

THE WEST SIDE METROPOLITAN ELEVATED RAILWAY SYSTEM OF CHICAGO.

Visitors to the Chicago World's Columbian Exposition remember the Intramural Railroad which carried such numbers of people on its elevated structure by electric propulsion. This was an example of an electrically operated elevated road. There is now in process of construction another electric elevated road in Chicago; one which, starting from the lake front in the heart of the business district, is to reach by several branches the entire area bounded by the branches of the Chicago River and denominated the West Side. The road is termed the West Side Metropolitan Elevated Railroad. With a track carried on an open-hearth steel elevated way, with plate girders throughout, built upon land owned in fee simple by its projectors, except for street crossings, and operated by the most advanced electric system of propulsion, the road will occupy a unique position.

The entire length of the road, including a trunk line which runs directly away from the lake front, and including four branches into which it ultimately separates, is nearly 18 miles.

The main line, starting on Franklin Street and running west to Paulina Street, is 1.81 miles long, but having four tracks is rated at double this length. From Paulina Street west to the city limits the main line becomes the Garfield Park branch, 4.02 miles long. The Logan Square branch starts from the same point on Paulina Street and runs north and then northwest to Logan Square, 4.49 miles. The Humboldt Park line, branching off from the Logan Square line, runs west, 2.13 miles. Finally the Douglas Park line runs south from the Paulina Street terminus of the main line and then west a distance of 3.7 miles. All the branches are two track. It is calculated that five-eighths of the population of Chicago live within the West Side area, and this immense population of about 800,000 people will be served by the road. The company has issued \$15,000,000 of bonds to supply its actual capital, besides stock of the same face value. One of the most advanced features of the enterprise is its acquirement of a right of way.

The path of the road lies through the center of the blocks, and the land acquired, partly through condemnation proceedings, was purchased outright, the company thus acquiring the solid lots, which enables it to proceed in the disposition of the property in any way it saw fit. The company was thus absolutely secure from damage suits, and could proceed in the work of demolition in any desired manner. Much of the way was cleared by the destruction of the edifices, and one of our illustrations, made by our special artist, shows the view down the roadway as it is being prepared for the superstructure.

Advantage is also taken of the ownership of the land to erect the stations directly under the track. From the stations, which, unlike the elevated stations of the Metropolitan Elevated RR. in New York, are on the street level, stairways lead to the platforms above, all being under cover. Not content with the purchase of its roadway, nearly \$400,000 worth of surplus land was purchased. This was to afford ground

to which the more valuable houses on the roadway might be moved. One of our illustrations shows the operation of moving a number of brick dwelling houses, in solids, on rollers, to a new locality.

The superstructure shown in another of the illustrations, where it is seen crossing a street, is of the most substantial type. The weight per lineal foot is put at about 1,000 lb., a total of 46,000 tons for the entire structure. The rails weigh 80 lb. to the yard. The steel is from the Carnegie works.

The cars are to be operated in two to five car trains, one of which will be a traction car taking its current from a special bar or rail laid on the deck. The system adopted is that of the General Electric Company. It is needless to say that the operation of an elevated road by electricity represents the perfection of traction systems as far as passengers and dwellers on the line are concerned, as there will be no smoke or noise of escaping steam. The traction car, which takes the place of the ordinary locomotive, is so constructed as to carry passengers, and will be a smoking car, and thus a very practical economy in the system is attained.

