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Drifting Sand Filter, Toronto Island

Report As To Its Efficiency—First Municipal Drifting Sand Filter On This Continent—Normal Rate of Filtration Sixty Million Imperial Gallons Per Twenty-Four Hours—Number of Filters, Ten—Thirty Units in Each Filter

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A BACTERIOLOGICAL and physical test of a section comprising five filter units of the new mechanical filtration plant on Toronto Island, as provided in sections 4 and 200 respectively of specifications and condition forming part of the contract therein, was completed in January, 1918.

The test extended over a continuous period of thirty-eight days, from December 5th, 1917, to January 11th, 1918, exclusive of Sundays and holidays. The actual number of days upon which the plant was tested was thirty-two, covering the period specified in paragraph No. 4, section a, of said contract.

A total of 108 bacteriological samples of the filtered water, and 108 examinations of the raw unfiltered lake water were made during this thirty-two day test, the results of which are herewith attached.

The lake water during this period was frequently disturbed and polluted by storms, and therefore represents at least the average, if not worse than the average, condition.

During the period of testing, the average amount of alum applied to the raw water was 1.02 grains per gallon, the specification calling for the use of an average of 1 grain per gallon during such test.

The average amount of water filtered daily was thirty-one and one-third million Imperial gallons.

The turbidity of the raw water varied from one to 115 parts per million with an average turbidity of 6.6 parts

per million. The turbidity never exceeded one in the effluent, which was at all times clear and bright.

During the test the amount of alum was controlled to some extent by the chemical condition of the raw lake water. Whenever this showed evidence of pollution the amount of alum was increased. On four occasions, however, it was not possible to make this chemical determination, with the result that less alum than necessary was applied. On several occasions also, there was failure in the Hydro-Electric supply, with the result that the operation of the filters was seriously disturbed.

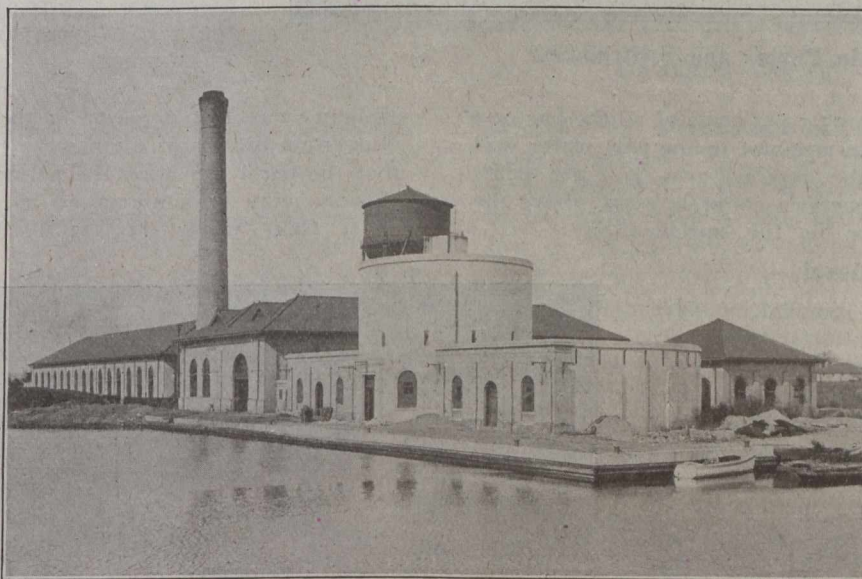
For these reasons we considered it to be just to exclude the results obtained on four days on which we believe that the efficiency of the filter was probably interfered with.

The bacteriological results, therefore, are being given under two groupings, one in which all results obtained during the whole of the thirty-two day period have been summarized, and the other from which, for reasons just stated, the results of eight samples have been excluded.

Bacteria Removal (Agar 37°C.)

A.—The total bacteria reduction during the thirty-two day period was 93.9 per cent.

[NOTE.—For other articles dealing with this plant readers are referred to *The Canadian Engineer* of April 8th, 1915, containing a report of a 30-day test of a drifting sand filter of the Ransome type. Articles relating more particularly to the constructional features of the plant will be found in *The Canadian Engineer* for November 25th, 1915, and September 14th, 1916.—EDITOR.]



View of Building Taken From South-West

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