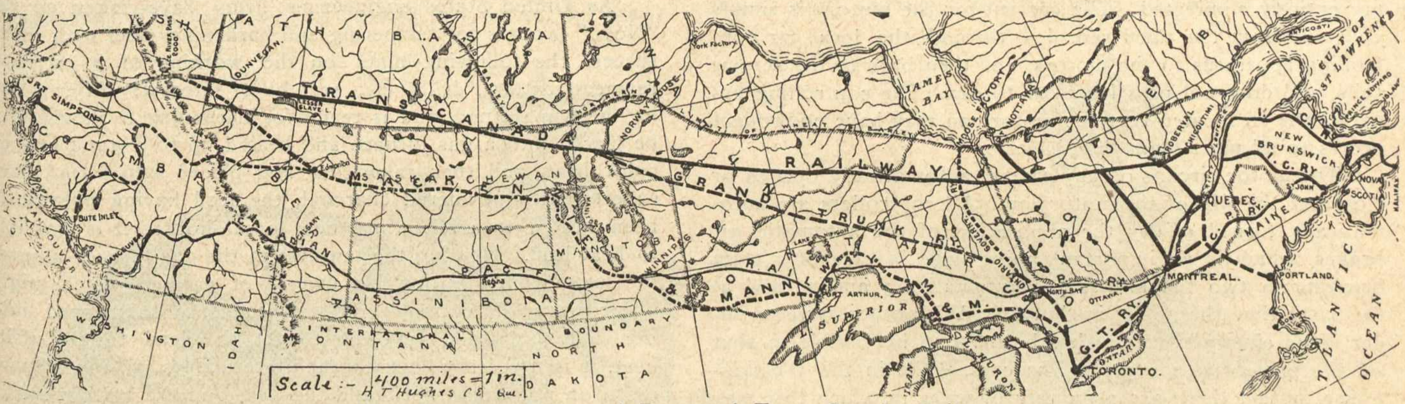
TRANS-CANADA RAILWAY.

The accompanying map, prepared by H. T. Hughes. C,E., for the promoters of the Trans-Canada Railway, shows the proposed route of that road from Quebec to Port Simpson on the Pacific Coast. The line will be the furthest north of all the trans-continental railways built or projected. The route of the proposed Grand Trunk Pacific Railway, as laid down on the map, is, of course, only approximate, as no surveys have yet been made. A table of distances has also been prepared by the promoters of the Trans-Canada, the following being the distances (approximate): Quebec to Port Simpson via Trans-Canada Railway, 2,831 miles; Quebec to Port Simpson via Grand Trunk Railway, 3,407 miles; Portland to Port Simpson via Grand Trunk Railway, 3,603 miles; Liverpool to Yokohama via New York, 12,089 miles; Liverpool to Yokohama via Trans-Canada Railway, 9,831 miles; Liverpool to Yokohama via Grand Trunk Railway, 10,944 miles (Portland); Quebec to Vancouver, 3,078 miles (via C.P.R.); Chicoutimi to Port Simpson, 2,705 miles; Quebec to Yokohama, 7,367 miles (via Vancouver); Chicoutimi to Yokohama, 6,645 miles (via Port Simpson); Vancouver to Yokohama, 4,290 miles; Port Simpson to Yokohama, 3,940 miles; Quebec to Nottaway, 570 miles; Roberval to Nottaway, 380 miles; Winnipeg to Quebec, 1,572 miles (via C.P.R.); Winnipeg to Chicoutimi, 1,284 miles; Winnipeg to Nottaway, 850 miles; Winnipeg to Churchill, 840 (projected); Halifax to Port Simpson, 3,516 miles; Halifax to Vancouver, 3,662 miles (via C.P.R.); St. John to Port Simpson, 3,419 miles; St. John to Vancouver, 3,387 miles (via C.P.R.); Boston to Port Simpson, 3,236 miles; Boston to Vancouver 3,248 miles (via C.P.R.); New York to Port Simpson, 3,368 miles; New York to Vancouver, 3,290 miles (via C.P.R.); New York to San Francisco, 3,303 miles; New York to Yokohama, 8,490 miles.



