

Modern Projectiles.

The change from the old-fashioned cast iron balls to the accurate projectiles now required in gunnery is something remarkable. The projectiles made for the United States government by the Carpenter Steel Company, at Reading, Pa., are cast in moulds double the size of the finished shell. They are then hammered into shape in dies and machined, after which they are hardened by secret processes to proper temper and finally finished to exact dimensions, plugs being fitted in to fill the bored-out base of the chamber. If the shells are then truly concentric and balanced, two of each lot are fired at a hardened plate made of open hearth steel, this plate, which is backed by 3 feet of live oak backing, being one and a quarter times the thickness of the shell fired. If the shell penetrates the plate and backing without suffering injury, the lot from which it is selected is accepted. The steel used by the company in making projectiles is a special grade of chrome steel, and is of high tensile strength, the test pieces frequently averaging 110 tons to the square inch, with about 7 per cent elongation.

ROLLING CHAIRS AT THE EXPOSITION.

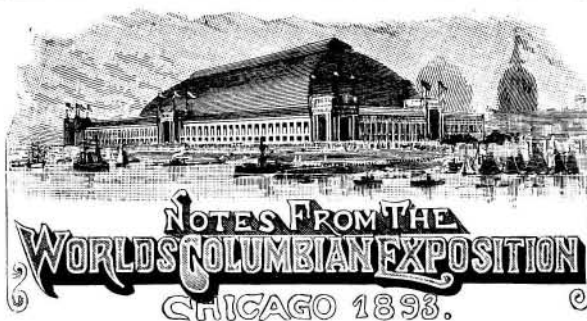
One of the first things to catch the eye of a visitor to the Exposition after a sweeping view, taking in the grounds and buildings as a whole, will be the rolling chairs, which are seen on every side. Not only invalids and ladies, but the tired world in general patronize these conveyances. These chairs, which are 2,400 in number, are provided by the Columbian Rolling Chair Company, and are the only surface conveyances allowed within the grounds. The rates are 75 cents per hour for single and \$1 per hour for double chairs, with attendants to perform the manual labor, or if your wife or friend desires your attendance alone, you guiding and propelling the vehicle, the chair may be rented at the rate of 40 cents per hour for single or 60 cents per hour for double chairs. The attendants are all physically capable young men, from the various colleges, who wear a neat blue uniform. Our illustration is from the *American Jeweler*, and was made from an instantaneous photograph.

The Erie Canal Celebration of 1825.

The *Express*, Albany, says: "Magnificent as was the naval review, it had no more significance, nor possibly was it more interesting to the spectators of to-day, than the celebration which took place there in November, 1825, was to the people at that time. It was then that the first canal boat from the Erie canal reached New York. It had as passengers Governor De Witt Clinton and other State officials, and its most precious merchandise was two casks of water from Lake Erie. The boat left Buffalo October 26, and though there were no railroads, telegraphs or telephones then, the fact of its departure was made known in the city one hour and a half later. This was done by means of cannon placed at regular intervals along the entire route of the canal and the Hudson River. The firing of cannon in Buffalo announced the starting of the boat, and one cannon after another repeated the salute, until the last one was heard in New York 90 minutes after the first one was fired in Buffalo. There was great rejoicing. The boat was towed out to Sandy Hook, and the water from Lake Erie was solemnly poured into the Atlantic Ocean, together with water from the Ganges, the Indus, the Nile, the Seine, the Rhine, the Danube, the Orinoco, the La Plata, and other great waterways. Naval vessels of the United States and England took part in the demonstration. The Salamagundi Club is now arranging to take relics of that particular canal boat to the Chicago Fair, and proposes that water from the Atlantic be, in like fashion, poured into Lake Michigan."

