

1911, to May 31, 1912, while using hypochlorite, there were 1,155 cases and 160 deaths, reductions of 41% and 31%, respectively. Hypochlorite treatment presumably saved 73 lives in one year. These valued at \$5,000 each, amount to \$365,000, which totals the enormous sum of \$7,300,000 when capitalized at 5%. This is a wonderful saving to a community of 564,000 people in twelve months.

Evanston, Ill.—During the past winter Evanston, Ill., had a typhoid epidemic, traceable to the water-supply, contaminated by the sewage of the city itself. Although the use of hypochlorite was not begun until December 19, 1911, nevertheless there was a reduction from 49 cases reported in December, 1911, to 12 cases in January, 1912, which dropped still further to nine cases in February, showing how thoroughly the hypochlorite treatment did its work. The untreated lake water, averaging 5,000 bacteria per c.c., with *B. coli* present, was reduced to an average of 75 per c.c., with *B. coli* shown to be present in all 1-c.c. portions tested.

Waukegan, Ill.—Conditions as to the pollution of the water-supply of this city with the city's own sewage are identical with those of Evanston. The increase in typhoid-fever cases reported, however, occurred later than in Evanston. A total of 82 cases in March was reduced to 56 in April and 27 in May, hypochlorite having been used for the first time on April 16, 1912.

Minneapolis, Minn.—There was an abnormal amount of typhoid fever in 1909 and 1910. The water-supply was taken from the Mississippi River without any treatment. The use of hypochlorite was begun late in 1910 and has been continued without interruption since that time. A modern filter plant of the rapid sand type is now being constructed, but the hypochlorite process will be used in conjunction with it when completed. The water is reduced from an average of 816 bacteria per c.c. to 5 per c.c. The 39 typhoid deaths in the ten months before hypochlorite and the two deaths in the ten months after hypochlorite was used, or a reduction of 95%, is remarkable.

Omaha, Neb.—Hypochlorite has been used since May, 1910, at which time there was an epidemic of typhoid in the city. The Omaha typhoid fever death rates per 100,000 for the last four years have been:

1908	1909	1910	1911
16	26	67	13

A reduction from 67 to 13 per 100,000 is remarkable and it is difficult to say how much higher the rate would have been in 1910 had not the sterilizing process been installed in May of that year. It is worthy of mention that the treated and settled water shows an average of only 43 bacteria per c.c., whereas the raw water from the Missouri River averages 30,447 per c.c.

Jersey City, N.J., was one of the first cities to adopt hypochlorite treatment for municipal water-supplies. The water from the storage reservoir averages 12,000 bacteria per c.c., with *B. coli* present, but the treated water averages only 10 per c.c., with *B. coli* absent. Hypochlorite treatment was begun in September, 1908. The average for 1905, 1906 and 1907 was 18.5 per 100,000, and this was reduced to an average of 9.6 per 100,000 for the three years following the use of hypochlorite, namely, 1909, 1910 and 1911, a reduction of 48% in the average typhoid fever death rate.

Kansas City, Mo., takes its water-supply from the muddy and polluted Missouri River and by means of sedimentation and sterilization reduces the bacterial content from an average of 5,500 per c.c. to 65 per c.c. The raw water shows *B. coli* present in 0.2 c.c., whereas this sewage organism is absent in all 1-c.c. portions of the treated water tested. The number of typhoid deaths reported during 1910 without

sterilization of the water was 107, while for 1911, with hypochlorite treatment in use, it was 61, a reduction of 43%. Many people in Kansas City use the clear and sparkling waters that issue in many places from springs and which can be pumped from surface wells. These waters have been shown to be very highly contaminated, although they are of very attractive appearance. The city is now conducting a campaign to discontinue the use of these waters for drinking.

Cincinnati, Ohio., has a rapid sand-filter plant with a capacity of 112,000,000 gal. per day. The hypochlorite treatment has been used as an adjunct to the filtration process since December, 1910, with a reduction from an average of 315 to 26 per c.c., or 91.7% reduction in the filtered water itself. *B. coli* was present in 0.6% of the 1-c.c. samples and in 91.1% of the 100-c.c. samples of filtered water examined, but in the treated filtered water tested no 1-c.c. portions showed *B. coli* present and only 12% of the 100-c.c. portions were positive.

These data show conclusively that the hypochlorite of lime treatment of water-supplies is wonderfully effective; that it reduces the bacterial content of water to a very low number; that it practically eliminates *B. coli* and, therefore, we think, *B. typhosus*, from water-supplies; that it is a very valuable adjunct to filter plants; that mountain streams and impounded reservoir supplies are made safe by its use; that it has stopped many typhoid-fever epidemics already begun and in all probability it has prevented many epidemics from occurring. Hypochlorite is not a panacea for all troubles arising from water-supplies, but when properly applied to the proper water in the correct quantities, it will accomplish wonderful results. Its great cheapness as to installation and operation, the short time necessary to install the treatment and its comparative simplicity, will surely cause disinfection by hypochlorite of lime to be continued and to be adopted by other cities where the supply is not all that it should be.

## NEW HARBOR COMMISSIONERS.

Messrs. W. G. Ross, F. Robertson and Lieutenant-Colonel A. E. Labelle are the new harbor commissioners for Montreal.

Mr. Ross is a prominent business man and is a Montrealer by birth. His business career has been a bright one, and as managing director of the Montreal Street Railway from 1905 to 1911, he did much to make that one of the strongest of Canadian corporations. At the present, Mr. Ross holds the following offices: President of the Asbestos Corporation of Canada, director in the Dominion Steel Corporation, in the Quebec Railway, Montreal Light, Heat and Power Company; also many other official connections with noted Canadian corporations.

Mr. Farquhar Robertson, coal merchant, hails from Glengarry county, Ontario, having devoted several years of his life to farming in that district. His first step into commercialism was made when he became manager of a Montreal lumber concern. He started his coal business in 1879. Mr. Robertson is a director of the Montreal Transportation Company, the Prudential Trust Company, and was president of the Montreal Board of Trade in 1909, having been vice-president the year before. He is prominently identified with charitable undertakings, and was three times elected by acclamation to represent St. Andrew's ward in the city council.

Lieutenant-Colonel Alfred E. Labelle was born in Montreal, and has been for more than a quarter of a century one of Canada's most prominent grain merchants. In company with Sir Rodolphe Forget, George A. Grier and Thomas Williamson, he organized the St. Lawrence Flour Mills Company, of which he was chosen managing director. He is the president of the Chambre de Commerce and is prominently identified with the Canadian militia.