

take for Gospel all that the pamphlets say, pay the price and save the fees otherwise due to the sanitary engineer for independent advice."

Lindsay is saddled with an ozone plant which is not an ozone plant, and which at the best consists of two rough filters, defective and leaking in their constructional features, allowing of surface contamination. Even the filters themselves are but an absurd apology, with a bacterial removal of only 30 per cent., whereas ordinary roughing filters should remove from 40 to 50 per cent. of the bacteria.

Ozone may or may not be a practical method of disinfecting water. We certainly are of opinion that in practical efficiency it is far below other recognized methods, but the method by which it has been boosted in Canada at the expense of, and in comparison with, other well-known systems of water purification, coupled with its total failure at Lindsay to provide any apparent results, has put back the question of ozone treatment in Canada for many years.

REPORT ON THE LINDSAY OZONE WATER PURIFICATION PLANT.

By The Provincial Board of Health of Ontario.

This report just published by the Provincial Government of Ontario has been anxiously awaited by many interested in the question of purification of water by ozone.

The report deals purely with scientific data based on exhaustive tests made on the site of the works; the investigations cover a period from September 7th, 1909, to February 1st, 1910, or practically five months. A temporary laboratory was provided at the works, Dr. Nasmith having charge of the general and chemical investigations, and D. Philp, of the bacteriological.

The system of applying ozone to the water at Lindsay is that known as the "Howard-Bridge" system. The principal



Interior of the Ontario Board of Health—Testing Laboratory in Lindsay.

feature claimed consists in an automatic method of drawing the ozone into connection with the water by means of aspirators. It has been claimed that the Howard-Bridge system practically constituted a revolution in methods of applying ozone to water.

The disinfecting or sterilizing qualities of ozone have been under investigation in Europe for many years, and their efficiency in this respect fully acknowledged. The difficulty, however, has always been, as far as water sterilization is concerned, in bringing the ozone into contact with every drop of water, this difficulty is increased because ozone is comparatively insoluble in water. Several mechanical devices are employed in order to provide intimate contact between the gas and the water. Such well-known systems as the Siemens Halske and the De Fries have been more or less successful, but the heavy expense of ensuring efficient contact has been

universally acknowledged as the main drawback to ozone purification methods in practice. **For instance, at St. Maur, Paris, it costs more to force contact between the ozone and the water than to make the ozone.**

Naturally, when Mr. J. H. Bridge introduced his method into this country, with guarantees of great promise and optimistic predictions of reduced cost and high efficiency results, much interest in **the method was aroused.** And, even in some quarters, enthusiasm was aroused. When it was found that the town of Lindsay, Ont., had decided to install the Howard-Bridge system in connection with its water supply, on the commercial basis of "no cure no pay," it was felt that the system was on its trial in Canada.

Naturally, now, there is very keen disappointment felt in many quarters that Dr. Nasmith, on evidence, has been bound to state as follows:

"From the evidence obtained by us I do not hesitate to say that the Howard-Bridge system, as installed at Lindsay, is an absolute failure, as far as purifying the water is concerned. From the mechanical standpoint of the means for carrying to and mixing the ozone with the water, it is defective in every particular.

"The system would achieve practically the same results with the ozonizers shut off or reversed."

Resumé of Report

The original agreement between the town and Mr. J. H. Bridge calls for a water which shall have all taste, odor, color, and harmful bacteria removed.

The water of Lindsay is obtained from the Scugog River. The river banks are low and marshy, the river bed itself is full of weeds and expands in places to include large areas of drowned lands with the usual accompaniment of fallen trees and partly submerged stumps.

The banks of the river are bordered by farms, and a considerable number of houses and barns may be seen from the river.

The proximity of the farms with their barnyards, manured fields and cattle, will readily account for the supply of colon bacilli constantly found present in the water.

As one would expect, the water contains large amounts of dissolved organic matter, derived from decaying wood, weeds and other vegetable and animal life; it is highly colored, contains much visible organic debris and usually tastes "weedy." As one would expect, the bacterial and protozoan flora is quite varied.

The Howard-Bridge plant consists of two parts: 1, the filters, two in number, which remove the suspended matters