

The Canadian Engineer

A weekly paper for Canadian civil engineers and contractors

Activated Sludge Experimental Work at Milwaukee

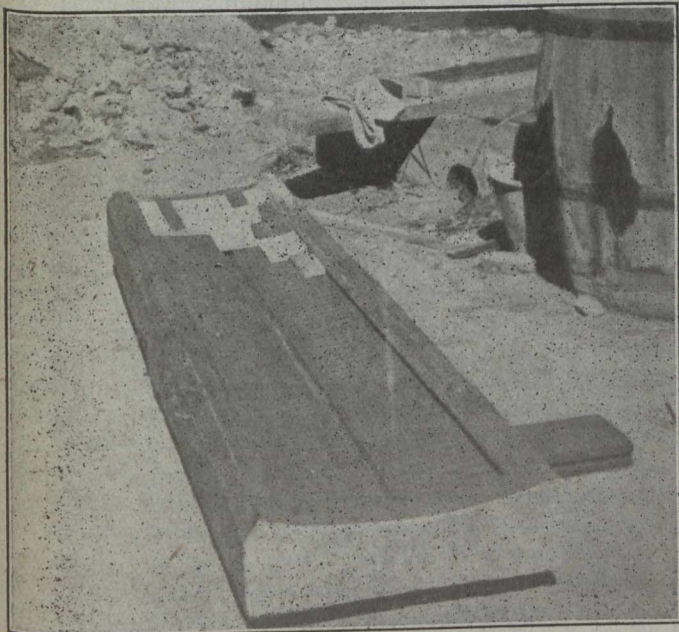
Influence of Low Temperatures Not Detrimental—Sludge Can be Converted into a Profitable Marketable Fertilizer—Determination of Best Methods of Diffusing Air Throughout the Sewage—Third Annual Report of Milwaukee Sewage Commission.

THE following extracts, taken from the third annual report of the Milwaukee (Wis.) Sewage Commission, which commission has made an unusually valuable contribution to the commercializing of the activated sludge process of sewage disposal, are of timely interest. The report describes the changes which have been found necessary, refers to the erroneous assumptions made in

was less than that in No. 2, it having been taken up by the septic sludge contained in the conduit connecting the two tanks.

This, of course, pointed to the necessity of eliminating in our final plant all connecting conduits designed to carry the mixture of sludge and sewage.

The building-up of the air pressure in the tanks from $5\frac{1}{2}$ pounds to nearly 8 pounds, with a consequent loss of air necessary for oxidation led us to examine the filter plates in the bottom of the tanks. We found these largely stopped up with a mixture of oil and fine particles of dust. This determined the absolute necessity of providing an air blower of a type which would certainly exclude all oil from the air discharge pipe, and the thorough washing of all air passing to the filter plates. The excelsior filter which we had provided for this service having proven inefficient, other methods had to be devised.

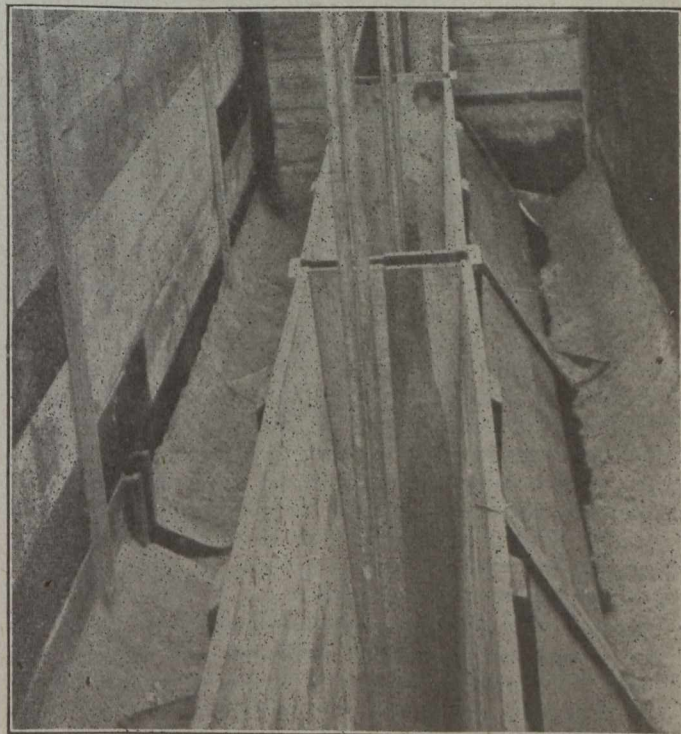


Showing concrete retainer for wood block diffusers. A few wood blocks shown in place. Blocks $\frac{1}{2}$ " thick and from $2\frac{1}{2}$ " to 4" square.

the original design of the plant and what was done to overcome the difficulties that confronted those in charge of the experiments. The report continues as follows:—

The permanent plant was designed, from the information then available, to treat 1,600,000 gallons per 24 hours with a four-hour period of detention and about 2,000,000 gallons with a three-hour period. The sedimentation tank was designed to provide for the maximum quantity treated on the basis of 22 minutes sedimentation period.

It was soon discovered that several serious errors had been made in our assumptions which prevented the plant from satisfactorily treating the volume of sewage for which it had been designed. The most prominent of these were that the conduits which carried the mixed liquor and activated sludge from one set of tanks to another became partially stopped up with the sludge which settled to the bottom almost as soon as the mixture entered the conduit. This sludge became septic and the dissolved oxygen in the liquor in tank No. 3, for instance,



Showing baffles in Nordell Aerating Tank. Baffles in form of chimneys with flared sides and curved bottom, standing about 3" above wood block diffusers. Liquid contents of tank forced upward through chimneys by air pressure and passes back to diffusers on the outside of chimneys, making complete circulation and high velocity when passing over surface of diffusers.

We also determined from a careful testing of the porosity of the plates before, after and during service that a plate of fine porosity was less efficient than a coarser one. That is, instead of a plate which would pass from 2 to 4 cubic feet of air per minute per square