Map Showing Route of Proposed Trans-Canada Railway.

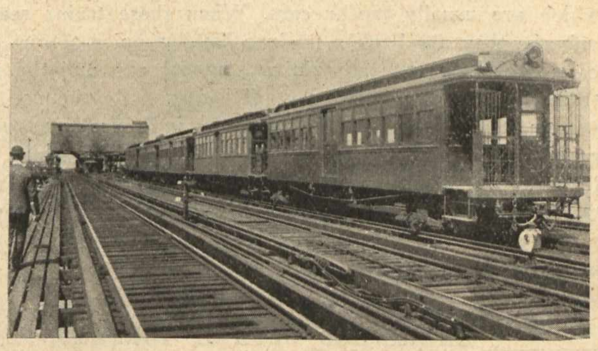
The following are given as the elevation of the summits of the different passes over the Rocky Mountains in Canada: Peace River, 2,000 feet; Pine River, 2,800 feet; Yellow Head, 3,800 feet; Crow's Nest, 4,425 feet; Kicking Horse, 5,400 feet.

ELECTRO-PNEUMATIC SYSTEM OF TRAIN CONTROL.

The Brooklyn Elevated Railway Company has just given an order to the Westinghouse Electric & Mfg. Co. for 210 multiple train-control equipments which will be used for the operation of electrically propelled trains on its lines. A few years ago the management of this road decided to discard steam locomotives and to operate all trains electrically. Before making such a wholesale change, however, it was deemed prudent to test exhaustively the different methods of handling electric trains. If the steam locomotive were to be replaced by simple electric locomotives, many of the advantages of electric traction would be sacrificed. In order to reduce the dead-weight hauled and to obtain a higher tractive effort when starting, it is better to place the driving motors on the trucks of several of the passenger cars of a train and thus take advantage of the weight of the cars than to put the motors on a locomotive, which must be artificially loaded down to give it the necessary adhesion. Other reasons for choosing a system employing a number of motor cars per train rather than a single locomotive were that, since the service is fluctuating, during a part of the day the large motors of the locomotive would be operated at a light load and consequently low efficiency. Moreover the trains could not be broken up into single units, as is possible when a number of the cars carry their own motor equipments.

The Brooklyn Elevated Company, therefore, went to the leading electrical manufacturers who had developed systems for controlling a number of motor cars in a train, and asked them each to equip a number of model trains for testing purposes. These trains were placed on the Brooklyn road a few years ago and have since operated in the regular daily traffic. The companies furnishing equipments were the Westinghouse Electric & Mfg. Co., of Pittsburg, the General Electric Co., of Schenectady, N.Y., and the Sprague Electric Co., of New York City. Careful records were kept of the number of miles run by each train, the number of accidents met with, the cost and time required for repairs, the comparative convenience in operation, and all other matters that might influence the decision. The result of this investigation has been the placing of the order mentioned above. All steam locomotives now in use will be in a short time replaced and trains will be operated by the Westinghouse system. In addition to the order for 210 cars, the company has already purchased about 150 equipments which have been in satisfactory operation for nearly a year.

The Westinghouse Multiple Train Control system has been developed by George Westinghouse, and, on account of his long experience in railroad and electrical matters, is eminently adapted for the operation of trains under everyday railway conditions. The Westinghouse system involves the use of compressed air for moving the current-controlling apparatus, electro-magnetic valves governing the admission of air to the controlling cylinders and low voltage electric circuits running



from car to car for controlling the action of the magnet valves. The connection for the low voltage circuits are the only ones which have to be established between the cars of the train, no air connections being required outside of the ordinary brake hose. A complete equipment for each motor car consists of two or four electric motors, a controller very similar to the controllers used on ordinary street cars, and one or two motormen's controlling switches, from any one of which all the car controllers on the train may be operated. The car controller, as stated, is similar in design to the ordinary form of hand controller which has been successfully used on electric street