

passenger and freight terminals which have been laid out in the heart of the city, as mentioned above. Two miles beyond, at Cartierville, 600 acres have been reserved for a divisional yard, with repair and erecting shops, and with a margin to be devoted to workmen's dwellings, etc. The Montreal terminal system (with its great tunnel) and the Cartierville yard are shown in fig. 3.

The line now skirts the banks of the Riviere des Prairies, one of the mouths of the Ottawa, for some six miles to mile 20, where it crosses to Isle Jesus and then skirts the east bank to mile 22, where it crosses another channel (the Riviere des Mille Isles) and reaches the mainland near St. Eustache. The line now runs as straight as the topography will allow to Grenville, where it joins the existing line of the C.N.Q.R., and crosses the Ottawa with it on a fine steel bridge, 2,000 ft. long, to Hawkesbury at mile 60. It then skirts the bank of the Ottawa for nearly 50 miles more, passing through L'Orignal and Rockland to Ottawa at mile 116. There are only two important bridges on this section, over the South Nation River and over Greens Creek near the city. Ottawa will be on a branch about a mile long to the existing Central Station.

The main line follows up the Rideau River and crosses it near mile 122. The Toronto branch leaves at this point, which has been called Rideau Jct. The main line swings away again towards the Ottawa and crosses both the C.P.R. and

The largest of these is Cedar Lake, 10 miles long. The scenery is very picturesque. The amount of agricultural land being very small, several hundred square miles of this and adjacent valleys have been set aside as a national park and game preserve. The line follows the Petawawa very closely, with heavy rock work and comparatively abrupt ascents in the canyons alternating with easier country and level grades along the lake expansions, to mile 289, where it attains an elevation of 1,100 ft. above sea level.

The rise has been almost constant, and although there are many miles of level there is very little reverse at any point. There is now, however, some four miles of descent to the crossing of the Kioskoku Lake, an expansion of the Amable du Fond River. This is one of the constructive problems of the road, being 1,200 ft. wide, with 40 ft. of water, over a not very reliable bottom of unknown depth. Eventually there will be a solid earth fill. Another divide, with an elevation of 1,140 ft., occurs at mile 306, after which there is a long descent to Lake Nipissing, at North Bay, where it is 460 ft. lower. About half of this is negotiated on a grade of 0.5%, compensated; the balance is intermittent, and nowhere more than 0.4%. At mile 339, the line again crosses the C.P.R. overhead, and at mile 344 reaches North Bay, the first town since leaving Pembroke.

#### Lake Nipissing to Port Arthur.

From North Bay the line parallels the C.P.R. along Lake Nipissing to mile 359,

large rivers which unite further north to form the Moose River. The country is much better and shows considerable areas of clay loam. At mile 577, the Apishkanagama (another large tributary) is crossed, and at mile 610 the Kapuskasing Lake. This again is a very attractive country, which continues across the Missinaibi at mile 632. Although the immediate surface is undulating, the general level is uniform.

At Oba, mile 686, there is one of the topographical freaks which are so common on this great plateau. A considerable stream, the Oba River, forks abruptly; part of it crosses the line and runs north into the Missinaibi, the balance turning abruptly south and after a circuitous course crossing the line at mile 696 as part of the Kabinakagami, which eventually empties into the Albany River many miles north of the Moose River. At mile 712 is another large stream, the Morrison or Shekak (hitherto not laid down on the maps), noted for the size, number and voracity of its trout. Still another large stream feeding the Albany system is the Obakamiga, at mile 740.

From this point westward the line runs into some rough Laurentian country again to mile 800, when it again emerges on to the great northern plain near Mackays Lake. It has crossed the height of land in the meantime, and crosses back again near mile 810. At mile 825 it crosses the outlet of Long Lake, known as the Kenogami River, which also swells the Albany. The lake is an extraordin-

