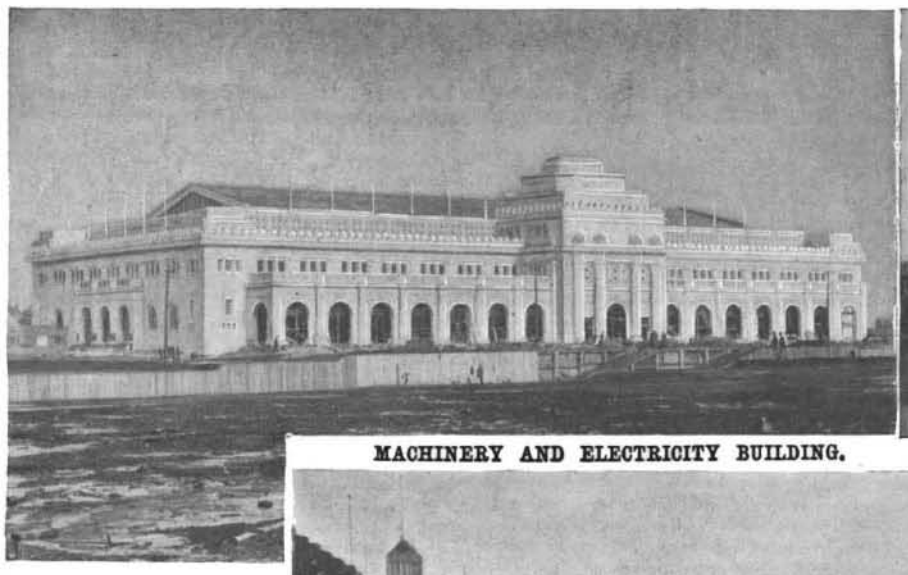
The Horticultural Building is designed in the Corinthian and Ionic styles, and will furnish 27,000 square feet of space for exhibits.

The main feature of this building is a central dome, with an open gallery from which visitors may view the surrounding country from a height of 110 feet. The main entrance will be through a portico supported by free Corinthian columns.

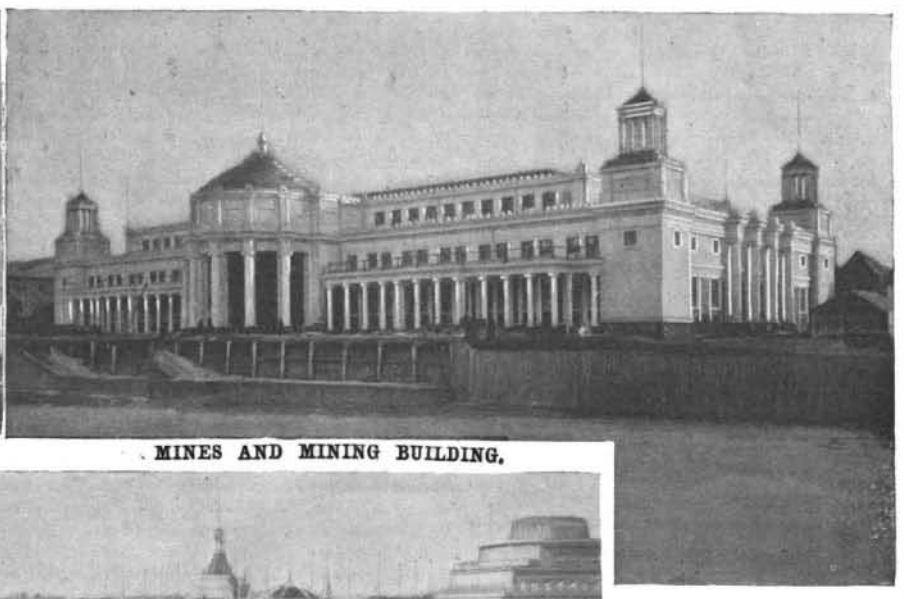
The State Buildings are progressing rapidly. Illinois will have an exceedingly pretty and pretentious home, designed in a combination of Greek and Byzantine architecture, with a dome 115 feet high. Nebraska's commodious building is 90 by 145 feet. Iowa, Wyoming, Colorado, South Dakota, Wisconsin, Montana, and even far-off New Jersey are already at work in the preparation of plans for buildings. One of the most novel will be Georgia's Pine Palace, built of native lumber and highly polished. An immense wigwam will represent Pottawattamie County in Iowa, while Missouri will boast of three beautiful buildings. The other State buildings are rapidly materializing, and it will be safe to say that when the exposition opens its gates on June 1, no less than thirty-four of our States will be fittingly represented.

