

sist of one 105 ft. and one 60 ft. deck plate girder span on stone abutments and centre pier at the Vermillion River crossing, 17 miles west of Sudbury, one 180 ft. through riveted truss span at the Spanish River crossing, mile 42, one 176 ft. through riveted truss span at the second crossing of the Spanish River at Espanola (built in 1901) and two 100 ft. girder spans at two other points together with a 36 ft. deck girder span on concrete at an overhead crossing of the government trunk road near Espanola. These major structures are supplemented by a number of timber trestles and pile bridges. At Little Current, in order to cross the channel, in front of the town, through which there is considerable vessel traffic, a bridge, some 600 ft. long with a draw span is required. This structure will be erected this year.



View of Roadbed at Mileage 87, S. C. & H. B. Ry.

The traffic expected for this railway consists of ore, pulp and paper, coal and the products of the Manitoulin Island, which previous to the construction of this line, was entirely dependent on water communication with the main land. This island is 90 miles long averaging 8 to 12 miles wide, and is capable of great development. The population at present is about 20,000 and at least one-half of the island is fine agricultural land, particularly adapted to hay and stock raising. The construction of the Algoma Eastern formerly known as the Manitoulin & North Shore Railway has been most eagerly looked forward to for years by the Manitoulin Islanders.

The above work has all been in charge of the writer, as chief engineer of both roads. On the Algoma Central & Hudson Bay G. F. Horsey and C. Le B. Miles are in charge of the work at the north end, and L. C. Maxwell and J. A. Hedgecock at the south end as division engineers. B. E. Barnhill is division engineer of the Algoma Eastern with headquarters at Sudbury. W. C. Franz is general manager and G. A. Montgomery superintendent of both roads.

ANOTHER ACCIDENT ON WELLAND CANAL.

Navigation in the Welland Canal is tied up as the result of an accident at lock 23, near Thorold, at 11.30 a.m. August 2nd, when the steamer Wiley M. Egan, bound light from Deseronto to Ashtabula, crashed into the lock and carried away all four gates. Water from the upper levels rushed through the narrow enclosure into the lower level of lock 22, carrying the boat back some distance.

New gates were sent from Port Dalhousie, and Superintendent Sullivan notified, but the placing of them will take some time. The loss is estimated at about \$8,000.

PORT ARTHUR WATER SUPPLY.

The city of Port Arthur and Fort William in experiencing the growth and development which has been their lot during the past few years have at last had to face the problem of an abundant supply of pure water for drinking and domestic purposes. The supply of these centres has for many years been Lake Superior, and with the intake many thousands of feet from the shore this source left nothing to be desired, until the industries, many of which located along the water front began to pollute the water front with their discharged refuse; when this pollution reached the proximity of the intake, the matter took on such a serious aspect that the corporation council requested Mr. T. Aird Murray of Toronto to make a report on a possible future supply from certain sources north of the cities, and generally known as Hazelwood Lake and Current River; if this were not practical to make such recommendations as would give the citizens a clean and efficient service for considerable time to come.

In addition to the fact that the water on the land side of the municipalities was practically free from pathogenic bacteria and organisms, this source commended itself on account of the possibility of drawing the supply to the taps by gravity and thus reducing pumpage expenses.

That it is entirely feasible to obtain an abundant supply of water from the Current River at a static head requisite for city purposes, has been demonstrated by surveys and levels. At a point immediately above the Cascades a level of water may be obtained about 400 feet above the level of Lake Superior. This is practically the nearest point from which water can be diverted by a gravity system and the relative costs and efficiencies between a gravity and lake supply are based upon water being diverted from the river immediately above the Cascades.

In order to make a favorable comparison between the two systems it is necessary to assume an equal volume of supply by both gravity and pumping. In the preparation of the report Mr. Murray assumed that the quantity made available be 10,000,000 gallons per day, equal to a per capita supply of 100 gallons for a population of 100,000.

The feasibility of obtaining a supply from Hazelwood Lake was discarded after an investigation, owing to the boggy nature of the water shed and the increased distance from the cities which necessitated additional outlay for pipe, etc.

Chemically and characteristically, the water in Lake Hazelwood, in Hazelwood Creek near the junction at Current River, and in the Current River itself are the same for all purposes.

It is reported that, before the natural level of Hazelwood Lake was raised and flooded lands added, that the water was clear instead of bog colored as at present. At the present time the bog coloring matter both in Hazelwood Creek and in the Current River, is extremely high and for all practical purposes, may be taken as similar in content. So high was the color of this water that the different phases of the chemical analyses of the same, depending on the color of the reagents and precipitates, was rendered extremely difficult and to this fact the slight variations in the table of analysis is due. In the tabulation of the ammonias, this, of course, does not hold, for the water is distilled at as constant a temperature as possible before the reagent is added to compare the tint.

It is possible that if the flood land was scraped and all brush, weeds, tree stumps and soil to a depth of at least one foot were removed that the original clear color might be recovered.