ELECTRIC RAILROADS IN PARIS.

The visitors at the Electrical Exhibition can see a very fine model in bronze, surmounted by very beautiful designs, which represents an electric elevated railroad. This model is placed in the large aisle very near the pavilion of the City of Paris. It is in miniature a part of the new system of railroads which should be constructed over all the great streets of the capital in order to lessen the number of encumbrances and to supply the want of locomotive means of which the whole city justly complains. M. J. Chrétien, the inventor of the new system, proposes its immediate application to all the great boulevards.

Electricity has indisputable advantages over other methods of locomotion. It is an economic method which can produce very slow as well as very rapid motion, which causes no noise or smoke, and which only allows the use of light vehicles and, consequently, the laying of unobstructive tracks. The building of electric railroads in places where business is most active, will have the double result of freeing the public roads of obstructions and of giving to the public sufficient means of transportation.

The following details we borrow from a pamphlet published by M. J. Chrétien entitled "Chemin de fer electrique des boulevards." The electric road is a double-railed viaduct supported by a row of columns spaced about forty or fifty metres from each other, and placed in the middle of the road. A central hollow beam rests on the columns and carries all the load; it runs the whole length of the boulevard, at a height varying from five to seven metres above the earth in order to compensate for the irregularities of the ground. On each side of the beam the rails are placed, resting on a metallic platform, so that there is one on the right and another on the left.

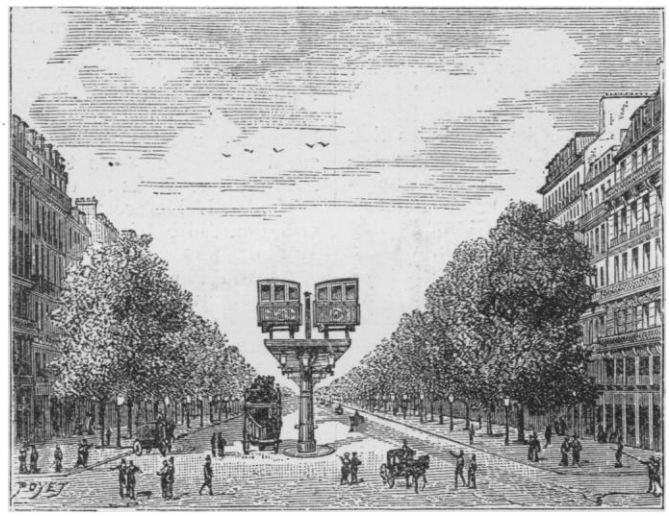

Fig. 3.—SECTION OF THE PROPOSED ROAD.

The stations, twelve in number, are placed about 500 metres from each other, and we can ascend by a very convenient staircase, placed either over the sidewalk or over the pavement. For the station most elevated above the ground, electric elevators are provided for the use of those who wish to ascend. It can even be said that it is easier to take the electric road than to ride in an omnibus.

Two works for the supply of the motive force are placed under the ground. Each of these works consists of steam engines to furnish the motive force and Gramme dynamo-electric machines to produce the electric currents, when they are set in motion by the steam engines.

The electricity thus produced is transmitted through the whole length of the road by conducting wires, and distributed to the various carriages. These are put in motion by means of electric machines, which each of them carries, and which receive, through the conducting wires, the electricity necessary to attain the speed required.

Thanks to very simple means, applications of electricity, there can be no collisions, no accidents of any kind; the motions are easier than in the ordinary railroad, and the carriages can regulate their speed with remarkable precision.

The speed is about 350 to 400 metres a minute, that is to say, the speed of a good trotting horse; with this speed, and reckoning a half minute for the mean time of stoppage at station, the whole length of the road, which is 4500 metres, can be traversed in about 17 or 18 minutes. This is half the time of an ordinary omnibus.

According to the ideas which we draw from the pamphlet spoken of, the capacity for transportation of the electric road is so great, that we with some difficulty accept the given figures, while it is easy to try the exactness of them. Thus, every minute a carriage, with places for 50, passes each station; so that, if the carriages are always full, there will be 100 persons carried each minute in the two directions, and if we take account of the additions during the journey, we will have about twice as much; that is about 200 persons every minute, or 12000 per hour. But it is possible to still increase the carrying capacity, and to reach the maximum corresponding to the trip of two carriages joined together, at intervals of a minute. We will arrive, in this case, to the colossal figure of 24000 persons an hour. Although these figures appear more than sufficient, it is certain, for those who know the activity at certain times upon the boulevards, that there are times when everybody cannot find room without waiting.