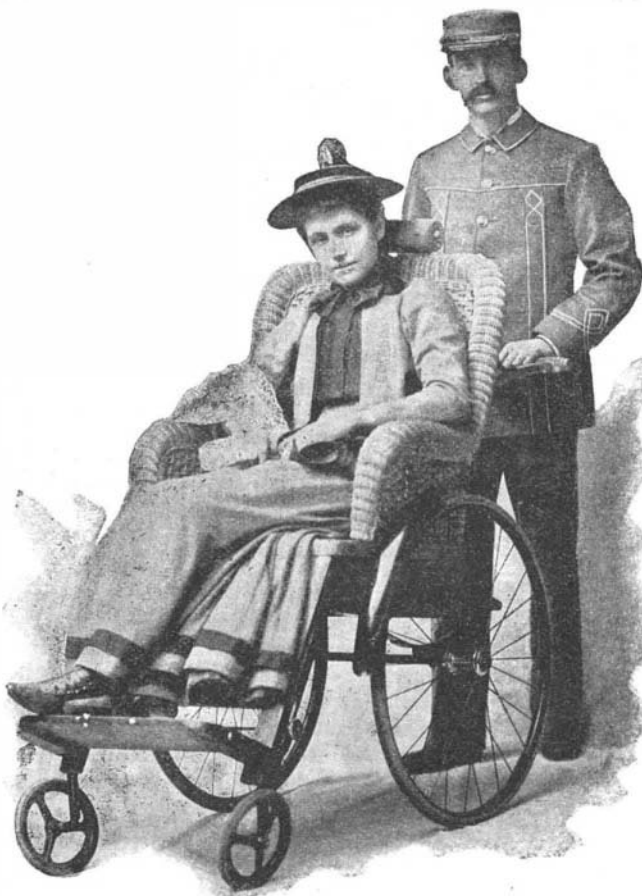
Trional as a Hypnotic.

We announced some time ago the introduction of this substance as a hypnotic. It is of the same family group as tetronal and sulphonal, but contains three ethyl groups instead of four in tetronal and two in sulphonal. Dr. Krauss, of Buffalo, in a recent number of the *New York Medical Journal*, describes his results with the drug as very encouraging, although he has used it in only small doses (from eight to ten grains) without repetition of the dose. The patients were all suffering from nervous diseases—such as Graves' disease, epilepsy, neurasthenia, trifacial neuralgia etc.—and in all of them, fifteen in number, except in those in whom peripheral nerve irritation was present, the results were gratifying. In the cases of the patients suffering from neuralgia the combination of trional with acetanilide was followed by sleep. A case of prurigo is the only one in which failure has to be recorded. No bad results followed the use of the drug, and the only apparent objection to its use in the United States is the fact that its producers have patented it and so made it less accessible for ordinary use.—*Lancet*.



The attendance at the Exposition during the month of May as officially reported was over 1,000,000 paid admissions. This gave the Exposition a gross income from this source of about \$500,000, although some allowance is to be made for admission of children, as those from six to twelve years of age only pay twenty-five cents. In addition to this source of income there was considerable return from concessions. While the returns were comparatively small during May, the expenses were much larger than they will be during any other month that the Exposition is open. The reduction in the working forces has made a difference of perhaps \$5,000 a week, so that it is roughly estimated that during the following weeks the necessary running expenses will not be over \$15,000 a week, and possibly not over \$12,000.

Thousands of people crowded recently in the evening at the Electrical Palace to witness the unveiling of the tower of light, which is by far the grandest display



COLUMBIAN EXPOSITION—A COMFORTABLE WAY OF SEEING THE SIGHTS.

in electric illumination so far as one piece is concerned that could well be imagined.

The model war vessel State of Illinois was also delayed in being formally opened. This exhibit, which is made by the United States navy department, is a very attractive one for people who have never visited the sea coast and have not seen the steel cruisers which have been illustrated in the columns of the *SCIENTIFIC AMERICAN*. This model man-of-war is constructed after the pattern of the cruiser Oregon. On the evening of the day it was opened the vessel was electrically illuminated and the search lights added greatly to the effectiveness of the illumination. Strong light was thrown upon the vessel from the powerful search lamp stationed on the northeastern corner of the promenade on the roof of the Manufactures and Liberal Arts building.

The fine display of machinery which is made by German manufacturers in the Palace of Mechanic Arts was speeded up on June 1. The exhibit made by the Germans in this department is really very fine, both in the quality and extent. Next to the United States the German exhibit is the most interesting. It includes an excellent showing of electric and power machinery, wood-working machinery, etc. The Mexican exhibit in the extreme southwestern corner of the Manufactures and Liberal Arts Palace is most creditable to that country. It includes specimens of native manufactures, such as clothing, pottery, carvings and the like. Cotton and woolen goods made in Mexico are also shown. Much work is that of the native Indians.