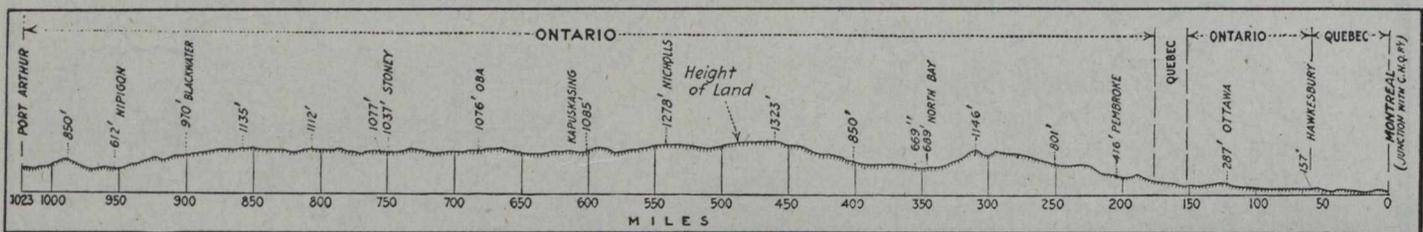


Fig. 2.—Profile of Montreal-Port Arthur Line, Canadian Northern Railway.

G.T.R. (Parry Sound branch) overhead, and after paralleling the river again for several miles crosses it at mile 154 to the Quebec side. It parallels it again for 22 miles, recrossing into Ontario near mile 176. This is the most important structure so far, necessitating a span of 300 ft. and several smaller ones. At mile 199 it again crosses the C.P.R. overhead, and at mile 206 runs into Pembroke.

So far the line has been in settled country and generally in limestone formation, following one of the great rivers of the continent for practically the entire distance. The securing of light grades has been a comparatively easy matter, but beyond this point the problem is entirely different. The line leaves the Ottawa and ascends the Indian River and almost immediately begins to rise. At mile 225, a divide is crossed which leads to the valley of the South Petawawa (another large tributary of the Ottawa) the line skirting along Grand Lake and some other expansions to mile 253. Another low divide is crossed into the valley of the Little Madawaska, down which the line runs to the main Petawawa. The work is quite moderate, but largely in rocks. The grades, after surmounting the Indian River divide, are almost level.

The Petawawa occupies a very marked depression running for over 100 miles parallel to the Ottawa. At points it narrows to the dimensions of a canyon, and again widens out sufficiently to form lake expansions two miles or more in width.

then crosses the Sturgeon River at mile 365 and follows its valley and that of one of its branches to mile 397. There it crosses another low divide into the valley of the Wahnapeite, and crossing this it skirts the south shore of the lake. At mile 427 it runs into the existing line from Toronto northward, which has been in operation for some years. This point has been named Capreol Jct.

The combined line now runs up the Vermilion valley through a country which has been proved to contain large mineral wealth. At Moose Mountain, hematite iron is being mined in considerable quantities; nickel, copper and some silver have been turned out at other points. There is also a good deal of timber being taken out at various points. The valley itself is somewhat remarkable. It cuts almost at right angles to the general strike of the country and leads up to an unusually low height of land between Lake Huron and Hudson Bay, 1,350 ft. above the sea, at an average grade of only 10 ft. per mile. This divide is so flat as to be imperceptible to the eye, and at its highest point is a spring pond in a local depression.

For 250 miles the line has been running through a country almost useless from an agricultural point of view. Where it has not been rock, it has been dry sand and gravel, but on the northern slope of the continent it begins to improve, and some of the valleys show good land and are well timbered. At mile 563, the line crosses the Ground Hog, the first of the

ary sheet of water 55 miles long, extending south to within 30 miles of Lake Superior. It formed one of the problems which the early C.P.R. survey encountered, and forced the line down to the immediate shore of Lake Superior. The effort to find some way round it or across it delayed the C.N.R. surveys over a year. At the south end it is a deep valley between high granite ridges, and the country on either side is almost inconceivably rough. At the north end, on the contrary, is a flat country in every direction, except south, and considerable areas of good land abut against it.

The Hudson's Bay Co. has had a trading post here for half a century or more, and within the last few years the French company, as it is called (Revillon Freres), has established another. Four long travelled canoe routes meet here. One from the south by the lake itself and a chain of lakes and rivers connecting it with Lake Superior near Jackfish Bay. Another starting from Lake Superior by the Pic River and Mackays Lake; a third comes in from Lake Nipigon to the west, and still another follows the Kenogami River to the Albany. This point is therefore a natural gathering place for the Indians of the country and an emporium for the fur trade. The line follows approximately the third of these routes, skirting the north shore of Little Long Lake and Wild Goose Lake.

At mile 854 it crosses the height of land for the fourth time and enters the basin of Lake Nipigon. Crossing the