

a free steaming boiler has been obtained where such a design has been used is an important one, and will have its effect on the future designs of draft appliances for large modern boilers. Mr. Muhlfeld's design is reproduced on pg. 137.

The Trans-Canada Railway.

A deputation from Quebec, consisting of J. G. Scott, General Manager of the Quebec and Lake St. John and the Great Northern railways, L. Evans, O. E. Talbot, M.P.; Lt.-Col. B. A. Scott, Hon. C. Langelier and Lt.-Col. Roy, with whom was G. T. Blackstock, K.C., of Toronto, addressed the council of the Toronto Board of Trade, on Mar. 10 in the interest of the Trans-Canada Ry. project.

J. G. Scott, who was the principal speaker, said:—Making use of the Lake St. John Ry., which is constructed and will form the first link in the project, the mileage will be as follows: Quebec to Port Simpson, 2,830 miles; Chicoutimi to Port Simpson, 2,700 miles; Quebec to Vancouver by C.P.R., 3,078 miles; Quebec to Yokohama via Vancouver C.P.R., 7,367 miles; Chicoutimi to Yokohama via Port Simpson, 6,645 miles, so that in point of distance the Trans-Canada will be about 370 miles shorter from tidewater to tidewater than any other transcontinental road, and about 700 miles shorter to Japan than the C.P.R., or 2,200 miles shorter from Liverpool to Japan than the New York-San Francisco route.

The summit between Lake St. John and the James Bay district is 1,200 ft., and the highest point reached in crossing the Rockies will be 2,850 ft. The enormous advantage of this low summit will be appreciated by comparing it with 5,200 ft. on the C.P.R., 5,800 on the Northern Pacific, and 8,200 on the Union Pacific. The country is so uniformly level that the elevation at Waswanipi, on the Nottaway river, south-east of James Bay, is 680 ft. above tide, and at Norway House on Lake Winnipeg, 900 miles further west, it is 710 ft. From the information so far obtained, our Chief Engineer is of opinion that we shall get a line having no grade exceeding 1% ascending west, and no grade exceeding six-tenths of 1% ascending east, at least on this side of the Rockies. The advantages of such grades and low summits in the cheapening of freight rates will be readily appreciated.

By a branch line from Winnipeg to the Albany river, southern Manitoba will get the shortest outlet to the sea, the distance from Winnipeg to Chicoutimi by such a line being less than 1,300 miles, and to Quebec 1,410 miles, as against 1,572 by the C.P.R. A short branch from Waswanipi to Nottaway will give Manitoba, Ontario and Quebec access to a good port on James Bay, a very important matter as the west coast of James Bay is very shallow. A short branch from the Saskatchewan river, east of Prince Albert, to the north end of Lake Winnipeg, will not only give the Canadian Northern Ry. the shortest outlet to the sea by several hundred miles, but it will also give it the shorter line from the Saskatchewan to Toronto—using part of the Ontario Government's Temiskaming and Northern Ontario Ry.—than if they built another line around the north of Lake Superior.

It has been contended that the location of the Trans-Canada is too far north. A glance at the map before you will prove that at no point will this road go north of the line of possible wheat cultivation, as established by the reports of the Geological Survey. In fact, in the Peace and Mackenzie river districts, wheat comes to maturity in latitude 61, about 300 miles farther north than our proposed line. The records of the Meteorological Service prove that the average summer temperature at every point between Quebec and Port Simpson is warmer than at Rimouski

on the lower St. Lawrence, and yet the county of Rimouski grows more wheat than any other county in the Province of Quebec. The same official reports show that the average snowfall in the James Bay territory is less than half that of Montreal, and we have had a remarkable proof of the correctness of this statement during the present winter by the fact that C. E. Perry, in charge of one of our engineering parties at the north end of Lake Winnipeg, reported that they had not enough snow for snowshoeing, and were able to do their work without using them. The soil of the whole of the country from Lake St. John to the Rockies is fit for cultivation. The Lake St. John district grows magnificent crops of wheat of a similar quality to that of Manitoba. In the wooded sections the forests of spruce are very valuable, and the rivers abound in magnificent water powers to turn them into pulp and paper.

Bishop Bompas, of the Anglican diocese of Selkirk, who has lived in those territories all his life, writes us that he approves of the location of the Trans-Canada from one end to the other, except that he would have liked to see the line a little farther north for the better development of the country. Sir Sandford Fleming approves of this location and says: "I regard the shortest line obtainable between the tidewater of the two oceans as quite long enough," and adds: "Regarded from a Canadian standpoint, I cannot conceive any public undertaking which would better meet the wants of the Dominion throughout its whole extent."

