No. 14 to basin No. 1. The water runs through these openings from basin No. 19 back to compartment D in basin No. 14. Fine screens are provided between compartment D and compartment E. These screens are made of copper wire mesh, having openings one-tenth inch square. Each fine screen frame is 4 by 9½ ft. The copper mesh is fastened to separate small frames, there being three 4 by 3-ft. screens in each of the larger frames. All of the fine screens are interchangeable.

The water passes from compartment E through a 30-in. sluice-gate to basin No. 13, and flows by gravity to basin No. 1, and thence on to the well at the pump-house.

The coarse screens were placed to prevent debris or fish of any considerable size from getting into the basins. A very nice 5½-lb. pickerel—a beauty—was caught and delivered to the chairman of the Water Works Committee a few weeks ago. The fine screens were placed to prevent minnows from getting to the pump well, where chlorine gas is applied, and also to catch fine moss and grass.

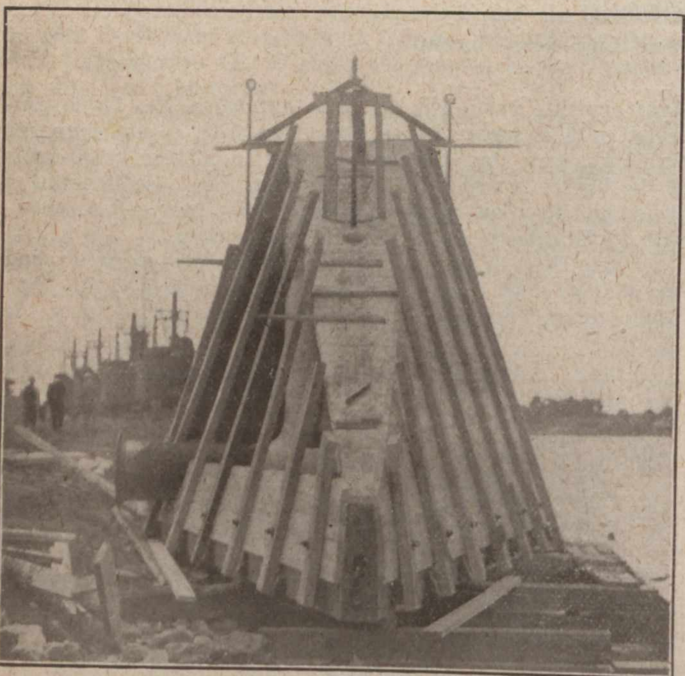

Fig. 3—Upstream End of Intake Structure, Showing Formwork—Note Three Lifting Bolts

The water is taken first into basin No. 14 instead of directly into basin No. 19 in order to provide a certain amount of sedimentation before the water reaches the fine screens, and to avoid the necessity of providing two screen-houses, one for fine and one for coarse screens. A by-pass was installed so that water may be run directly to the fine screens without going to basin No. 19, thus permitting sediment to be removed at any time from basins Nos. 15-19, inclusive.

From a construction viewpoint, the matter of greatest interest is the intake pipe itself and the structure on its river end, and the methods used for placing them in the river.

The St. Clair River at the intake, which is within 100 ft. of Lake Huron, has a velocity of over five miles per hour. The authorities at Ottawa insisted that we place no obstruction to navigation in the river, and would not allow any structure that would be within 29 ft. of the surface during low water, so any kind of a tower such as used at Buffalo, Niagara Falls, Detroit or Chicago, could not be used. We also had to keep in mind the fact that large steamers might anchor at the head of the river or foot of the lake during heavy storms, and that these ships might drag their anchors directly over our intake structure. A timber crib would make an excellent hold for a ship's anchor, and, therefore, would not make a suitable structure for our intake.

Some difficulty is experienced at Port Huron, and has been met at Sarnia, with frazil. A timber structure is much better than almost anything else for keeping up a supply

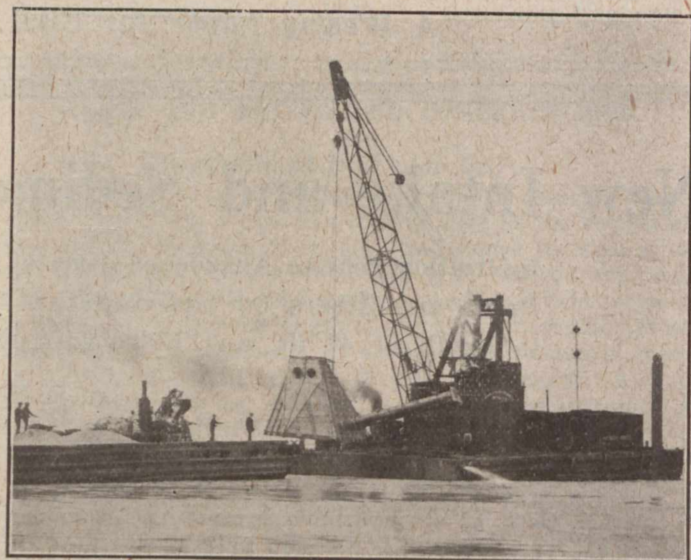

Fig. 4—Derrick on Scow at Right Lifting Intake Structure from Scow at Left—Showing Downstream End of Structure—Flexible Joints and First Length of the Two Pipes in Place

of water while frazil is running, but owing to other objections to such a crib, we decided on concrete as the material for the structure. Several models were made in plasticine and in plaster of Paris. The one finally adopted was shaped like an overturned boat of the cutter type.

The accompanying illustrations show very clearly the general arrangement of this structure. The line AB on Fig. 2 shows approximately where the ground line of the

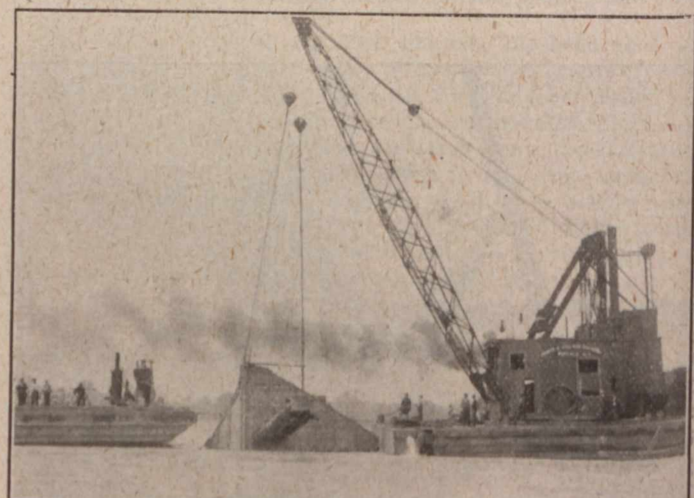

Fig. 5—Lowering Intake Structure

bottom of the river is, now that the structure is in place in the river bed. This structure is 30 ft. 3 ins. long and 16 ft. wide at the bottom, which is its widest part. The "nose" points upstream, and water is taken in at the downstream end. The weight of the completed structure in air was 71 tons, and the displacement is 55 tons.

Great difficulty was experienced in getting contractors to bid on the work. The plans called for the structure being placed in an excavation 47 ft. below water level. The top of the completed structure was to be 32 ft. below water