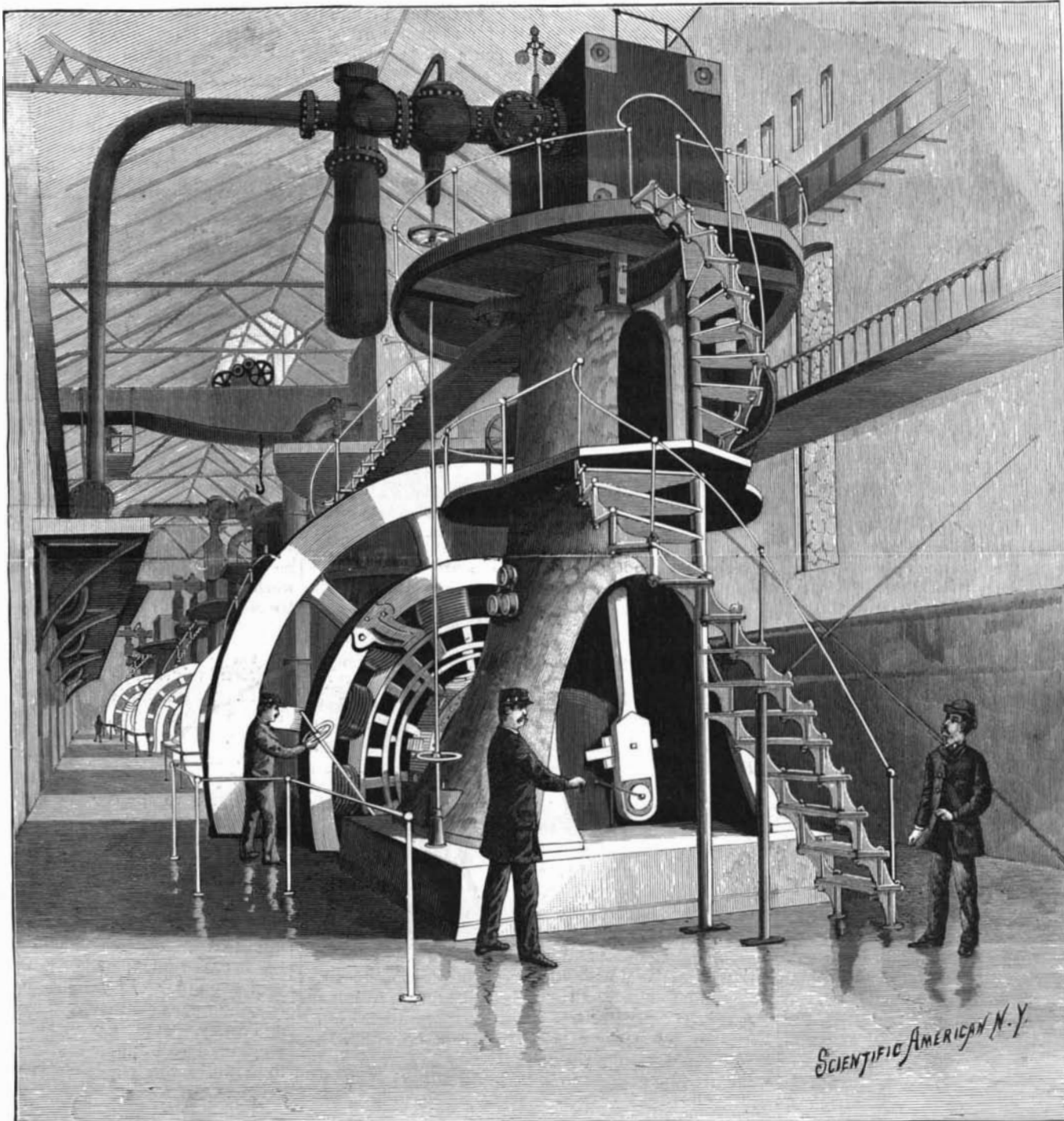
power each. The dynamo comes between the high and low pressure sides, so as to be inclosed by the engine frames. It is claimed that the energy stored up by the flywheel at full speed is enough to run a train of cars from the power house into the city. A Morgan electric crane of 75 tons capacity, also shown in the illustration, spans the engine house, commanding the entire area.

The massive switches required for the large currents delivered are mounted on a white marble base plate. The current from the power house goes to the car motors by the lateral contact rail and returns by the regular rails to the station, a system used on the World's Fair road. Each car will carry four motors, so that maximum efficiency will be given at three different speeds. On starting, the motors are thrown into series; at the next speed two are in parallel and two in series, and at the highest speed all are in parallel. Air brakes will be used, a small motor working the air pump on the motor car.

Sixteen Babcock & Wilcox boilers with automatic stokers supply steam for the engines. A moving grate carries coal to the fire and delivers ashes from the further end. All the firemen have to do is to keep the coal hopper full of coal. In addition to a 150 foot iron chimney, two huge rotary blowers are used to supply the draught. The main steam pipe is eighteen inches in diameter.

The entire generating or power plant is arranged to admit of increase without any disturbance of existing parts. It is located on the alley back of Throop Street, between Van Buren and Congress Streets, directly in the rear of the city lighting plant.

The part to be performed by this road in Chicago cannot well be overestimated; constructed in the most substantial way, and free from possibility of judgments against it for damages to property, it has two of the best guarantees for success. It will reduce the present time required to reach its limiting points thirty minutes. If all goes well, it will doubtless extend its lines. By using its alleys Chicago saved



ELECTRIC GENERATING PLANT OF THE WEST SIDE METROPOLITAN ELEVATED RAILROAD.

