In septic tanks particles of sludge attached to gas globules are constantly rising and particles of scum settling. These find their way from time to time into the effluent. Consequently the suspended matter in the effluent varies considerably. This causes large variations in the chemical analysis, necessitating frequent sampling over a long period to find the real efficiency of a unit. To prevent part of the sludge from passing away in the effluent is impossible, but if the sludge be removed from time to time it will help the unit to maintain its maximum efficiency. It is suggested that where tanks are neglected and become full of sludge the length of storage of the sewage is cut down until the effluent has really not been subject to septic action; in passing through the tank it has become charged with particles of digesting sludge, so that it might possibly be as bad, if not worse, than the original sewage. Curves showing normal effect of storage in septic tanks have been drawn from data obtained at the experimental station and are shown in Fig. 4.

	Nitrogen as albuminoid ammonia.	
	Original sample.	Filtered.
Influent	7·3	2·7
32 hours storage	6.03	2.6
32 hours storage (aeration)	3.6	2.4
	Oxygen consumed.	
	Original sample.	Filtered.
Influent	32·3	15·1
32 hours storage	23·2	7·5
32 hours storage (aeration)	21.9	7.6

From July 5th-25th, 1912, 11 samples.

The aerators were used between two periods of storage. After one period of storage the sewage was passed over an aerator and then into another storage tank. It was hoped a great improvement would result, due to a constant inoculation of the second storage tank with certain types of organism, thus ensuring a more constant action in the second tank. That this inoculation takes place is easy of proof, but the improvement in the character of the effluent was so small as to be negligible if measured by free ammonia, albuminoid ammonia and oxygen consumed tests. The results were:

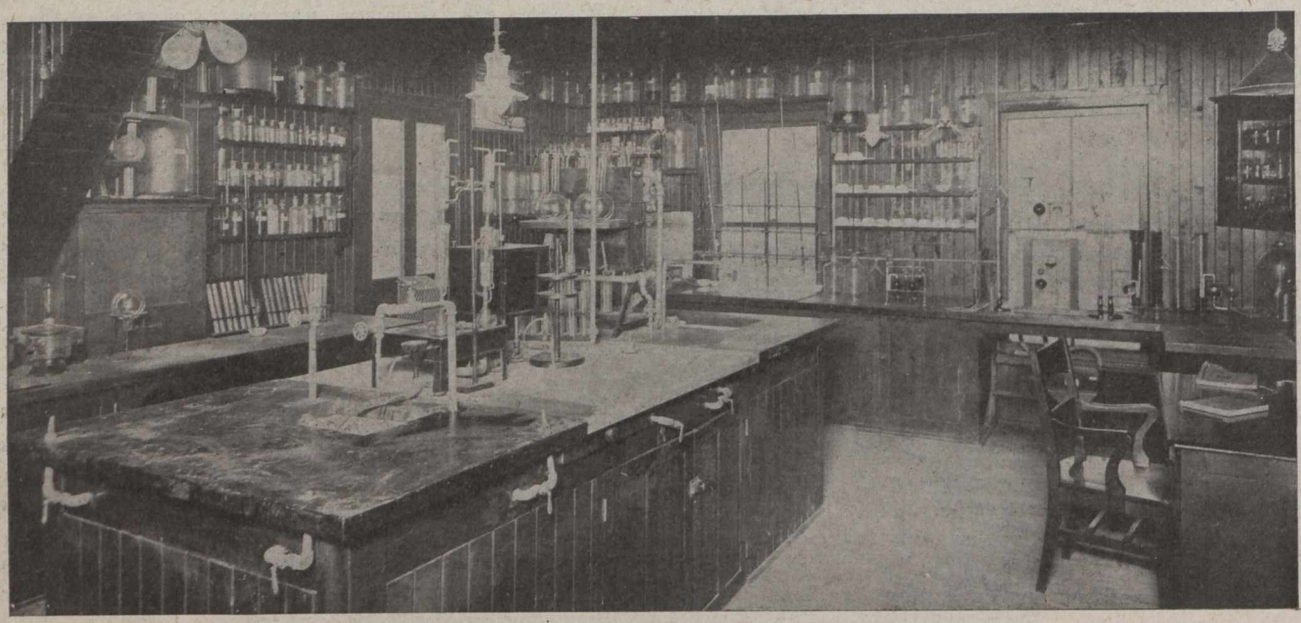

Fig. 1.—A View of the Provincial Board of Health of Ontario Laboratory for Sewage Analysis.

Average Analyses Showing the Action of Septic Tanks with Different Periods of Storage.

	Nitrogen as free ammonia.	Nitrogen as albuminoid, NH_3	Oxygen consumed in five minutes.
Influent	19.17	11.5	64.0
8 hours storage	24.6	6.37	38.5
16 hours storage	28.7	5.24	36.75
32 hours storage	31.5	2.79	25.4

June 2nd-Aug. 16th, 1911.

In order to find the improvement in the character of the dissolved solids, a series of analyses was run on the sewage, the sample being filtered with aluminum cream.

Showing Improvement in Dissolved Matter in Sewage in Passage Through a Septic Tank.

	Nitrogen as free ammonia.	
	Original sample.	Filtered.
Influent	26.6	25.84
32 hours storage	30.8	25.8
32 hours storage (aeration)	28.2	27.6

Average Analyses Showing the Effect of Aeration.

	Nitrogen as free ammonia.	Nitrogen as albuminoid, $N.H_3$.	Oxygen consumed.
Influent	19.17	11.5	64.0
8 hours storage before aeration	24.6	6.37	38.5
Immediately after aeration	23.7	5.2	33.2
8 hours storage after aeration = 16 hours	29.4	4.51	27.8
16 hours storage	28.7	5.24	36.75
16 hours storage immediately after aeration	26.6	4.36	29.5
16 hours after = 32 hours	31.5	2.79	25.4

June 2nd-Aug. 16th, 1911.