

NEW SOFT WATER SUPPLY FOR GREATER WINNIPEG IS PUT INTO SERVICE

By W. G. CHACE

Chief Engineer, Greater Winnipeg Water District

ST. Boniface was the first of the municipalities associated in the Greater Winnipeg Water District to tap the new soft water supply,—on the afternoon of Friday, March 28th. The city of Winnipeg and those municipalities which receive their domestic supply from Winnipeg's mains were first supplied on Saturday, April 5th.

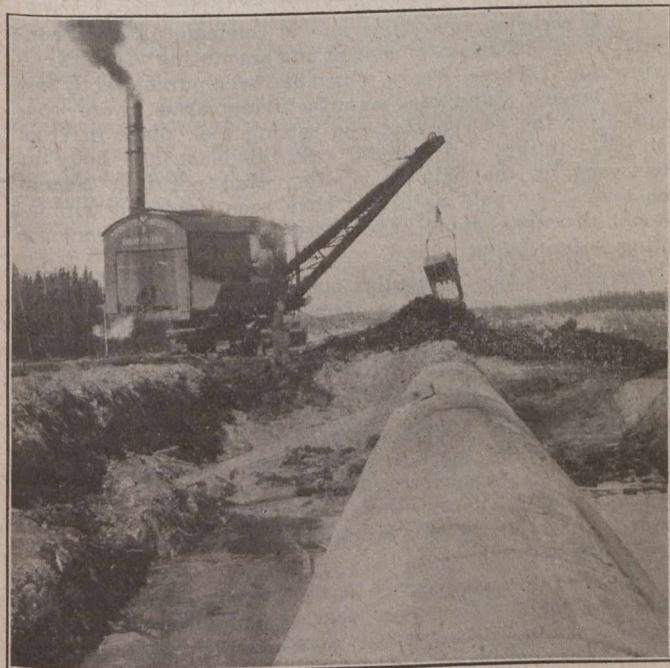
There is a general chorus of approval of the new supply, an appreciation of which may be understood when it is known that the previous artesian supply contained nearly 500 parts of hardness per million, whereas the new supply contains but about 40 parts.

The new supply, although coming from an open lake, is as colorless as was the sterile underground water previously used and contains but a minimum of living organisms, mostly invisible, since it is derived from a watershed wholly Laurentian and uninhabited except for a few Indians on their reserves.

These deliveries mark the successful completion of an ambitious project undertaken in 1913 and courageously carried through continuously in spite of the financial conditions which were caused by the great world upheaval.

Brings Water 95 Miles

The Greater Winnipeg Water District, comprising the cities of Winnipeg and St. Boniface, the town of Transcona and portions of municipalities adjoining Winnipeg and St. Boniface (namely: St. Vital, Fort Garry, Assiniboia, and East and West Kildonan) has an area of about 92 sq. miles. Pumping stations are maintained by the two cities and by Transcona, and the more thickly settled portions of the



BACKFILLING 7 FT. 7½ IN. BY 6 FT. 5¼ IN. AQUEDUCT IN WET TRENCH WITH WET MATERIAL

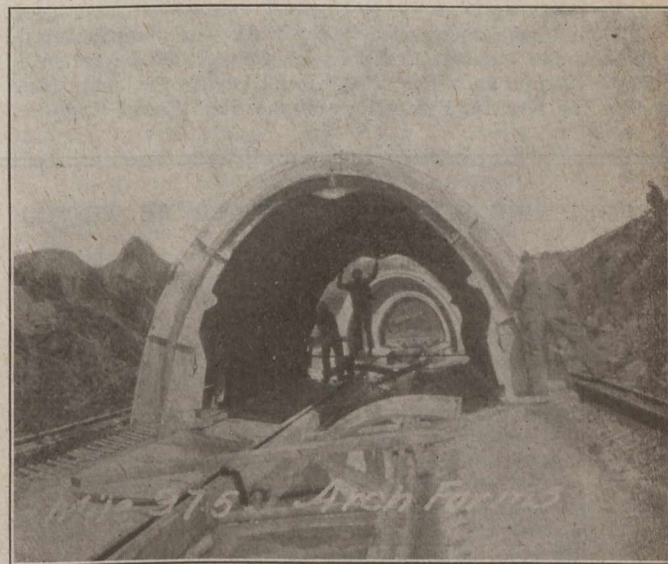
other municipalities receive water from extensions of the mains of the two cities.

The original report, upon the basis of which the citizens decided to develop the soft water scheme, was prepared by Rudolph Hering, Frederic P. Stearns and James H. Fuertes, whose estimate of the costs of the works necessary for the bringing of 85,000,000 Imperial gallons per day a distance of 96 miles, was \$13,050,000. This estimate did not cover the cost of necessary lands, interest during construction, the cost of necessary lands, interest during construction, discount on bond issues, nor certain other recoverable but necessary, temporary, equipment items. Now it is proven

that that amount of cash was sufficient, in spite of the extreme conditions of the labor and material market during the past four years, to build the works intended.

The three engineers suggested that five years would be the reasonable duration of period of construction, and except for one link the conduit was completed last autumn within the five year period. However, spring is the proper season in this climate for the substitution of soft water for the previous hard water supply, and it may be properly said that this, the largest municipal work hitherto attempted in Canada, has been completed on time and for the money estimated.

The debt created for the purpose becomes not only a lien upon the works constructed, but is also a first charge upon all the lands included in the district. The annual



ERECTING STEEL ARCH FORMS FOR 10 FT. 9 IN. BY 9 FT. AQUEDUCT

costs for interest and sinking fund are, by act of the Manitoba legislature, to be paid from taxes collected from assessment of the lands alone. The costs of operation and of maintenance of the works are to be collected by the district from the sale of water to the individual municipalities drawing same from the district's conduit. This year there were some protests made to the legislature, requesting certain modifications of these principles, but the questions were laid over for one year to permit thorough discussion by the interested parties.

The new conduit delivers by gravity from Indian Bay, on Shoal Lake, Ontario, a branch of the Lake of the Woods, to reservoirs upon the surface of the ground at the western terminus, a total distance of 96.3 miles, with a total fall of 294 ft. The easterly 84.62 miles of this conduit, designed for capacity above mentioned, will deliver 100,000,000 Imperial gallons a day, and at the western end of this section there will be established in the future a 250,000,000-gallon reservoir; west of this point, 11.7 miles of pressure lines now built will have a capacity of 60,000,000 Imperial gallons a day and this portion in the future will be duplicated.

Nineteen Miles of Pressure Pipe

Of the entire length, 77.5 miles were built as a horse-shoe-shaped, open-flow section, in sizes depending on the slope of the profile available, and 18.8 miles consists of reinforced concrete pressure pipe for heads varying up to 90 ft. Tests of individual sections of considerable length under full working pressures have shown that the losses of water will be negligible, totalling for the 96.3 miles less than two-tenths of one per cent. of the capacity of the structure. With the exception of about 1,200 ft. at the Red River crossing, the entire line is of plain or reinforced concrete.

The work was done almost wholly by local contractors. The Winnipeg Aqueduct Construction Co., an association of