Electric service for construction work on such portions of the road as were completed was put in operation some months ago.

A view of the electric generating plant is given in one of our illustrations. The immense generators are of the multipolar type and are direct driven, the armatures being on the main engine shaft. One type of generator driven at 75 revolutions per minute maintains a voltage of 500 on no load and 600 loaded with a current of 2,230 amperes. Another type at 100 revolutions gives 500 volts with no load and 550 volts with full load and a current of 1,450 amperes. They are of the type built by the General Electric Company especially for street car work. The armature winding consists of heavy bars of copper insulated by mica. They were wound when in place. There are twelve field magnets in the circle inclosing each armature. It was only after the winding of the armature and setting up of the field around it that the engines were assembled. The engines are Allis Corliss, and are compound inverted vertical, direct acting, standing some 50 feet high with 25 foot flywheels. There are five; two are of 2,500 horse power each, the others of 1,000 horse

power each. The dynamo comes between the high and low pressure sides, so as to be inclosed by the engine frames. It is claimed that the energy stored up by the flywheel at full speed is enough to run a train of cars from the power house into the city. A Morgan electric crane of 75 tons capacity, also shown in the illustration, spans the engine house, commanding the entire area.

Dangers of Liquefied Air.

M. Raoul Pictet has described the "cold burns" experienced by himself and his assistants during investigations at low temperatures. In some cases the skin is first red, then blue, and subsequently the area of the injured spot extends to nearly double what it was originally. There is a painful itching sensation in the surrounding tissues, as well as at the affected spot, and healing usually takes five or six weeks. In more serious cases the skin rapidly becomes detached, and there is a long and stubborn suppuration, the wound remaining open for more than six months in one instance after a drop of liquid air had fallen on the hand.

BERLIN is one of the most cosmopolitan of European cities. Though it is the capital of Germany, only 37 per cent of its inhabitants are Germans by birth.

SCIENTIFIC AMERICAN

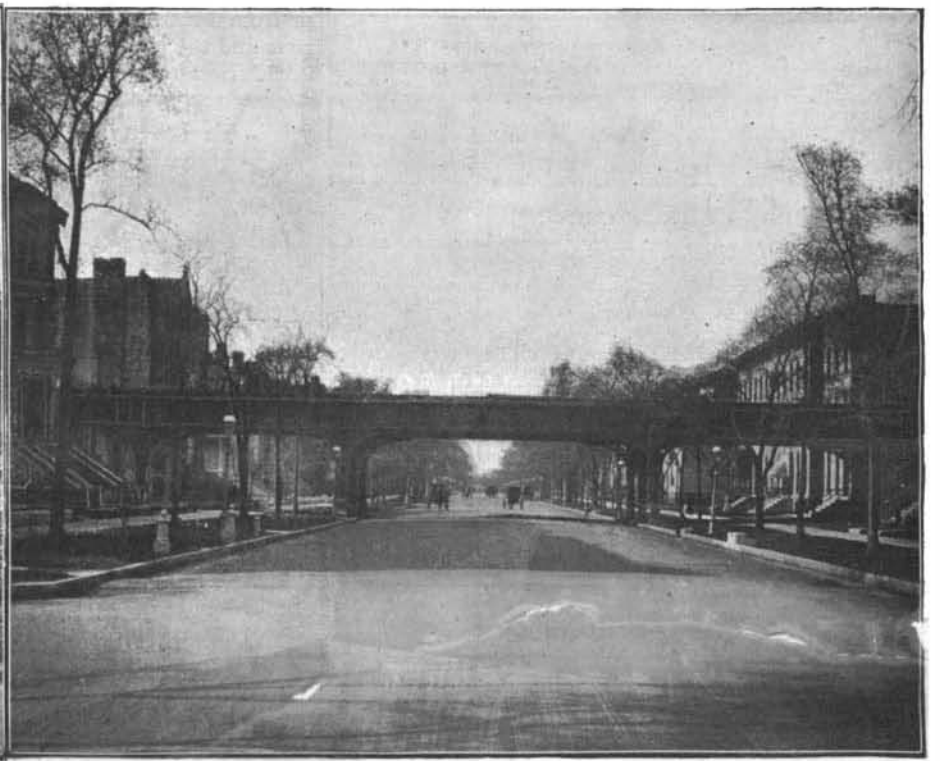
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Moving the Normandie Flats.

Progress of building operations.

The road crossing a street.

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