

Sturgeon River at mile 870, the line makes for the valley of a parallel stream, the Blackwater, which it follows to mile 900. Leaving the Blackwater about five miles above its mouth, the line turns abruptly south, and at mile 908 comes out on the immediate shore of Lake Nipigon at Sand Point. For the next 50 miles the work is generally heavy and on side hill. The line follows the bold shore of Orient Bay, and from its head follows a curious valley between lofty trap mountains, partially filled in with glacial drift, once forming the outlet of the lake. At mile 912 is the only tunnel since leaving Montreal, 1,100 ft. in length through a bold trap bluff.

200 ft. to the dividing ridge between it and Thunder Bay. Immediately after crossing this divide is the heaviest piece of permanent trestle on the line, the crossing of Blende River at mile 998. This is 1,400 ft. long and 140 ft. maximum height. From this point into Port Arthur, at mile 1,023, there is a long descent on fairly easy ground to within two miles of the city, whence it is being arranged to use the C.P.R. line to a junction with the C.N.R. line already in operation from Port Arthur westward.

**Exploration and Surveys.**

The surveys for this long stretch of line (1,023 miles) have extended over eight years, although most of the work

established supply routes, elevations of lakes and rivers, direction of drainage, and the character of the surface geology.

From the information gained, a general route was laid down through governing points, only one or two of which have been abandoned as the result of fuller information. This being done, the regular survey was started and carried continuously forward from either end. The methods were rather different from, and it is believed an improvement on, the usual practice. The district was divided into two parts under as many experienced division engineers, probably the very best men for the task to be found in the country. To each of these was as-



Fig. 3.—Canadian Northern Railway Terminal Lines in Montreal, with Tunnel under Mount Royal to Central Passenger Station.

The Nipigon is crossed at mile 945 and the line then follows its west bank to its mouth, crossing the C.P.R. underneath for the last time at mile 952. Just below the mouth of the river on Nipigon Bay is a piece of construction which has given some trouble and anxiety to both the C.P.R. and the C.N.R. in passing round a huge bluff 600 ft. high fronting on Nipigon Bay. The older road has the "inside" track and is partly in cut. The new one is altogether in fill and the slopes have run out into 100 ft. of water and mud. This bluff rounded, the line leaves the bay and strikes across the head of Black Bay on very easy ground, From Black Bay there is a long rise of

(and that the most difficult of access) was completed in the past four years. From Montreal to Sudbury the country was fairly well mapped and had been worked over by lumbermen. Supplies could usually be taken in by wagons within a few miles of the camps. From Capreol Jct. to Lake Nipigon, on the contrary, was almost a terra incognita. A half dozen of the main canoe routes had been traversed by the Geological Survey and laid down on the maps, their information was misleading and generally worse than useless. One whole summer and parts of other summers were spent in mere exploratory work, and rough track and micrometer surveying. These

signed two full parties, averaging from 13 to 17 men each. One of these parties ran traverses and rough exploratory lines ahead of the other and kept from 15 to 25 miles in advance of it. The other followed with trial lines and location.

The object of this was threefold. (1) The locating party should always have a knowledge of the country ahead, sufficient to prevent running into a cul-de-sac and having to back out again with much loss of time. (2) Both parties were kept on the same supply route and attended to by the same gang of packers and canoe men. (3) Both parties could be kept in touch with one another and completely