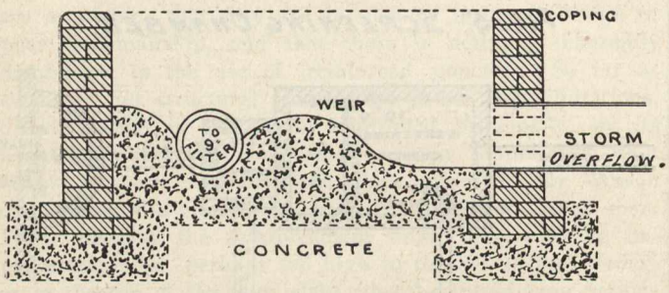
The size of the overflow pipe and gradient must be arranged to take the whole of the overplus, and the length of the weir with a hydraulic depth of ½-inch, also represent this amount. The top of the sill being kept ½-inch below the top

FIG. 7 STORM-OVERFLOW



CROSS SECTION THROUGH STORM OVERFLOW

of pipe leading to the works, so as to prevent a head acting upon this pipe and so increase its natural flow by pressure.

Liquefying Tanks.

These tanks are sometimes called "Septic" Tanks, being a trade name applied to a covered-in cesspool, in which the solid sewage is allowed to precipitate by natural methods without the aid of any precipitant. These tanks are very necessary to a bacterial disposal system, as they serve to break up and liquefy the solids and so make the work of the filters much easier and prevent them from choking. Experiments of treating new sewage by direct filtration have not been a success. It is not only the question of the organic solids, but also of mineral solids, such as the sand silt from the tear and wear of roadways, pathways and stone work. These mineral solids always form a proportion of the sewage matter, and settling tanks of some nature are necessary in

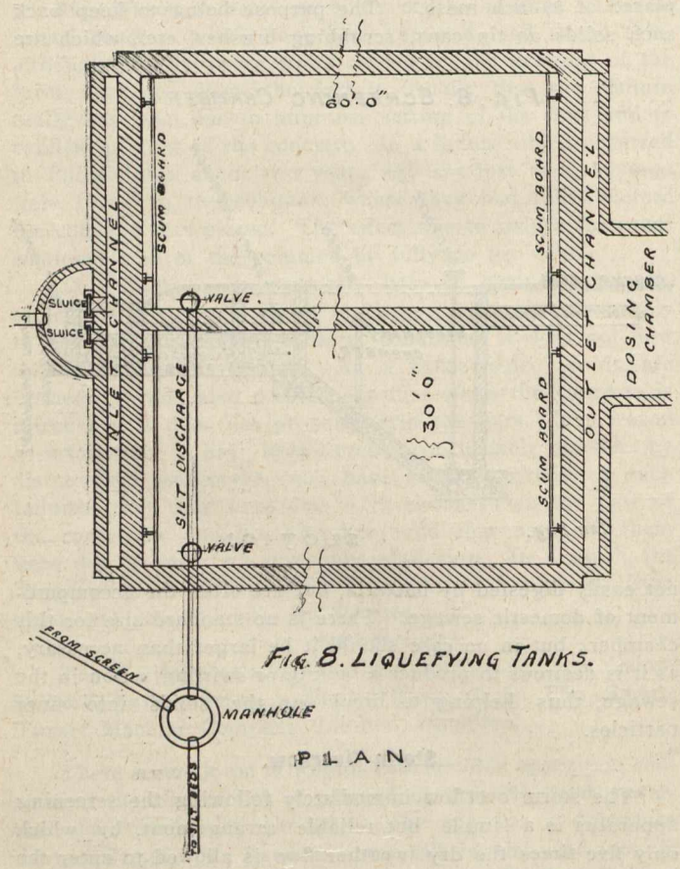


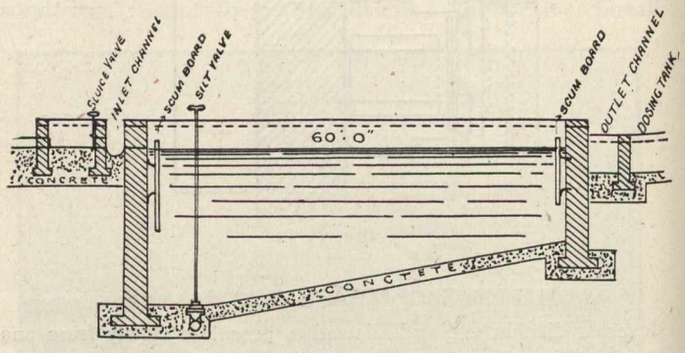
FIG. 8. LIQUEFYING TANKS.

order to retain them. The tanks are shown in figures 8 and 9. They are in duplicate, to allow of repairs and cleaning. The size of each being 60' 0" × 20' 0" × 8' 0" feet deep. The two being capable of holding 120,000 gallons of sewage or 24 hours' dry weather flow.

The sewage enters over a weir, the full breadth of the tank, in the form of a thin film. It then meets with a scum plate fixed about 3 inches from the weir, this stands about 6 inches above the water-level and dips about 2 feet into the body of the tank. It serves the double purpose of preventing any disturbance of the surface of the tank, while the sewage entering at a level above the bottom of the tank, the lower layers of precipitated matter are also undisturbed. The method of outlet is arranged in precisely similar lines.

The main principal in these tanks, is to prevent as far as possible any undue disturbance of the sewage. The process which the sewage undergoes is that of putrefaction. All

FIG. 9. LIQUEFYING TANKS

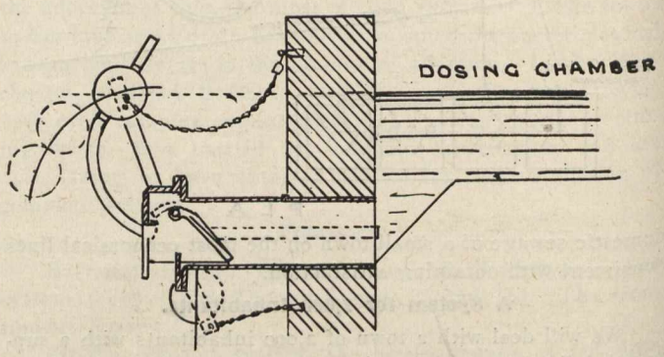


Can. Eng. SECTION

putrefaction is of a septic nature, that is it is brought about by the aid of bacteria in their effort to break up effete organic compounds. Consequently we gain from these tanks a more liquefied form of sewage. But it must be borne in mind, that no nitrification has taken place. And the effluent from these tanks is still sewage, though presenting a more desirable appearance than when it first entered.

An opinion exists in some quarters that such tanks provide all that is necessary for sewage purification. They accomplish no such desirable end. All that they effect is to prepare the sewage for purification by nitrification. In fact the work done is nothing more nor less than that of the old-fashioned, neglected cesspool; in which it was found that organic solids dissolved, and were then absorbed in their liquid state into the soil, there to undergo nitrification. To Mr. Cameron, of Exeter, however, great credit is due for having put this action definitely on a scientifically practical basis. He himself, however, does not claim that this septic action

FIG. 10. DOSING CHAMBER.



SECTION

will provide a purified sewage effluent, without the addition of nitrification, as at the Exeter works where the effluent from the septic tanks is treated on bacterial contact beds.

It would be as safe to discharge the effluent from septic or liquefying tanks into a clear water source, as to feed upon a dead carcass in a septic state of putrefaction.

Dosing Chamber.

The dosing chamber, or intermittent discharge chamber, forms an extremely important feature in the continuous bacterial system, on its capacity largely depends the success of the filter.