A curious innovation will be a Bureau of Courtesy. Not only is the idea novel, but it is surprising to learn that nearly all the people in Omaha will be enrolled in the committee. Every member will wear a badge, and visitors will be at liberty to address anyone wearing one of these badges, and ask for any information they may like. The member, on the other hand, will be pledged to treat the visitor courteously and answer his questions or put him in the way of getting them answered.

The transportation facilities are excellent, and extensive preparations are being made for the entertainment of the guests. With a number of good hotels, together with the many new lodging houses being erected, there will be no scarcity of excellent accommodations.



MACHINERY AND ELECTRICITY BUILDING.



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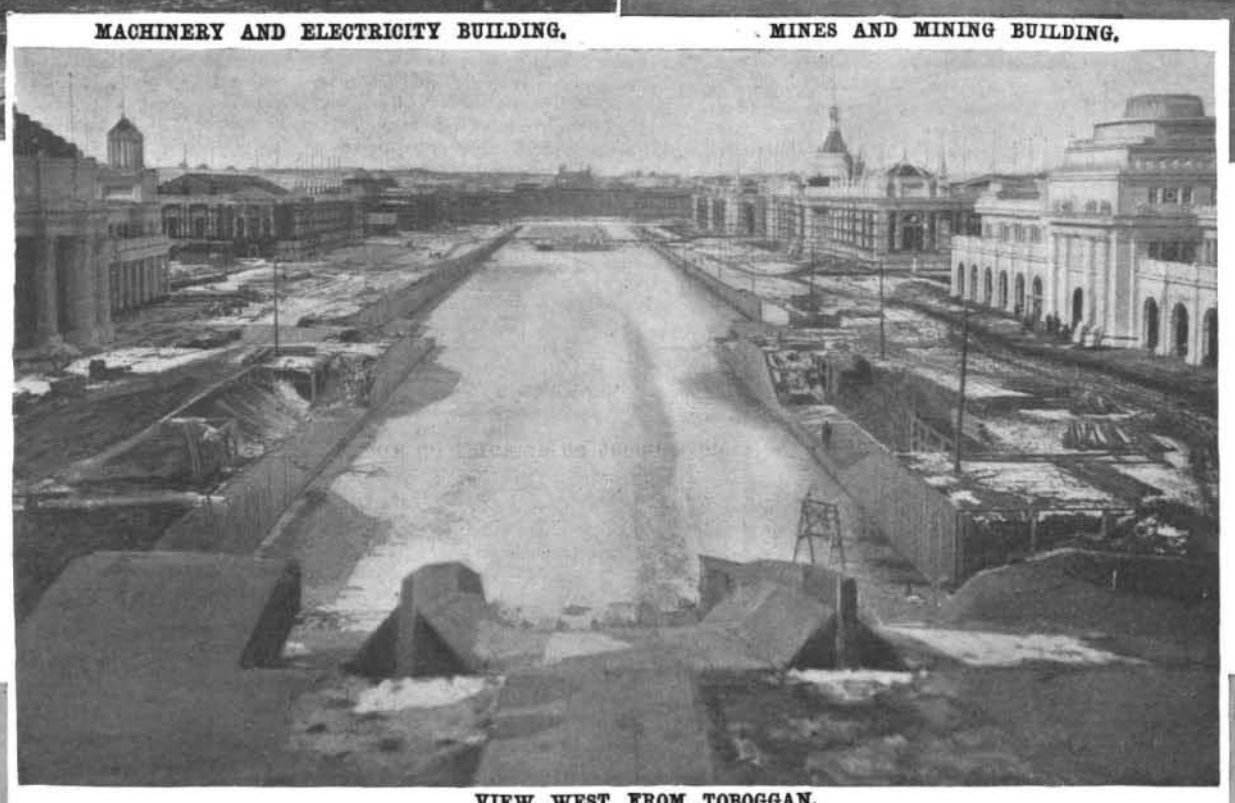