From the given estimate, the total expense necessary for the construction of the road, will only be from eight to ten millions, according to the greater or less magnificence necessary to construct a work of this importance in the centre of such a city as Paris.

Assuming an expense of eight millions, it is calculated that the price of a seat can be fixed at ten centimes, to realize profits large enough to pay the city an annual revenue of a million or a million and a half, without asking any subsidy whatever. The electric road has then as its several results, the furnishing the means of an agreeable, easy and economic locomotion, the satisfying the demands of a great traffic, which is growing day by day, and the supplying of an important revenue to the city, while still the price of a seat is kept at ten centimes.

In regard to the appearance of the road, which has a great importance in such a city as Paris, where art has never been too much sacrificed, it will certainly be seen, after a careful examination of the given designs and the engravings, that it is possible to give an artistic character to this work. Such as it is represented, the elevated road lacks neither strength nor magnificence; it is in the modern style, which alone is becoming to a work which our ancestors never dreamed of. It has been suggested besides, that, in order to fully satisfy the artistic demands, a competition should be opened to all architects and artists; and this would certainly lead to excellent results.

The utility and advantage of the electric road cannot be disputed; that it should exist is obvious, and the proposed work leaves nothing to be desired. This splendid work will certainly be accomplished, but perseverance and labor are necessary in order to vanquish all resistance, routine, and inertia, against which it would otherwise be fatally injured.—*Translated from La Nature.*

CHLORAL HYDRATE IN TOOTHACHE.—Dr. Spörer recommends that three to four lumps of hydrate of chloral (0.03–0.06 gram), should be inserted into the hollow and painful tooth, the chloral being allowed to dissolve.—*St. Petersburg, Med. Wochenschrift.*

