

There were, in addition, several deck scows 70 feet by 24 feet by 6 feet for carrying materials such as piles, broken stone, etc. The sand required for concreting was taken directly from the bed of the lake.

Pipe Line.—The pipe line points in a southwesterly direction from the Island, as indicated in Fig. 2, which shows clearly the connections of the old and new pipe with the pumping station. The course follows the bed of the lake into about 110 feet of water. The last several sections showing its position as the decline assumes a steep gradient, is indicated in profile in Fig. 3.

The pipes were, as stated, of riveted steel, 6 feet in diameter. They were manufactured by the Canada Foundry Company, Toronto, and delivered to the city at John Street wharf. They were eighteen in number and were 166 feet in length, with the exception of several that were equipped with manholes, and were 168 feet long. Fig. 5 shows one of the sections, together with a tee, several of which were used, one at the crib, and another as shown in Fig. 2.

Before placing the pipes in water, they were equipped with bulkheads at each end, and rolled into the bay. They were then towed into about 12 feet of water, where, after applying two 1 1/4-inch cables around each end, the bulkheads were removed sufficiently to allow the pipe to be sunk by the entering water. Then, the scow, equipped with the thribble blocks and winches, was floated over it and the pipe lifted into contact with the bottom of the scow. The whole was then towed out into its proper position in the lake, and the pipe lowered into line. Specially designed knuckle joints, facilitated the removal of cables after the

pipe had been lined up and a few bolts inserted. The cable arrangement was such as to permit accurate and minute changes in the position of the pipe, so that the divers found no difficulty in fitting the sections together. There were forty-four 1 1/4-inch bolts in each connection. At each joint, also, there was a wooden gasket of well-seasoned pine, 1 inch in thickness, with joints carefully broken, and put together with copper nails.

A 72-inch flexible joint, made by the Canada Foundry Company, Toronto, was provided in the pipe line at every stage where there was an appreciable change of grade, until the point was reached where the lake bed descended rapidly, as shown in Fig. 3. From this point to the end of the line, a flexible joint was placed at the end of every pipe section. These joints each allowed a movement from the centre line of the previous pipe of 21° 30'. Expansion joints at regular intervals each allowed a play of 18 inches. They were equipped with a 2-inch rubber ring inserted between angles, and held in position by eight or nine bolts around the circumference of the joints. Fig. 7 shows a pipe connection equipped with a flexible joint, and shows an expansion joint also.

Several points of interest arose in connection with the manufacture and delivery of these pipes that might well be mentioned. The shipping of this 72-inch pipe had an important bearing on the manufacture, as it was specified in flanged lengths of 166 and 168 feet, and the shipping of these sections allowed all circumferential joints to be shop riveted. Further, calculations were made to insure the pipe being of ample strength for safe

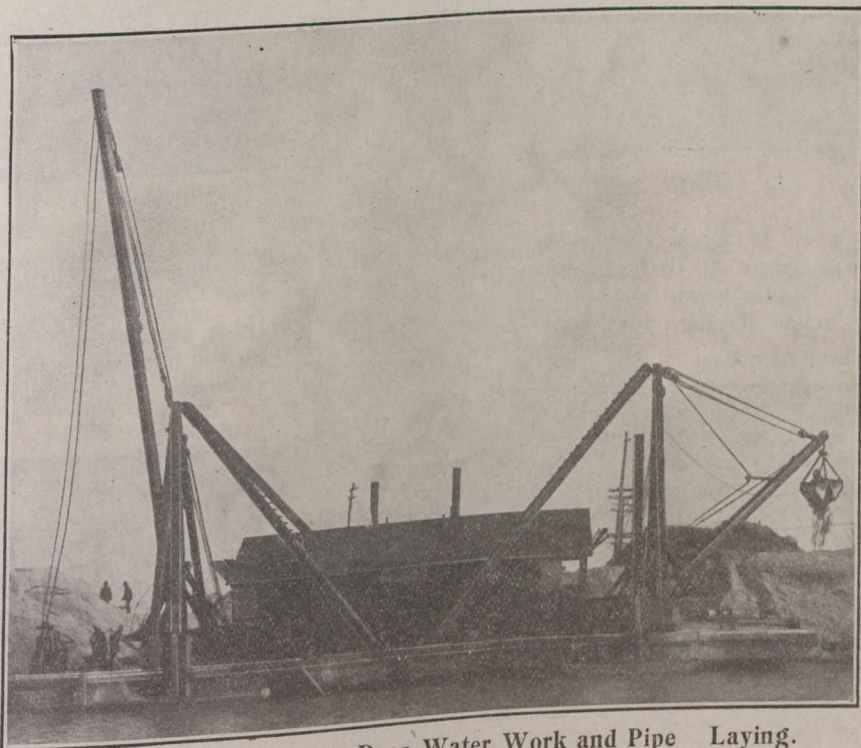
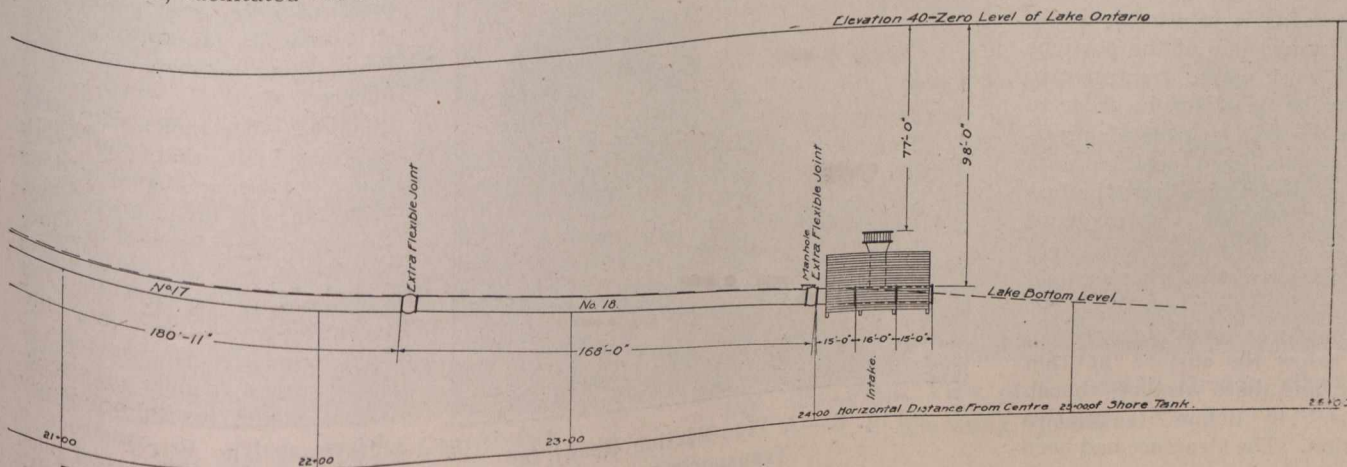


Fig. 4.—Scow Used for Deep Water Work and Pipe Laying.



Five Sections of the Pipe Line.