

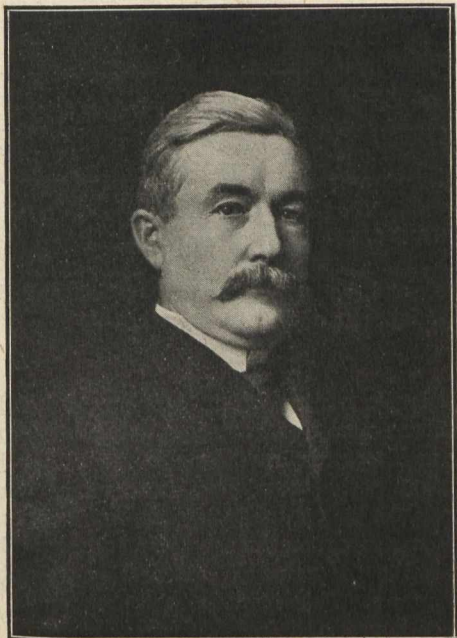
TORONTO-SUDBURY BRANCH C.P.R.

This week saw the opening of 260 miles of new roadway in the Canadian Pacific Railway system, and the completion of one of the most perfect pieces of Canadian railway.

For many years the C.P.R. had contemplated a Toronto-Sudbury line, but it was not until 1903 that they actively commenced construction. In 1898 Mr. H. D. Lumsden, now chief engineer of the National Transcontinental Railway, located for the C.P.R. a line from Sudbury to Kleinburg on the Owen Sound branch, but when the C.P.R. were ready to build in 1903 the requirements as to grades and curvature were so much in advance of those of fifteen years before that new location parties were sent out. The reconnaissance survey was made by H. M. Killey, and the final location was made by parties under the following locating engineers, Messrs. Killey S. Keemley, H. Carry, and J. K. Macdonald.

The line was located with a maximum curvature of four degrees and a limiting gradient of 0.3 per cent. In construction these limitations were not perceptibly departed from.

In 1903 the contract for the section from Rumford to Byng Inlet, sixty miles, was given to Foley Bros. & Larcen. This section was the heaviest work on the line. Eighty per cent. of the excavation was granite rock, and some of the cuttings were one hundred feet deep. This section was practically completed in the spring of 1905.



Mr. J. W. Leonard, Manager of Construction, 1903-7.*

In the spring of 1905 a second section was let. This section extended from Bolton, on the Owen Sound branch, to Parry Sound, a distance of about one hundred and twenty eight miles. The work was let to George S. Deeks & Company, and constructed by the Toronto Construction Company. By November, 1907, this section was completed.

The section from Parry Sound to Byng Inlet, forty miles, was let in the fall of 1906 to Ross-Harris, of Montreal, and this section together with the diversions between Bolton and Toronto, built by John Begg, of St. Catharines, has just been completed.

The difficult engineering work on this line arose because of the necessity of light curves and grades and a direct line, which made necessary the crossing of the large waterways at right angles, thus precluding the use of valleys as an easy path for construction.

The most important bridges and trestles are the Willow Creek trestle, 1,300 feet long, 110 feet high and containing some 750,000 f.b.m., the Severn River Bridge, composed of a riveted truss 20 feet and two 60 foot deck plate girders; the Parry Sound Viaduct; the Byng Inlet trestle, 2,600 feet long, and the French River Bridge, 530 feet long, made up

of a warren truss of 415 feet feet, and two 60 foot deck plate girders.

The French River Bridge was fully described in the Engineer of June 5th.

The Parry Sound Viaduct spans the Sequin River, and is over a portion of the town of Parry Sound.

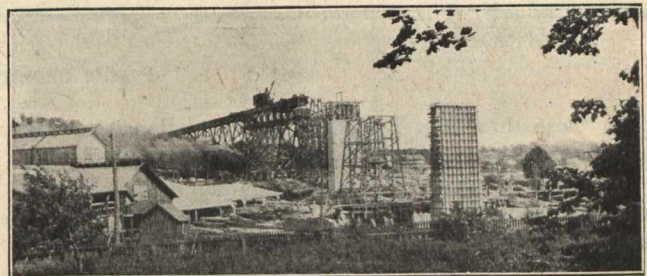
The structure consists of twenty-six spans of various lengths, consisting of twenty-two deck plate girder spans, two 125 feet deck lattice spans, and two 165 feet deck lattice spans, all resting on ten steel towers of varying heights from 35 feet to 90 feet, and the whole steel superstructure is supported on forty-seven concrete piers, consisting of two abutments, one at each end of the bridge, five large piers for supporting the heavy spans, and forty pedestal piers, one under each of the legs of the towers.

Three of the big concrete piers are 90 feet in height. The total length of the steel in this bridge is 1,700 feet, and the total distance of the viaduct from bank to bank is 2,800 feet.

The height of the bridge from the top of the rail to the level of the water in the bay is about 125 feet.

The total weight of the steel in the various spans and towers of the bridge is 3,500,000 pounds.

The erection of this bridge was undertaken by the Hamilton Bridge Works Company, of Hamilton, and completed with plant, appliances, and tools of the very latest engineering practice, and it is interesting to note that twenty spans out of the twenty-six were placed in position with the steel erection car, or derrick, and without falsework or scaffolding of any kind. The two 125 feet deck lattice spans and one of the 165 feet deck lattice spans were erected from falsework, or scaffolds, in the usual way, the material being delivered to the spans with the steel derrick car referred to.



Parry Sound Viaduct, in Course of Construction.

The other 165 feet deck lattice span over the River Sequin was erected as a cantilever without the use of falsework.

As it crosses over the yards and tramways of the Parry Sound Lumber Company, the Railway Commission ordered that a large portion of the bridge shall have a solid deck or floor with steel railing six or eight feet high, so as to prevent the falling of sparks and cinders on the lumber piles.

The main line is laid with 80-pound steel C.P.R. standard, the sidings with 56 and 72-pound steel. The sidings are 3,000 feet long and are placed approximately every five miles. With but few exceptions station houses are built and operators installed at each siding.

The only division point on this section is at Muskoka, 130 miles from Toronto. Here an eight stall concrete round house has been erected, also a concrete engine house and machine shop. A central heating and lighting plant has been installed, oil house and sand house erected and also a coal chute equipped with machinery electric driven. The water supply is secured from Stewart Lake, a body of water some 800 acres in extent, and stored in a 50,000 gallon tank, 35 feet above rail level.

Besides the mail line the division yard contains eight siding, two repair and two storage tracks, together with leads to engine house and the 70-foot turntable.

The C.P.R. do not make a practice of making known contract prices, but it is understood that the prices for work on this line would average about as follows:—

Clearing, per acre.....	\$48.00
Grubbing per station of 100 feet and on borrow pits per 2,800 square feet.....	20.00

* See Can. Eng., page 147.