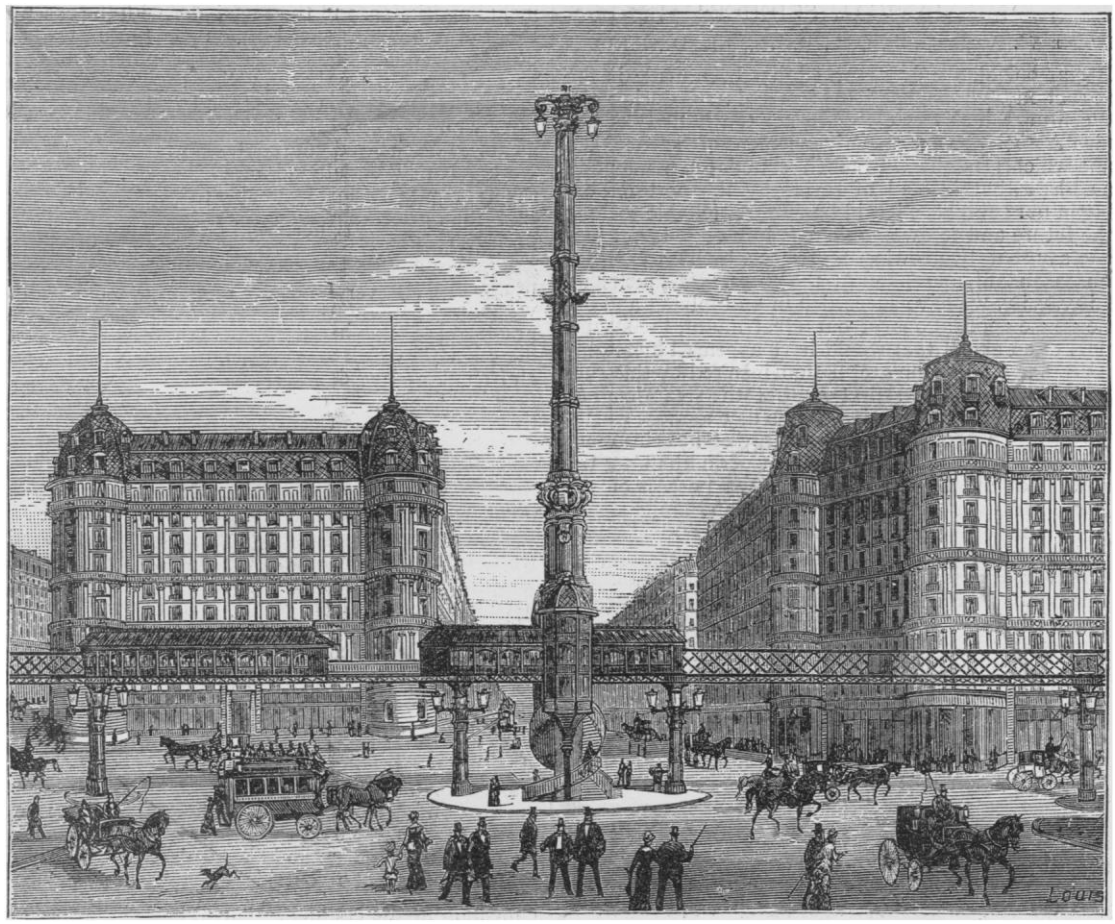

FIG. 1. ELECTRIC ELEVATED RAILROAD FOR THE BOULEVARDS OF PARIS. PLAN OF M. CHRÉTIEN. VIEW OF A STATION.

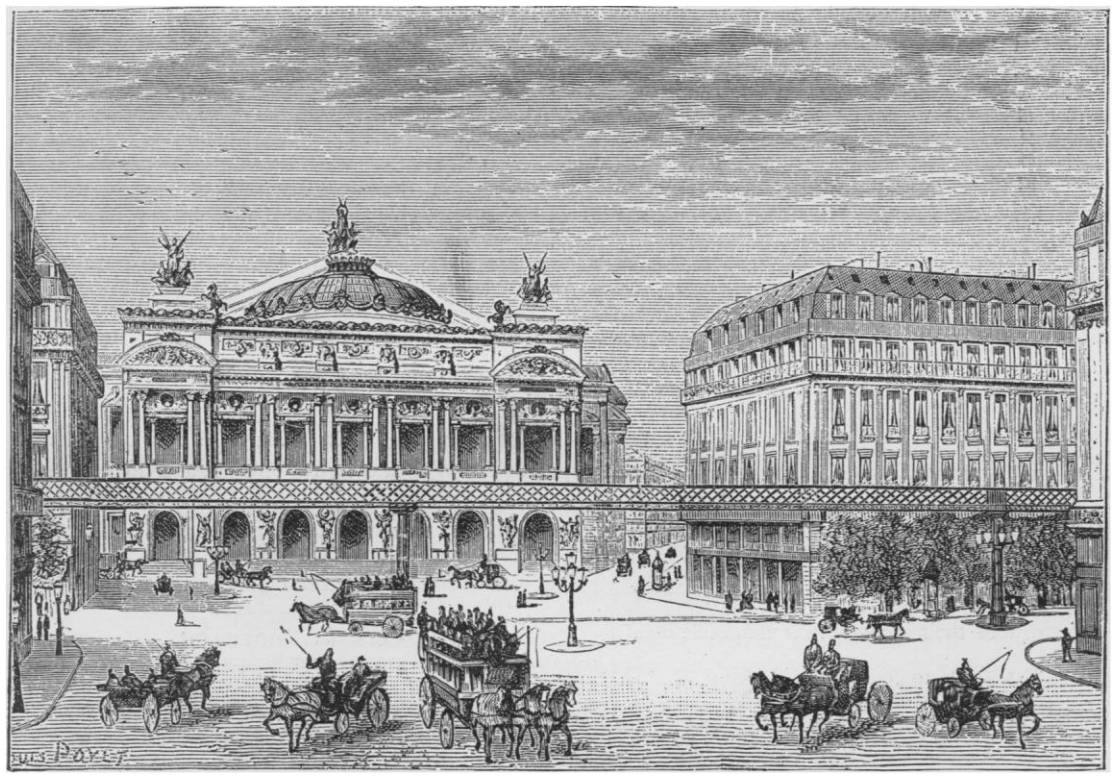

FIG. 2. PLAN OF THE ELECTRIC ELEVATED ROAD. VIEW BEFORE THE GRAND OPERA OF PARIS.