Sir William Van Horne says in a press interview: "The Trans-Canada road has started with better prospects than the C.P.R. had once. We would hail with delight a parallel route from the Atlantic to the Pacific to help us to develop the country. There is enough of it up there for us all."

So that the location of the Trans-Canada is not too far north.

But this enterprise has special advantages for Ontario. Not only will it give Toronto a short route to the Saskatchewan and Peace river countries, but it will develop by an east and west line the best part of New Ontario from the Quebec boundary line to the crossing of the Albany river, a distance of 350 to 400 miles. It has been contended that the Trans-Canada will have many miles to build, and that what is wanted is immediate relief for the freight blockade in the West, but our intention is to begin construction from the Ontario Government railway westward as soon as that road reaches the point of intersection; so that there is no reason why the Trans-Canada cannot reach the Northwest as soon as any other projected road. And by this mode of construction Toronto will be one of the principal bases of supplies during the building of the road, and after its completion will be the nearest city to the interior, an important point in connection with the sale of manufactures, agricultural implements, etc.

The Trans-Canada will be splendidly situated as regards seaports. On the Atlantic side it will have the choice of Quebec, with its deep-water docks and splendid accommodation for the largest vessels that can be built; at Chicoutimi, with the safe deep-water navigation of the Saguenay, the closest shipping-point to the Northwest wheat-fields; at Montreal by a branch line which the charter provides for; and in winter, the new bridge, now being built across the St. Lawrence at Quebec, will give the shortest possible line to Halifax and St. John, which very justly claim the winter export trade of the vast Northwest, which the Maritime provinces have paid their full share to pay for and to develop. The Trans-Canada is the only road which can safely be depended upon to give the winter trade to Halifax and St. John without danger of diversion to U.S. ports. And it is not unnatural that the disappointments of the past

should have made these ports very jealous of Portland. On James Bay there is a good port, with some dredging of a bar, at the mouth of the Nottaway, which will give access to 4,000 miles of coast-line of that great inland sea, with its vast undeveloped resources in fisheries and minerals. On the Pacific coast, Port Simpson is said to be the finest harbor north of San Francisco.

The Trans-Canada will not only help to remove the freight congestion in the Northwest, but its level gradients will very materially reduce freight rates on grain, a relief for which the farmers of the Northwest have long been crying out. A reduction of 3c. a bushel on the present freight rates would save them enough money annually to pay the interest on the whole cost of the road, and we hope to be able to reduce rates much more than that.

A most important consideration in connection with this road is its military advantage. Situated from 300 to 400 miles from the frontier at all points, protected, if need be, by fleets at Halifax, at Quebec, at Chicoutimi, at Nottaway and at Port Simpson, the Trans-Canada Ry. would be simply impregnable. We Canadians are a peace-loving people. We want to give all our time and all our energies to the development of our country, the finest in the world. We want to live at peace with our neighbors and with the world. We are averse to militarism, and although we enjoy the protection of the British army and navy, paid for by heavy taxes on the British ratepayer, there seems to be a sentiment in the country against contributing anything towards the cost of the army and the navy. At the same time we know that the exposed condition of our frontier, with our only rail connection with the west running close along the border for hundreds of miles, and sometimes across it, is a source of weakness to the Empire, and perhaps the cause of many weak bargains with the U.S. which we seem at times to resent. We know, or we should know, that a border raid could at any time destroy our railway communication at Winnipeg and at many points further east, and not only our railway, but also our telegraphic communication, and thus completely isolate the west from the east. Surely if we are going to build another transcontinental line it would be wise to locate it in such a way as to guard against this danger. It is a cowardly people that will not take any precaution for its own safety in case of trouble. If we will not contribute to the army and the navy what better contribution could we offer to the Mother Country than a line of railway which will cause Canada to cease to be the source of weakness and anxiety which she now is to the Imperial Government?

We have four parties of engineers in the field, one working from Roberval towards James Bay, another from Norway House eastward, one from Norway House westward, and a fourth laying out the terminal at Port Simpson, and working from there towards the Peace river pass. We do not pretend to be very strong capitalists, but I may say, without boasting, that the directors of our company, as a whole, are as strong financially as was the directorate of the C.P.R. during the first years of the existence of that company. All we ask from the Toronto Board of Trade is a fair and impartial consideration of this important question from a Canadian and patriotic point of view. I may say that we presented our case to the boards of trade of Halifax and St. John. We did not ask any expression of opinion from them. We left the question entirely in their hands and to their good judgment, and I am happy to say that shortly afterwards both boards, without solicitation on our part, passed resolutions completely endorsing the Trans-Canada project and recommending it to the Government.