TEST OF RIVERDALE PUMP, TORONTO

By T. M. Jones
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THE accompanying illustration (Fig. 1) shows a recent addition made to the equipment at the Riverdale Pumping Station, Toronto. This station is at the corner of Broadview and Carlton streets, and is so situated that all the water for the east end of the city is supplied through it. The consumption of water during a period of 24 hours varies considerably, the rate of pumping sometimes being as low

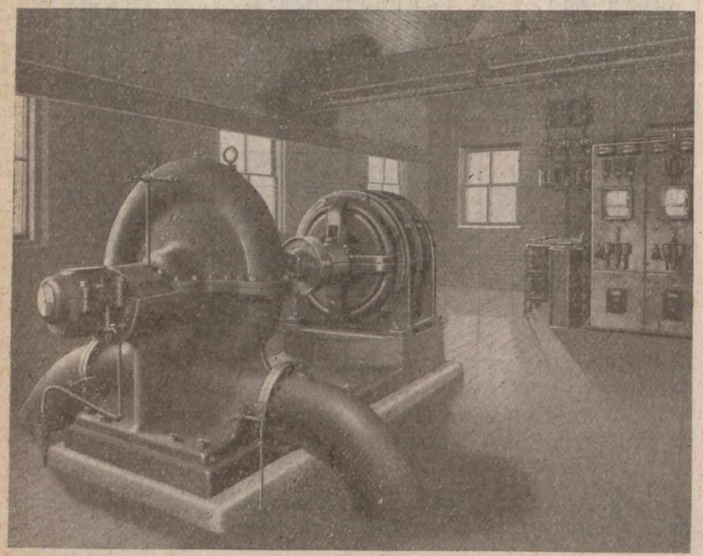

Fig. 1—Riverdale Pumping Unit, Toronto

as two million gallons per day and at other times as high as five million per day, and, as one pump is called upon to take care of the supply, the city engineer had to select a pump having characteristics that would give high efficiency at a wide range of pumpage.

Besides high efficiency, other considerations were taken into account. Due to the fact that this station is situated

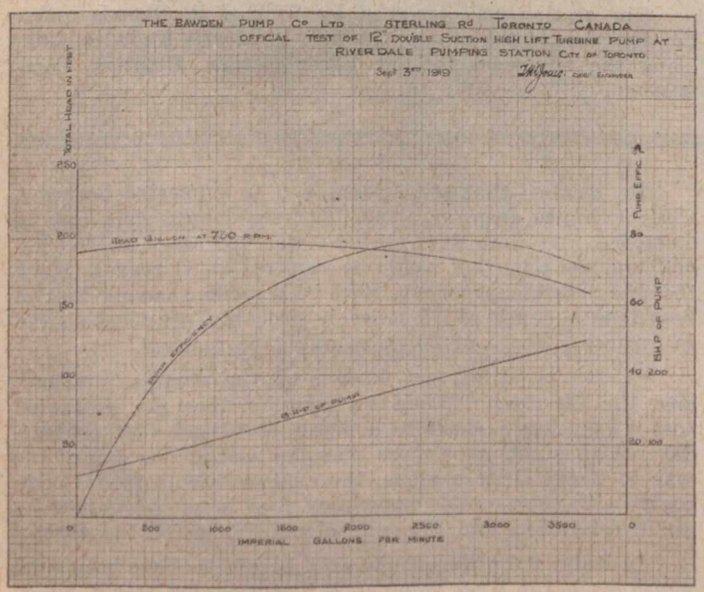

Fig. 2—Efficiency, B.H.P. and Head-Gallon Curves

in a residential section, it was essential that the pumping equipment should operate with a minimum of noise. In view of the above local conditions and the variable pumpage required, both as to capacity and head, it was necessary for the contractors, the Bawden Pump Co., Ltd., Toronto, to design a special pump having characteristics that would meet the conditions with the maximum of efficiency. After careful investigation, they decided to install a 12-in. split-casing high-lift turbine-type pump, fitted with bronze impeller and direct-connected by flexible coupling to a 260-h.p., 750-r.p.m., 4,000-volt, 3-phase, 25-cycle, wound-rotor induction motor having resistance for 50% speed reduction, continuous duty.

The pump construction is of the most modern design, having a spiral casing, and is of the double-suction type, split horizontally so that shaft and impellers as well as bearing can be removed without breaking any pipe joints.

The switchboard panel is of blue Vermont marble, mounted on pipe supports, the instruments having a dull black finish, so that all parts of the entire equipment match one another, a very pleasing feature in a power-house where neat appearance is of some consequence.

This installation was completed about two months ago, and was recently given its official tests by the city's mechanical engineer. Fig. 2 shows the pump efficiency as well as head-gallon and brake horsepower curves at maximum speed, 735 r.p.m. Tests were made at twelve other speeds with equally good results.

The flow of water was measured by a pitometer, readings being taken at five-minute intervals, and in order to obtain the average flow of water in the discharge pipe, readings were taken at every inch across the pipe diameter. The suction and discharge pressures were taken by calibrated pressure gauges. The electric readings were obtained by a specially arranged set of testing instruments. The latter were also used to check the instruments supplied with the switchboard.

FLUSHING AND CLEANING WATER MAINS*

By William Molis
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NO matter how good the water is, what the source of supply, or how good the filters operate, you will find some accumulation of some sort in water mains—mud or a trace of iron or some algia forms—depending altogether on the source of supply—whether it is a deep-seated well, a shallow well or a large or small river. While the accumulation may not be large, and not detrimental to the health or purity of the water, it still exists, and the flushing of the mains will readily remove it.

One way of doing this is to gate off a main on both sides, say for half a mile, or a few blocks at one flushing, starting at some high point in the system, either by opening hydrants or a flush gate. If no flush gate is available, then start at the high point and open hydrants down the line until you get to the end. This procedure must be followed in the cross-sections, the same as in the main lines.

This flushing process is mostly done at night, when it will inconvenience the least number of people. In the outlying districts we usually flush mains in the daytime. One must have a good force of men on the job to be ready to answer a fire alarm and to open the gates quickly.

Flushing a 16-in. or larger main is not an easy task. A goodly number of hydrants must be opened to do the work right. If there are steamer connections on the hydrants, by opening these one gets a good flow and it is easier on the pavements.

We have two flush gates in our system, one a 6-in. and the other an 8-in. opening, which open into a large sewer or creek. I would not advise emptying into a sewer that is too small; all kinds of trouble will result from overflowing into cellars.

If there should be too much deposit to wash out at one time, there will surely be some trouble with the meters, which would then have to be cleaned out after the flushing.

*Paper read before the Iowa Section of the American Water Works Association, Mason City, Iowa, October 23rd, 1919.