

be a blue light displayed with the signal when at danger, and no light when at safety. The back spectacles should be so designed that the blue glass cover the light at all times except when the blade is in the horizontal position. The towerman is thus assured that a danger signal is displayed in the front of a signal whenever the blue light is visible. Such a spectacle would not require a blue glass, as the light would be displayed through a blue glass in the back of the signal lamp.

Automatic Block Signals on the Chicago & Alton.

A sketch of the portion of the line of the Chicago & Alton which is now being equipped with automatic block signals by the Hall Signal Co. is shown in the accompanying engraving. The road to be signaled is from Corwith Junction to Joliet, 31.5 miles, double track; Joliet to Zarleys, 5 miles, single track, and two miles out from Joliet on the Coal City Branch, single track, making the total length of road signaled 38½ miles.

The signals are semaphores, and each signal (or pair of signals on the same post) is moved to the all-clear position by an electric motor worked by a battery. The face of the home signal blades is painted white with a black stripe near the outer end and parallel to it. The blades of the distant signals are yellow on the face, with two black stripes, 2½ in. wide, parallel to the outer (notched) end. (Semaphore blades 4 ft. long, with white faces, are used on this road for train order signals.) The signals are to have green lights for the night all-clear indication; and the distant signals, when against a train, will show a yellow light.

Forty-three home signals and 39 distant will be put in, and five home and four distant signals now in service at railroad crossings will be connected with the automatic system by electric slots, the track circuit being carried through the interlocking plants. The average length of block is about 1½ miles, the shortest block being 3,000 ft. and the longest 2.4 miles. The home signals are to stand normally in the stop position, and the distant signals, also standing normally horizontal, can be cleared only when the home signal is clear. Each home signal will be cleared (if its block section is free for the passage of trains) by each approaching train as it reaches a point about 1,200 ft. short of the distant signal. With this arrangement the engineer will be able to see the distant signal change to the clear position. The number of switches in the main line is 64. These will set signals at stop when they are open, and will be provided with audible indicators. The audible indicator, a bell, will begin ringing when an approaching train enters the clearing section, 1,200 ft. in the rear of the distant signal.

On the single track lines the automatic signals are arranged to protect trains in both directions, the arrangement of the circuits being the same as that on the Cincinnati, New Orleans & Texas Pacific, which was described in the *Railroad Gazette* of Nov. 12, 1897.

