increased to a depth of ten feet for reasons dealt with in the description of the valve-house.

The floor of reservoir consists of concrete, 8 inches thick, reinforced with 1/2-inch steel rods, spaced 51/2 inches, centre to centre, and also with 34-inch rods, laid longitudinally between columns. This reinforcing was calculated to resist the static pressure from beneath when at any time the reservoir should be emptied, the level of water outside being four feet higher than floor level.

The walls are of plain concrete, 2 ft. 6 in. thick at base, and sloping on the inside to 1 ft. 6 in. at the top. Columns for supporting roof are also plain concrete, 1 ft. 6 in. square. Beams are of reinforced concrete, the reinforcing consisting of three 11%-inch. rods, the centre rods being bent up at ends. In addition to this, two 1/2-inch rods, bent as shown, are placed to anchor the ends of beams to walls, and over piers two 1/2-inch rods 8 feet long are placed for shear. The roof consisted of concrete 4 in. thick, reinforced with 1/2-inch steel rods, spaced 51/2 in., centre to centre; longitudinal rods are also placed as shown. The roof slab is continuous from end to end of reservoir. The concrete for floor and roof was composed of one part cement, two of sand and four clearly indicates the uniform pressure now secured.

compound engine, designed to work against a head of 240 feet, including suction, when supplied with 125 pounds steam pressure per square inch at throttle. Discharge from pumps enters a 14-inch and 12-inch main to city and standpipe.

The standpipe is situated on a hill adjacent to the city, the dimensions being 100 feet in height and 30 feet diameter. Foundation consists of concrete 7 feet 6 inches thick, and is hexagonal in shape. The standpipe pressure at the centre of the city records 80 pounds per square inch. However, in case the necessity arises, owing to fire, to increase this pressure, an electrically operated valve is to be placed on the force main at the base of the standpipe, and water can then be pumped direct to the main. This valve is to be operated from the pump-house.

Fig. 3 is a reproduction of two records taken from the pressure gauge in the city hall. The first one shows the pressure on November 25th, 1908, before the stand pipe Connections were made, and when the pumps were pumping direct into the city mains without the standpipe for overflow. The second record was made January 5th, 1909, and



Cross Compound Pumping Engine, built by The John Inglis Company, Limited.

parts broken stone. That for the walls and columns was composed of one part cement, 21/2 parts sand and five parts broken stone. The concrete was mixed by a "continuous mixer," but materials were carefully gauged in boxes, no automatic appliances being allowed. Where the conduit discharges into the reservoir an overflow chamber and valvehouse has been constructed, also of concrete. There are two valves here. The object of these valves is, in the one case, to allow of reservoir being emptied, the water meanwhile discharging through overflow pipe into old reservoir, from which the water could be drawn through the 14-inch pipe mentioned previously as being laid under the new reservoir, a valve being placed on this pipe for this purpose. The second valve in the valve-house is an overflow. This can be operated so that the overflow level will be considerably higher than any high water mark of the river ever recorded or remembered by the inhabitants.

The valve-house is built partly over a section of the reservoir. An opening in the roof, railed off, provides an opportunity for visitors to view the water as it discharges from the conduit into the reservoir, this being the only place it is visible until it reaches the consumers. From the reservoir the water flows to the pump well, from which it is pumped by a 3,000,000 imperial gallon horizontal, cross-

The following analysis, which is a good average result. shows the water to be very pure :---

Total solids 336 pa Chlorine 9 pa Free ammonium 038 pa Albuminoid ammonium 038 pa	arts per million arts per million merest trace arts per million
Contract. Contractor.	. Price.
Supplying 24-inch tile Lytle Tile Co., Buff N.Y.	falo, \$24,000 00
Iron pipe Gartshore, T., Hamilt	on 24,978 00
Laying force main J. Conn & Co., Winds Concrete reservoir C. H. Conery, Guelph PumpsJ. Inglis & Co., Toron Standaine	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Standpipe roronto from works,	0,250 00

The Guelph Waterworks system is managed by a commission consisting of G. B. Ryan, chairman; R. L. Torrance, secretary, and the mayor. Mr. J. J. Hackney is the manager of the whole system, the Commissioners dealing only with matters of policy.