

THE TRANSPORTATION PROBLEM IN CANADA, AND MONTREAL HARBOR.

THE following abstracts are from a paper read on April 7th, 1914, at a meeting of the Institution of Civil Engineers of Great Britain. The speaker was Fred. W. Cowie, B.A.Sc., M.Inst.C.E. The population of the Dominion of Canada is about 8,000,000, and the foreign trade per capita is \$125.

The population of Montreal, including the connecting municipalities, is about 600,000, and the foreign trade of Montreal per inhabitant is over \$600. As a comparison, England (United Kingdom) has a foreign trade per capita of \$125, Germany \$67, and the United States \$41.

The total land area of Canada is 3,600,000 square miles, so that the density of population is less than two per square mile, as compared, for instance, with thirty-one per square mile in the United States.

It has been stated by trade experts that the difference between the average price received by the producer of Western Canada and the price paid by the consumer of the food products is 33 per cent. For wheat for which the consumer pays \$1 the farmer therefore receives 67 cents; 33 cents are paid for transportation and handling, and to the selling organizations. It is equally vital, therefore, to the producers in Western Canada and to the consumers in Great Britain, that this latter percentage should be reduced to the lowest possible figure, so that the farmer may receive the full due for his toil, and the cost of living in Great Britain may not be unduly enhanced.

Another consideration which is of vital interest to Canada is the absolute necessity of collecting by her own people the transportation and selling tolls.

As an illustration, it may be stated that, although in Montreal harbor 60,000,000 bushels of grain were handled in 1913, nearly 100,000,000 bushels of Canadian grain were shipped in the same year through Buffalo in the United States.

The cost of transportation per bushel, from the average point of divergence to the United Kingdom, may be stated, for the various stages, as approximately 18 cents.

For every bushel of grain shipped through Buffalo there is therefore a loss to Canadian transportation and selling organizations of about 18 cents, or for 100,000,000 bushels \$18,000,000.

Transportation in Canada.—Even with these striking illustrations it is not easy to fully appreciate what is known in Canada as the "problem of transportation." A comprehensive view of the Dominion and the North Atlantic to Europe is shown in the paper by an original map drawn to scale (Mercator's Projection), showing Canada and the northern half of the United States, with the trade routes to Europe. The main routes are naturally "east and west," and the vast area tributary to the River St. Lawrence is geographically shown.

The "north and south" routes through the United States are principally by rail or by the Erie Canal from Buffalo to American Atlantic ports. The Erie Canal was created by the United States to offset the advantages of the St. Lawrence route. The magnificent railway systems between New York and Buffalo are the most powerful rivals of the "all Canadian" routes.

The opening-up of the vast productive areas of Western Canada, where it has been found that with one-tenth of the cultivable land under crop, 200,000,000 bushels of wheat, and double that quantity of other grains, may be grown, has established, within the last few years, entirely new transportation conditions.

With the tremendous tide of emigration from both Europe and the United States to the new provinces, this production will necessarily increase greatly, and the "problem" is, how to provide the required transportation facilities.

A table of transportation routes from the Canadian West to the United Kingdom is given. This interesting table is worthy of study, as not only present routes are shown but important projected and commenced lines of trade are indicated.

Great efforts are being put forth by the Canadian government and the transportation and other corporations to improve facilities, so as to cheapen and render available Canadian routes; but at the same time similar and extraordinary efforts are being made to improve Buffalo harbor, the Erie Canal, the rail routes, and the harbors of Boston and New York.

In the opinion of the author, who advances striking illustrations and argument, with equal effort, the advantages for future transportation should lie with the St. Lawrence route.

Montreal's Position on the Line of Route.—From the West to Montreal.—The transportation routes in Canada almost all lead to Montreal.

Up to the present the only real rival to the Montreal-St. Lawrence route is the United States route via Buffalo and New York. The western trunk lines of the United States have been improving their "north and south" connections so as to tap the three great western provinces of Canada. These railways provide excellent services to Duluth and Chicago.

A further diversion is made to the United States route at Port Arthur and Fort William. From this twin port at the head of the Great Lakes, the cheapest commercial navigation in the world enables grain and other products to be shipped to Buffalo. Between Buffalo and New York there are several splendid railway systems and the Erie Canal. The new Erie Canal, a modern barge-canal through the state of New York, giving a draught of 12 feet, will soon be completed at a cost, including harbors and damages, which is expected to reach \$150,000,000.

The New York and Boston port authorities are at the same time making every effort to improve their harbors, and to provide such attractive facilities as will capture at least a large share of this growing Canadian trade.

By the Canadian routes everything goes by rail direct from the west to Port Arthur. From the twin cities, Port Arthur and Fort William, there are, with modifications, two distinct routes, namely, the "All-Water" route, direct to Montreal, and the "Lake and Rail" route, through Georgian Bay to Montreal.

By the "All-Water" route to Montreal, a distance of about 1,400 miles, vessels are limited by the present Welland and St. Lawrence canals to a draught of 14 feet, or 2,500 tons. An excellent type of vessel has been developed for this service, and the trip from Montreal to Port Arthur and back is made in 14 days.

By the "Lake and Rail" route vessels of 10,000 tons ply between Port Arthur and ports on the Georgian Bay. The Canadian railway companies have established magnificent elevators at Port Arthur and Fort William, and also at several Georgian Bay ports, so that loading and discharging may be carried on with unsurpassed facilities. From the Georgian Bay ports splendid railways are being built to Montreal and existing lines are being improved.