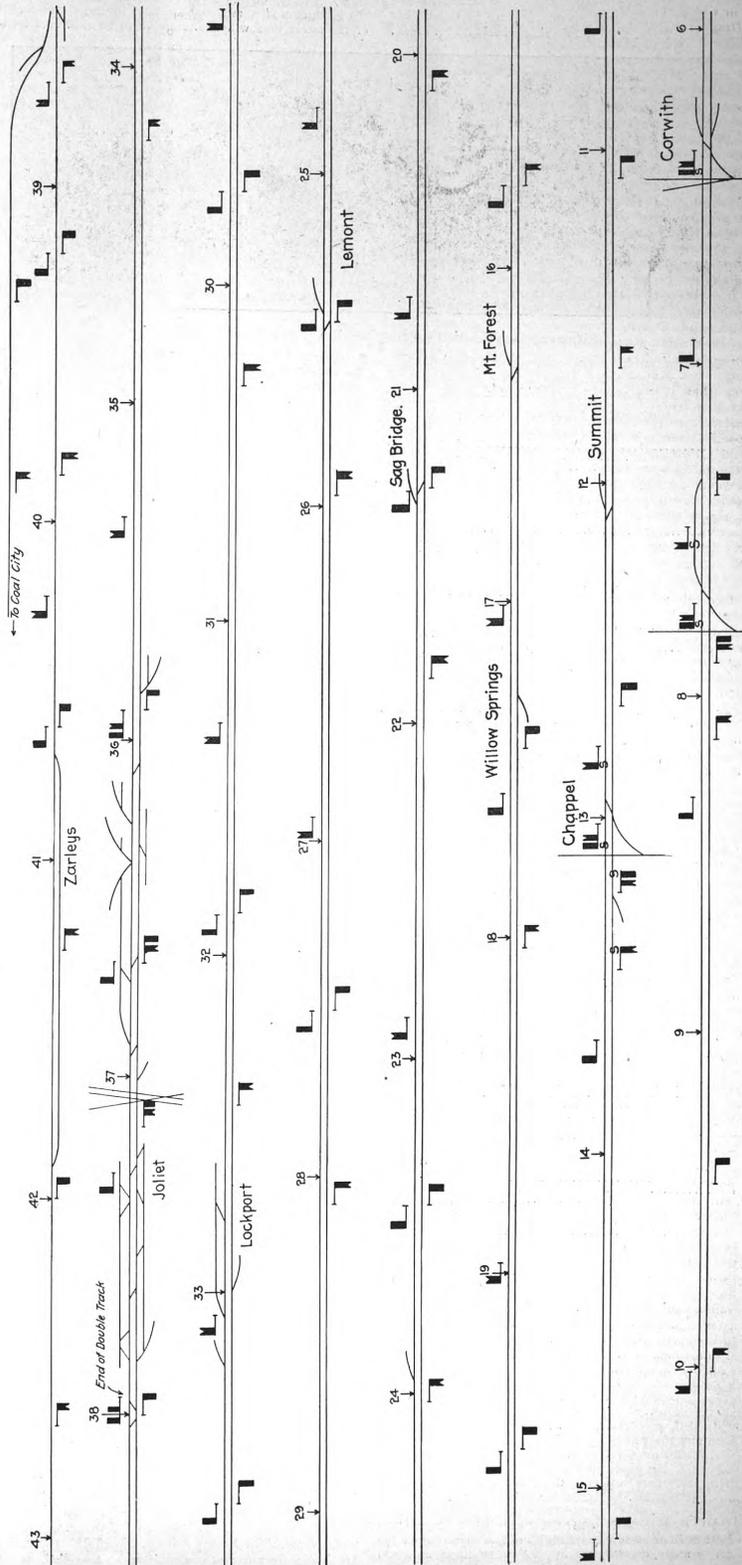
The Transportation Show at Paris.

The Western Railroad Co. of France has an opportunity to show something in the way of electric traction at the Paris Exhibition. The line from Issy to Viroflay is designed to connect the Champ-de-Mars with Versailles, and is largely in tunnel and, of course, is worked by electricity. The central power station at Issy will furnish 9,000 kilowatts, using a five-phase current at 5,000 volts, which will be transformed at three substations. From this station also current will be furnished for lighting the stations and for various mechanical purposes about the stations.

The 10 electric locomotives which the company will put in service are shown by drawings. They are mounted on two bogie trucks, and each axle carries a motor. There are two types of these motors; one is mounted directly on the axle and the other is geared. There are two controllers, one at each end of the locomotive, so arranged that the motors form two independent groups, and the motors of one truck can be cut out entirely. These engines have Westinghouse air-brake as well as hand-brake.

Only about two kilometers of the line is now in operation, and this is worked by motor cars, the locomotives not yet being in service. As now used, each train has two motor cars, one at each end, and between them are run one or two cars without motors. Each motor car has two 40 h. p. motors. A train of four cars has 360 seats, and weighs about 90 tons. The maximum speed between stations is 27 to 30 miles an hour. This service was opened with the opening of the exhibition, and has been working regularly since.

The company has four compressed air locomotives for use at the Invalides station and for service in the tunnel, if required. These have two bogie trucks, the axles being coupled to and to. The motors are compound, each having two cylinders, the pressure in the high pressure cylinder being 284 lbs., and in the low pressure cylinder 142 lbs. The locomotives are provided with hot water tanks, each carrying 2,260 liters, and heated by steam blown in at a pressure of 258 lbs. The high pressure cylinders are 12½ in. diameter, the low pressure 20½ in., and the stroke is 22 in. These locomotives also have Westinghouse air-brakes and hand-brakes.



Automatic Block Signals on the Chicago & Alton—Corwith Junction to Zarleys.

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