Chateauguay and Northern Railway.

There is being added this season to the railways entering Montreal a short but important piece of line, connecting with the Great Northern Ry. at Joliette and having a magnificent entrance into Montreal from the north through Maisonneuve and Hochelaga, with a fine terminal, now under construction, at the corner of Moreau and St. Catherine sts. The Chateauguay and Northern Ry., leaving Montreal, parallels the existing line of the Montreal Terminal (Electric) Ry. on a 40-ft. right of way secured from that company for a distance of about 12 miles to Bout de L'Isle, where the Terminal Ry. ends. Here the line curves to the right, leaving the Terminal line and then crossing it by means of an overhead crossing—a through girder span and concrete abutments over Park avenue—then crossing the Ottawa river, or as it is here called Rivière des Prairies, passes the village of Charlemagne and, turning northeast, runs in a straight line beside the L'Assomption river some seven miles to the town of L'Assomption. Here the line curves to the left and runs in a northwesterly direction for about 2½ miles to where it crosses, nearly at right angles, the C.P.R. main line between Montreal and Quebec and, somewhat less than a quarter mile further on, the L'Achigan river; then, curving to the right, it passes the town of L'Epiphanie, and after crossing the St. Esprit river, runs in a direct line for about 6½ miles to a crossing of the Lac Ouareau river, thence on another tangent of about 4½ miles it connects with the Great Northern Ry. in the town of Joliette.

The country through which the line passes is a level agricultural district, well settled and prosperous, intersected by numerous streams and by a number of deep gullies running to the rivers, and all open, with the exception of some three or four miles between L'Epiphanie and Joliette. The profile shews a gradual rise in the direction of Joliette but with very easy gradients, the heaviest being 0.6 ft. per 100, the sharpest curve on the line being 2°.

From an engineering point of view the feature of the line is the number and cost of the bridges compared with the length of the line, there being over 3,400 ft. of steel bridging and trestling in the 36 miles, exclusive of permanent culverts and overhead road crossings. Taking the bridges in order from Montreal, the first is Bout de L'Isle bridge, a combined railway and highway bridge across the Ottawa river, which is divided into two channels by Isle Bourdon. The bridge crosses the first or west channel by 8 spans of 140 ft. each and one of 200 ft. in the centre, together with a short girder span of 46 ft. at each end to the shore abutments, making in all a length of 1,412 ft. The piers and abutments are of masonry on concrete foundations resting on piles. The bed of the river was found to be of very firm blue clay into which piles were driven about 2 ft. 9 in. apart; upon this concrete was deposited through the water in bottomless caissons to a level of 1 ft. below low water and well riprapped, and the slopes of the embankments in front of the abutments also protected by hand-laid riprap. Upon the concrete foundations rests the masonry of grey limestone from the Terrebonne quarries, The piers in this channel are 30 ft. in height and are built with a batter of 1 in 24 on all sides, with a cutwater extending up about two-thirds of the height, and the down stream ends rounded, giving the whole a substantial and handsome appearance. The east channel is crossed by seven 140-ft. spans and two 76-ft. plate girder spans, making a total length of 1,132 feet. The piers in this channel are of the same design and material as those of the west channel, but are 2 ft. less in height, and as the water in this channel is much shallower than in the other, the contractors were enabled to cofferdam all the piers, pump them out and deposit the concrete dry, the depth of concrete in the east channel being only 4 ft. against 16 to 21 ft. in the west channel. The superstructure for this bridge, as well as for the other bridges on the line, was supplied and erected by the Dominion Bridge Co. The 140-ft spans are through trusses, with parallel top and bottom chords and inclined end posts, 5 panels each, the 200-ft. span at the centre of the west channel being higher at the centre of the truss. The railway, single track, is carried in the centre between the trusses, which are spaced 17 ft. 9 in. centre to centre of trusses, while the highway portion of the bridge consists of two roadways 10 ft. clear from truss to railing on each side of the bridge, carried on brackets outside of the trusses and with heavy latticed railings 4 ft. 10 in. in height, making altogether a very handsome and well-proportioned structure.

The next bridge is that over the L'Achigan river at L'Epiphanie, which consists of one 140 ft. deck truss span in the centre and two 50 ft. plate girder deck spans. The piers and abutments of this bridge are of concrete on bedrock, the piers in the river having a height of about 20 ft., the height of the truss bringing the track about 50 ft. above the bed of the river. The dimensions of the piers are 18 ft. in length with a width of 6 ft. at the top, and a batter of 1 in 24 ins. on all sides, and having rounded ends. The abutments are 20 ft. in width by 8 ft. at the bridge seat, and the slope of the embankment runs in front of them towards the piers. About a mile further on is the St. Esprit river bridge, which consists of one 75 ft. and two 30 ft. plate girder deck spans, the piers and abutments being of the same general design as those at L'Achigan and with rounded ends. The Lac Ouareau river bridge consists of one 140 ft. deck span crossing the main channel of the river, and a 50 ft. plate girder span at the easterly end with ten 30 ft. bents of steel trestle on concrete pedestals, ending with an abutment to hold the bank at the western end. The piers and abutments of this bridge are also of concrete and of the same general design as the others.