Two State buildings have been dedicated with con-

siderable ceremony, those of Kentucky and California. The Kentucky building is purely a club house, but the opening ceremonies were quite elaborate, because in connection with them was the unveiling of a monument to Daniel Boone. The California building is one of the largest State buildings on the grounds. In appearance it is far ahead of most of the State buildings; in fact, California has made a much finer display than any other State excepting possibly Illinois. The building is a reproduction of the old mission station at Santa Barbara. Much taste has been displayed in laying out the grounds around the building. Inside there is a splendid display of the products of the State.

On June 1 the Children's building at the Exposition was formally opened with appropriate exercises. The scheme of erecting the building and arranging its use was the work of the ladies connected with the Exposition management. There was no money, however, that could well be used for this purpose, and the first question was to raise the funds. Some of the generous ladies of Chicago held a grand bazaar and in other ways secured more than enough money to carry out the idea. There has been collected in this building a great variety of toys, playthings, books and all devices adapted to the purpose of entertaining and educating children. The Japanese took much interest and sent many contributions. A *creche*, with a checking system, so to speak, is established, so that women who wish to attend the Exposition, and have no particular means of caring for their young children, can bring them to this building and have them properly looked after. Another line of usefulness shows the different systems of educating children in the kindergarten work and in kitchen gardening. Every facility is at hand for accomplishing these and other lines of work for educating children. The roof of the building is arranged as a sort of playground, and in the center of the building on the first floor is a gymnasium where the children indulge in calisthenic exercises. Sloyd and physical culture are included in the work. This building is located between the Woman's building and the north end of the Horticultural building.

As to musical entertainments, the programme during the month of May included twenty free popular concerts, twelve symphony concerts, three musical festivals and three chamber concerts. The programme for June includes four Russian concerts, Handel's "Messiah," Bach's "St. Matthew's Passion," concert by the Exposition festival orchestra of 150 pieces, Gounod's "Third Mass," three grand festivals of 1,500 voices and 200 instruments with eminent soloists, Brahms' "A German Requiem," concert by the Brooklyn Arion Society, Handel's "Messiah," Bach's "St. Matthew's Passion."

A GENERAL GLIMPSE AT THE EXPOSITION.

A correspondent gives his impressions as follows:

The facilities for reaching the Fair grounds are at the present time more than sufficient to carry the visitors. The elevated railroad is in fine running order, and takes the passengers directly into the grounds; but the running time is rather long, owing to the distance and the number of stations. The steamers also require a long time to make the trip; but if the visitor's time is limited, the World's Fair express trains on the Illinois Central offer a quick and cheap method of reaching the grounds. The open cars are familiarly called "cattle cars," but they will prove very acceptable during the heated term.

The 64th Street gate is, in many respects, the most pleasant entrance to the grounds, and is the nearest entrance for the Administration and Manufactures buildings. The visitor buys his ticket at the little ticket booth and passes through the turnstile. As there are turnstiles for passes, workmen, and children, as well as the regular ticket gate, there may be some trouble in finding the proper gate the first visit. Once past the turnstile, and the visitor will make his first acquaintance with a unique feature of the Exposition—the Columbian guard, who is without the power of making an arrest, for they can only summon the patrol wagon, which carries a city policeman, and who is without a club for defense, though they have a preposterous little sword. Still the guard's uniform is pretty, and they serve to give a little color to the scene. The guards are polite, and on the whole do not deserve one-half the fun poked at them by the papers, which, in many cases, is the result of ill-nature on the part of reporters. It appears to have been the aim of the directors to put everybody in uniform. The guards are dressed in blue, as are also the sellers of the official guide. The official catalogue boys have a distressingly bright red uniform, while the guides are habited in gray, and the chair pushers (a handsome body of young men) in a light blue uniform, which ladies would describe as fetching. Every one connected with the Fair must march, and it is very amusing to see the ticket takers leaving the turnstiles and marching two by two with their big tin boxes. The central railroad station, near the 64th Street entrance, is a large structure, and

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