

# The Canadian Engineer

*A weekly paper for Canadian civil engineers and contractors*

## WOODSTOCK WATERWORKS

DESCRIPTION OF PLANT WITH SPECIAL REFERENCE TO WATER LEVEL ALARM AND VALVE FOR CONTROLLING MAIN DELIVERY.

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THE waterworks of Woodstock, Ont., was originally constructed in 1880 by a private company for fire protection. It was purchased by the city in 1885 and in 1890 it was decided to elect water commissioners to administer the department. At that time the water was derived from the Cedar Creek, which passes through a portion of the city, and was seriously polluted, so the board set about to improve the quantity and quality. They appointed the late Thos. C. Keefer, C.M.G., to investigate and report in conjunction with the then city engineer, now Col. Wm. Mahlon Davis. The report was in favor of acquiring springs in the neighborhood and carrying out works in the city which will be referred to in the following notes.

The Hart Springs, located about three-quarters of a mile from the city, were purchased and the water utilized. In addition to these about 16 acres of land, since increased to 30 acres, were purchased on which there were a number of good springs, called the Cormick Springs, and the water taken into an 18-inch salt-glazed vitrified conduit and delivered into the city pump station well.

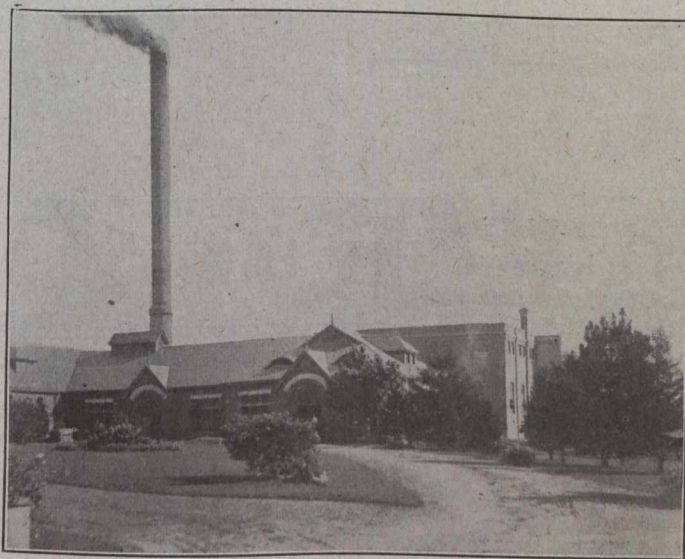
The Hart springs yield about 250,000 Imperial gallons per day and the Cormick springs over 1,250,000 gallons. The yielding capacity of the springs has not been fully developed and a considerable flow passes to waste. The Cormick springs are located about three miles south of the city in a hollow at the foot of a rolling country which rises about 200 or 300 feet higher, and there is a fall of about 40 feet between the intake and the pump well. The area, measuring about 30 acres, consists of a water-eroded formation covered with cedar and pine trees and a luxuriant growth of plants which are useful to reduce the evaporation and to conserve the water. These springs evidently tap a subsoil reservoir of some magnitude and the water is pellucid, cold and clear.

The city owns 120 acres of land at the springs, but only 30 acres are fenced in. A deep channel has been cut on the higher sides of the property to intercept freshets and pollution. This channel conveys the drainage below the intake.

There is a brick screen house 8 feet by 12 feet at the intake, and a concrete collecting basin adjoining it. The water from Cormick springs gravitates to the basin, where the sediment is deposited and the leaves removed by screens. There are sluice valves for periodical cleansing of the basins. The water has to pass vertically through screens, then along an open channel, through three vertical screens into the chamber where the water is admitted into the 18-inch conduit and thence into the pump well at the pumphouse in the city.

The pipe line from the headworks to the city is indicated by stone monuments, so that its direction can be located.

The pump-house contains two Mather & Platt two-stage centrifugal pumps, fitted with a third stage to boost the water pressure for fire purposes. These pumps were supplied by the Canada Foundry Co. They are driven by induction motors. One is a squirrel-cage type with an ordinary starter switch. The other is fitted with a wound rotor and a control switch so that its speed can be regulated until the full load is carried. The motors are Canadian General Electric Co.'s make, 175-h.p., 2,200 volts, 25 cycles, 750 r.p.m. The pumps are rated to deliver about 1,700 gallons per



Woodstock Power House and Pumping Station, Showing Hydro-Electric High-Tension Station in Rear.

minute under domestic or fire pressure. When pumping the domestic supply under a pressure of about 80 lbs. per square inch, only two impellers are operated. When a fire pressure is required the third impellor and chamber can be put into operation while the others by a clutch which is thrown in by an external slide and the pressure is immediately increased by 40 lbs. per square inch. The third impellor can be released and the pressure drops to about 80 lbs., without stopping the pump.

There is also a four-million-gallon-per-day, cross compound condensing steam engine and pump, built by John Inglis & Co., Toronto, working under 110 lbs. steam pressure, when required. This is provided with a Stilwell Bierce jet condenser supplied by Leonard, London, Ont. The steam cylinders are 18-inch and 36-inch with 30-inch stroke. The water cylinders are 12½ inches in diameter. There are four air chambers on this pump and