(a) The concrete mixture is not sufficiently rich to insure watertight work; the proportions should be one, two and four, or one, two and a half, and five. The stone should be carefully graded, and all pieces should pass in any direction through a two-inch ring. No large stones should be used.

(b) In the rock the wall was laid without outside forms, and the minimum thickness is stated as eight inches. The rock is stratified, with the joints of varying magnitude between the layers of the rock. Into and through these openings the cement and sand of the concrete mixture could flow as the concrete was placed, reducing in the stone of the wall the cement binder that was already too small in volume from the proportions of the concrete.

Without the solid rock backing the two-foot wall is not thick enough for the head of water of twenty-four feet. Even with the solid rock backing, eight inches of this concrete is not enough to make watertight work.

There are no provisions in the specifications for ramming the concrete, for limiting the depth of the layers, nor for jointing old and new concrete.

The following portion of this report is of general interest. It points out the need of careful construction



The new Concrete Lining partly completed, showing the Method of Working Forms.

and skilled supervision. After stating that concrete, to be watertight, must not be laid in freezing weather, nor with the thermometer near 32° F., it says:—

"It is to be further noted that no matter how good the material of the concrete, nor how rich the proposed mixture, the excellence of the finished concrete directly depends on the care with which it is mixed and placed, and on continuous, careful, skilled supervision. This fact cannot be too forcibly stated, and should never be omitted from any consideration of concrete construction. There is no form of building where constant personal attention is so absolutely necessary as in concrete work. One barrow of poor concrete or one barrow of good concrete poorly placed in a wall may leave a poor section that cannot thereafter be made dense and tight. When concrete is once cast, no external inspection of the moulded wall can disclose the location or extent of the imperfect work. The builder should be reliable, responsible, and skilled, and the purchaser's inspection should be zealous and unremitting. These pre-requisites are



The completed Concrete Wall as it appears at the present time.

quite independent of, and auxiliary to, physical and chemical examinations of the components of the concrete. The general idea is that nearly anybody can make good concrete. The general fact is that the best concrete requires good judgment, good faith, incessant care and attention, and superior skill, as well as first-class materials."

During May of this year tenders were called for the reconstruction of the gas tank holder. The work consisted in rebuilding the interior of the gas tank holder to make it conform to the dimensions called for in the plans prepared by the Davis-Farnum Co., of Waltham, Mass.; of rendering the concrete walls and bottom of the tank impervious, or comparatively impervious, to the action of water; of replacing the gas tank and its framework, fittings, and all other connections in commission. Messrs. Merrill & Allen, engineers, of To-ronto and Belleville, respectively, proceeded with the work by first lifting and supporting the two cylinders of the tank. This was a very important step, and by the method employed a perfectly clear space to work in was obtained. The attempts made previously to waterproof by giving the wall a tar paper lining had been accomplished by lifting the outer cylinder only. The accompanying views illustrate the various stages of the work as they progressed and the system employed of lifting and holding tanks in place during the progress of the work.