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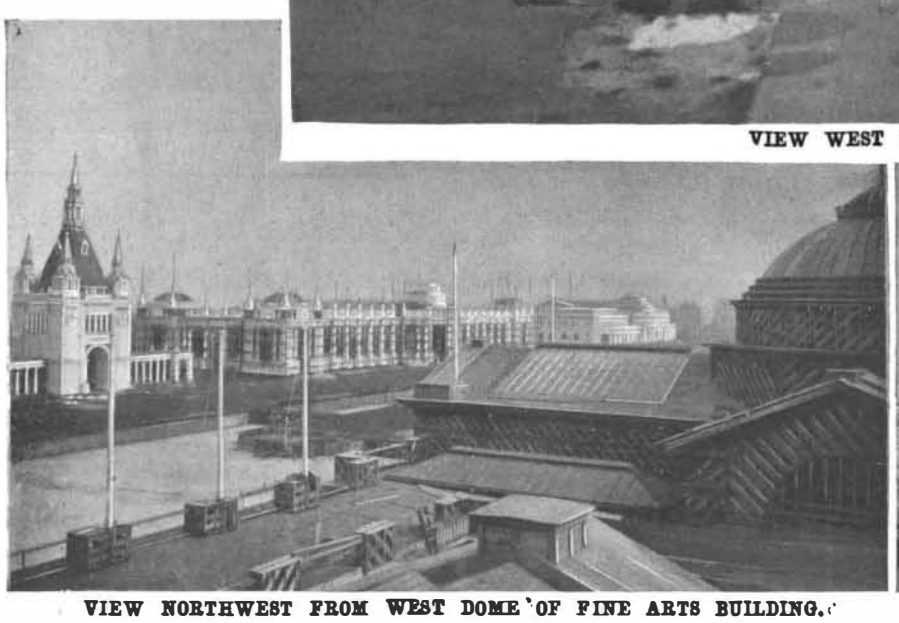
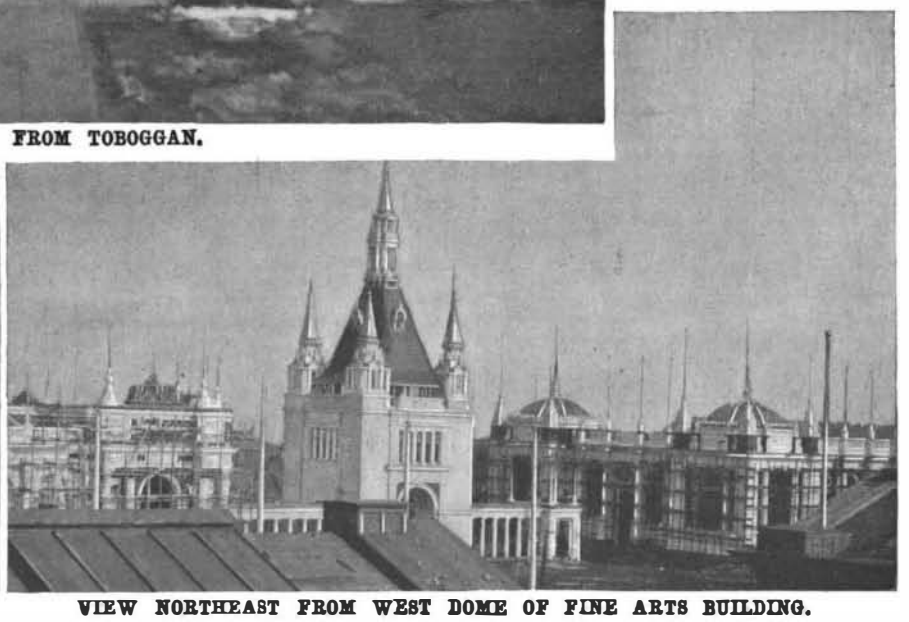


VIEW NORTHWEST FROM WEST DOME OF FINE ARTS BUILDING.



VIEW NORTHEAST FROM WEST DOME OF FINE ARTS BUILDING.

THE TRANS-MISSISSIPPI AND INTERNATIONAL EXPOSITION AT OMAHA.

A Parisian Scientific Toy Picture Book.

The pictures represent the most familiar domestic animals, and each animal speaks its own language. To cause it to break silence, it suffices to pull a little string at the edge of the book. Here are a rooster, a cow, a lamb, little birds in their nest, a donkey, a cuckoo, a goat. On the last page are children who are welcoming their parents. If we pull at each page the string spoken of above, we shall hear the characteristic cry of each creature. The rooster crows, and his cry is very well imitated. The donkey hee-haws, the lamb bleats, the little birds twitter, the cow moos, the cuckoo sings, and the little children call out "papa" and "mamma." These various results are obtained very simply with the aid of small bellows placed in a box hidden in the book. When the string is pulled the air enters the corresponding bellows, and is then expelled by a spring that tends to return the bellows to its original position. The air makes its exit through a special tube appropriate for each cry, and at the same time the bellows meet with certain obstacles placed on a wire. These arrangements have been carefully studied with a view to producing the proper sounds.—La Nature.

THE legend of Romulus and Remus being suckled by a she wolf passes for a fable, but the researches of naturalists lend it color. In India native children have been nursed by wolves and lived with them. Negroes aver that anthropoid apes have suckled babies. Romanes has cited as a fact the suckling of three young rats by a cat whose kittens had been taken from her.