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IMPROVEMENTS TO WATER SUPPLY AT PORT HOPE, ONT.

NOTES ON THE DESIGN AND CONSTRUCTION OF THE NEW 600,000-GALLON-PER-DAY SLOW SAND FILTRATION PLANT, INTAKE, RESERVOIR AND PUMP HOUSE, WHICH ARE NOW NEARING COMPLETION.

OWING to pollution of the infiltration wells upon which the town depended for water, Port Hope, Ontario, last fall had to consider other methods of obtaining a potable supply. Three infiltration wells and a filter gallery had been located near the shore of the lake. It was found that these were being polluted by drainage from the town site; also insufficient water was being obtained from them. Shallow trenches were dug beyond the infiltration wells and a temporary pumping station kept these trenches full. The water so supplied filtered back through the sand into the wells, and thus increased the supply. It was foreseen that this method could not be continued during the winter, because the shallow trenches would freeze, and besides, it did not remedy the serious pollution.

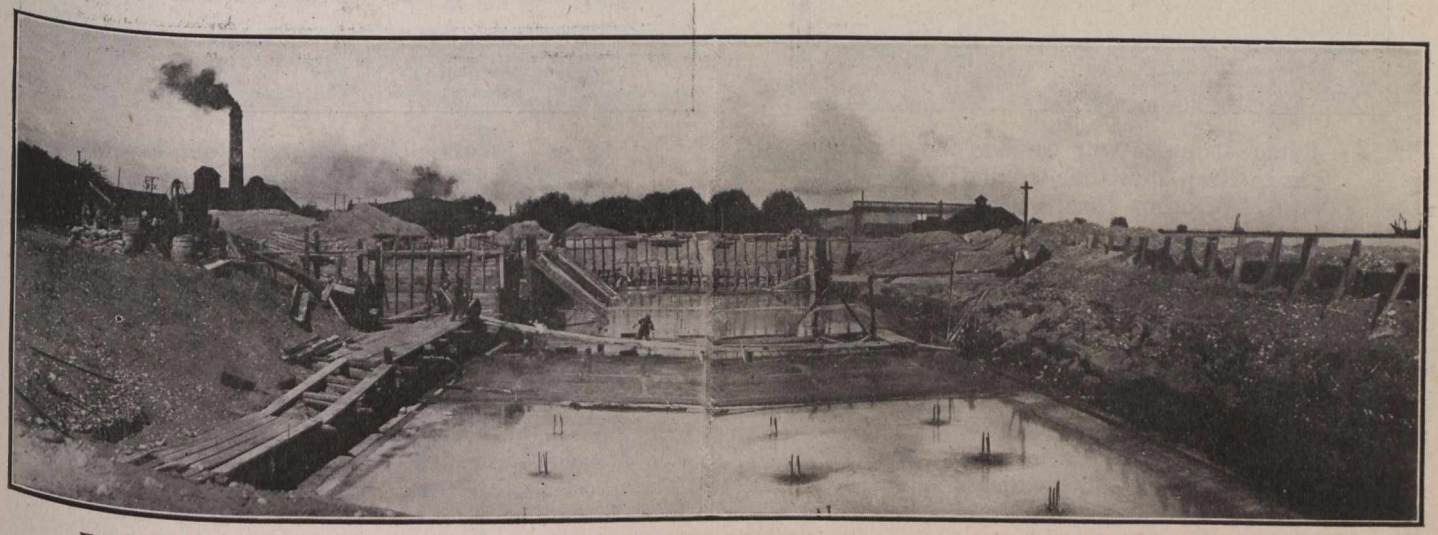

Fig. 1.—General View of Construction of Floor of Filters, Showing Steel Dowels for Columns. The Main Pumping Station is Shown in the Background at the Left.

In October, therefore, the town called in a consulting engineer, and voted the necessary money to obtain a permanent pure supply. No other source of supply excepting Lake Ontario was considered, because the distribution system and the pumping station were arranged to receive the supply from Lake Ontario, and also because of the much greater cost involved in piping from distant sources.

The consulting engineer recommended the erection of a slow sand filtration plant, because the excavations made for the infiltration wells were admirably suited to such filters, practically no other excavation being necessary. Also, good sand and gravel were readily available, thus reducing the cost of such filters, and thereby reducing the annual interest and operating charges to such an extent as to be lower than they would be for a mechanical gravity filter.

Intake.—An intake pipe 14¼ inches internal diameter was laid to a point in 10 ft. of water, 1,800 ft. from the filters. By running the same length of intake into the lake at a different angle, supply could have been obtained at 20 ft. depth, but this supply would have been from the vicinity of rapidly shifting sand. The vicinity to which the intake was laid has a rock bottom, and the water was found to be much clearer there than at the 20-ft. depth. For about 900 ft. from the shore, a channel was dredged sufficient to allow a covering of 2 ft. on the pipe, and for the remainder of the distance, sufficient dredging was done to be able just to bury the pipe. The outer 900 ft. of the intake is laid partly in clay and boulders and partly in rock.

The contract for laying the intake was awarded to J. F. Boyd, of Sault Ste. Marie, Ont. It will be completed in about four weeks.

The intake pipe was connected up in 90-ft. lengths, with a bulkhead at each end so as to float it. It was towed into position, sunk by admitting air, and connected