to a maximum of 80° F., thus giving the various organisms their respective optimum temperatures for growth. However, when the cover was applied, as shown between the points B and C on the curve (Fig. 1) the temperature did not fall so readily as when the reservoir was open, thus permitting the bacteria to thrive but to no alarming extent, as is seen from curve 1. Again, the effect of the cover is seen in Table 1, in that the total nitrogen was not as high as it was formerly, due to the lack of organic matter which entered by way of the wind. This is also seen in the amount of amorphous matter which was usually present in the open reservoirs; in this case it followed curve 3, and hence is omitted.

The effect on the chemical constituents will be seen from Table 1, in which it will be noted that the total nitrogen, nitrites and nitrates decreased due to the lack of added organic matter, which in former times was carried in by the wind and birds; again this decrease was due to the decreased number of dying algae, etc. Again, the alkalinity appears to vary in times previous to covering, due no doubt to the varying amount of carbonates and bicarbonates, in which case the carbon dioxide was used by the organic growths; on the other hand, after the cover was added, the alkalinity appears to remain constant. If water plants enter a body of water which is open to the air, as this one was, the mineralized nitrogen and carbon dioxide are used as food, thus causing the plants to excrete substances which to higher life are poisonous. The oxygen consumed, in this case was reduced between 0.2 and 0.3 cubic centimeters per liter, pointing to the fact that something that was at work had now stopped. Hence it is evident that if factors like those above mentioned are controlled the water will not and should not deteriorate.

TABLE 1

Effect of the cover on the chemical constituents, in parts per million

Month	Total Nitrogen				Nitrites				Nitrates				Alkalinity			
	1913	1914	1915	1916	1913	1914	1915	1916	1913	1914	1915	1916	1913	1914	1915	1916
August	0.109	0.040	0.109	0.105	0.004	0.007	0.004	0.003	0.20	0.10	0.20	0.22	76.5	74.0	55.8	64.0
September	0.051	0.19	0.024	0.024	0.002	0.005	0.004	0	0.15	0.25	0.38	0.10	87.2	62.0	67.8	76.0
October	0.054	0.021	0.021	0.020	0.001	0.005	0.004	0.002	0.20	0.24	0.37	0.15	87.2	60.0	71.5	79.6
November	0.031	0.018	0.037	0.017	0.005	0.003	0.003	0.004	0.80	0	0.36	0.10	65.4	71.5	81.2	76.1
December	0.032	0.060	0.032	0.019	0.003	0.002	0.002	0	1.10	0.30	0.30	0	55.4	71.3	64.0	79.6

In curve 3 it will be seen that the microscopic growths have been somewhat excessive, and in those places where a sudden drop is seen either cleaning or copper sulphating or both had been practised, showing an immediate effect but not the permanent one desired. However, when we come to the points B and C an immediate drop is seen, which in comparison with that for former years at the same times appears to be permanent, so that in the future very little microscopic growth may be expected in this reservoir.

Conclusion

Hence for the following reasons every reservoir used for service should be covered.

(1) From an aesthetic sense, in that all matters which have been removed by filtration are kept out.

(2) By keeping out all manner of debris the chemical composition is not changed much, in fact not so much as it would be without the cover.

(3) The temperature will not vary as much, during all seasons of the year, as without the cover.

(4) The expense of treating and cleaning the reservoir, thereby sometimes causing much inconvenience to the consumer, is avoided.

(5) A flat taste may result from the use of the cover, this, however, can be eliminated by constructing the reservoir so that a constant circulation is maintained.

(6) By constructing the cover flat an eye-sore is eliminated in the vicinity, since the cover can be used as a base for a bed of flowers or a garden, thus improving the appearance of things around the reservoir.

TORONTO SECTION, AM. INST. OF E. E.

Nearly fifty per cent. of the members of the Toronto Section of the American Institute of Electrical Engineers attended the meeting held March 15th, when J. J. Frank, of the General Electric Co. of Pittsfield, read a paper on "Modern Transformers." Twenty per cent. of those present took part in the discussion.

The next meeting of the Toronto Section is to be held at the Hydro-Electric Laboratories on Strachan Avenue, Friday, April 5th, when W. P. Dobson is to read a paper on "High Voltage Testing."

CANADIAN RAIL ORDERS IN UNITED STATES

New York dispatches state that the Canadian government railways are in the United States market for 5,000 box cars after placing an order for passenger equipment with the Pullman Company, and ten narrow-gauge engines with the Canadian Locomotive Company.

The Grand Trunk has recently ordered 25 switching engines from the same builders. The Pennsylvania Tank Car Company has taken orders for tank cars from steel companies and from oil refiners. Oil companies continue actively in the market for railroad equipment. Ten companies ask for 600 tank cars, which will require about 9,000 tons of steel.

In the statistical review of the Mineral Industry of Ontario for 1916, the Deputy Minister of Mines notes that the tendency in the mineral industry of Ontario, particularly in the metals, is towards the production of the finished article, as contrasted with the mere mining and selling of the raw ore or material. Molybdenite and lead have not been mined extensively in Ontario so far. The making of war munitions, however, has for the time being, stimulated the demand for both metals. Concentration plants for molybdenite have been followed by the installation of plants at Orillia and Belleville for the manufacture of ferro-molybdenum. Formerly, the English supply of this alloy came entirely from Germany. Another ferro compound, ferro-silicon, is being made on an extensive scale by Electro Metals, Limited, at Welland. A smelter for the production of pig lead has been installed at Galetta on the Ottawa River, to treat the ore raised from the lead mine at that place. About 400 tons of lead were made in 1916. When the plans of the British-America Nickel Corporation are fully carried into effect, there will be two nickel refineries in operation of capacity equal to the demand for the metal from the entire British Empire. A company has also been formed for the manufacture of nickel-copper steel direct from the Sudbury ore, recent investigations and experiments having shown that the prejudice against the presence of a moderate proportion of copper in steel is not justified by the facts. The next logical step in the development of the nickel industry will be the establishment of plants for the making of nickel steel, either from imported or domestic iron ore if the latter can be had in sufficient quantity. Not much has yet been actually accomplished in the treatment of copper ores. The increased demand for fluorspar has come largely from steelmakers. It is used chiefly as a flux, but also in the manufacture of hydro-fluoric acid, and in certain metallurgical operations. A newer use is in the recovery of potash from feldspar and from Portland cement clinker. The last previously reported production of fluorspar was in 1911, when $200 worth was marketed. In 1916 the shipments amounted to 1,283 tons, valued at $10,146, the price averaging nearly $8 per ton.