In addition to the above mentioned structures, there are a number of concrete arch culverts, 1 of 10 ft. span just outside of Montreal, and between Charlemagne and Joliette; 2 of 6 ft., 1 of 8 ft., 2 of 10 ft., 1 of 14 ft. skew arch, and at the Ruisseau Vacher a 25 ft. concrete arch culvert. The concrete is composed of one part cement, two of sand, and six of broken stone. Other small culverts are of open beam cedar.

The fencing is Page wire, with posts 16½ ft. centres, 8 ft. long, standing 4½ ft. above the ground.

The piling for the Bout de L'Isle bridge was done on the ice during last winter, and work on the concrete and masonry was commenced in April last. On Nov. 16 we were advised that the substructure for both channels was completed. A temporary trestle was erected across the east channel to facilitate construction, and trains have been run over it. The other bridges are completed, also all the concrete culverts with the exception of Ruisseau St. Pierre, which was expected to be completed by Oct. 31. The superstructure of the Bout de L'Isle bridge was begun in July, and is now completed across the west channel with the exception of flooring and railings. On Nov. 16 three spans of the superstructure over the east channel had been erected.

The grading, which has all been done this year, is practically completed, and tracklaying is now being vigorously pushed at three points, L'Epiphanie, Joliette and from Montreal. Out of 36 miles, all but 2½ miles had been laid up to Nov. 25. The company has secured a convenient ballast pit near L'Assomption, where a steam shovel is at work, and the track is being rapidly ballasted. The rails used are 70 lbs. per yard, and 33 ft. long, 4 bolt angle plates and ties laid 22 in. centres. Owing to the flatness of the country, material to make the heavy fills at the gullies before mentioned and at the approaches to the bridges was difficult to obtain, and in some places large areas of extra land had to be acquired from which to make the fills, notably across Isle Bourdon in the Ottawa river, where the dump is required not only for the railway but for a 14 ft. roadway on each side. These roadways, however, are carried down from the west channel on a 5% grade to the centre of the island and up again on the same grade to the east channel, and also at the east and west approaches on the main land. At the Bout de L'Isle, or west end of the bridge, a 3-posts temporary trestle has been erected over 1,000 ft. long, and another at the Charlemagne end, 1,460 ft. long, is under construction. These trestles will be filled in from the ballast pit by train. Fencing and telegraph line are well under way, and were expected to be completed by the end of Nov.

Stations are located at the following points with distances between as stated:—Charlemagne, 13.5 miles from Montreal; L'Assomption, 20.6 miles; L'Epiphanie, 23.7 miles; Ste. Marie Salomie, 29.3 miles; Joliette, 36.2 miles. At each station a passing siding is constructed 2,200 ft. long, the station and freight house being on the main track, with a 12 ft. platform about 200 ft. long, and a spur freight track running in behind the freight house. The design adopted for the passenger stations which are now under contract, shews a building 1½ stories high, having a curved roof extending 7½ ft. over the platform all around, and with flat-topped dormer windows, the whole appearance being attractive and picturesque. There are two sizes: the smaller, 24 ft. by 40 ft., and having on the ground floor general waiting room, agent's office, baggage and express room, with 4 living rooms upstairs; and the larger, 24 by 50 ft., having in addition a ladies' waiting room on the ground floor. With the exception of the one at Charlemagne, which is to be of brick, the buildings are of wood with shingle roof, and walls covered with American clapboards 3 in. to the weather. A water tank of 60,000 gallons capacity will be located at L'Epiphanie, and another at Montreal. The Montreal terminus is at the corner of St. Catherine and Moreau Sts., where a handsome station will be built, together with the requisite terminal facilities.

The engineering staff is as follows: F. A. Hibbard, late of the Michigan Central, Chief Engineer (to whom we are indebted for these particulars); C. E. Macnaughton, R. M. Charlton and J. O. Montreuil, Assistant Engineers in charge of three sections of the work; A. W. H. Stimpson, C.E. in charge of the draughting department at the office at Bout de L'Isle, with A. Langlois as assistant. D. J. Mullarkey is Chief Inspector.

The contractors for the greater part of the work, viz., substructure of bridges, grading, fencing, telegraph line and concrete culverts, Charlemagne to Joliette, are the F. C. Dunn & Co. J. B. Laflamme is their superintendent of works. In addition Isaac Kert has the contract for the fill on Isle Bourdon, and Schell, Bonneville and Purcell for the grading between Bout de L'Isle and Lasalle St. Maisonneuve. The balance of the work, wooden culverts, tracklaying and ballasting, is being done by the company under the superintendency of J. Rowley.

The company has every reason to be pleased with the excellent showing made in completing 36 miles of railway, with so many important and costly structures, in one season, and it is largely owing to the efforts of H. H. Melville, the Vice-President of the Company, that the work has been pushed in such a