provided whereby the collected effluent may be discharged. The valve consists of a tapering heavy lead stopper fitting into a concrete ring and is operated by a handle from the top of the tank. It has worked very well. On account of its softness it fits very snugly. We did not adopt a copper automatic valve in fear of the action of the considerable quantity of lactic and other acids in the effluent.

if the ends of the tile rows are opened up. The grease in the

One thousand four-inch field tile were placed in rows two feet apart to receive the now half treated sewage, and thus distribute it evenly over the whole area so that each portion would do its share in the final disposal. It is quite admitted that the bed is overworked, but it is only for five months in the year that the plant is required to be in operation. The rest during the next six or seven months is expected to resore its efficiency, and the experience of the last two winters has sustained this expectation.

The tile is buried under 10 or 12 inches of a very sandy soil, which in this case had to be hauled from a distance to make the bed. The soil in the immediate vicinity of the factory where the sewage could be conducted by gravity was heavy clay and not suitable for this sort of work.

The plans 1 and 2 will show in detail the construction of this plant.

Detailed Description of the Plant at Colborne.

The daily discharge of sewage from this factory is from 200 to 250 gallons.

The sedimentation tank in this case is 9.5 feet by 2 feet by 4 feet in depth inside measurement, and calculated to hold approximately 450 gallons, or two days' discharge.

The flush chamber is constructed like the one at Innerkip, with a capacity of about 150 gallons. The valve and float are the same as at Innerkip.

The subsurface irrigation is carried on through 300 four-inch farm-tile, buried from 10 to 12 inches below the surface in a good, porous, natural soil.

The plans 3 and 4 will show in detail the construction of this plant.

These plants have now been in continuous operation during two seasons.

At the end of each season the first compartment in each had about one foot of scum on the top and about one foot of sludge at the bottom, the next chamber had about six inches of scum and the same of sludge, the next about two inches of scum and the same of sludge; the last chamber had only about one-half inch of scum and about the same of sludge. The effluent passing into the flush chamber was still turbid and contained some suspended matter, but was much less turbid than the fluid in the grit chamber or first compartment.

The odor was bad when the cover was lifted, but was not noticed in the factory, for the vent pipe was carried to above the roof, and escaped high enough up. The scum if rendered down ought to yield quite a quantity of good fat for, say, tannery purposes. The sludge will have to be taken out or buried or disposed overland. It is all organic matter; nevertheless it has not disappeared, as it was once claimed by septic tank promoters would happen. But one cleaning a year is not a hardship. It is localized and not all over the neighborhood.

No trouble has been experienced with the tile. However, they were not without deposit in them. They contained about one-quarter of their capacity of sludge, made up of little pieces of casein and fat chiefly. The earth about the tile was not sludge at all. The inside of the tile was greasy throughout their circumference. This sludge can be cleared out from the flush tank by using two or three quantities of clean water pipes can in great part be removed then by flushing with boiling water, thus avoiding the necessity of removing the tile, which we quite expected to have to do every two years at least. Standing over all the winter after this was done would about complete the removal of the fats from the inside.

When butter-making is being done there is no sewage being produced necessitating the use of the plant.

At Colborne the results are precisely what were found at Innerkip.

Bacterial treatment in these two cases has not been able to remove all of the organic matter, but has removed much, but with some mechanical aid has given excellent practical results.

From the above the conclusion is justified that when little water is used sewage disposal is not necessary. All of the washing and the whey, if whey tanks enough are provided, should be hauled away to supplement hog feeding. Any infection or ordinary dirt in it can be rendered harmless by a simple sterilization.

The laundry water would be dangerous on account of the alkalies used. This water could be efficiently dealt with on the ground of the neighborhood, provided it is not discharged on the same spot each time it is thrown out. It is not greater in quantity than the laundry water of an ordinary fair-sized household. If a large quantity of water is used, the whey would be too much diluted. The washings and flushings should be treated. The method employed at Innerkip and at Colborne, though not perfect, would fill the requirements in nearly a perfect manner, at least for all practical purposes.

A SIMPLE METHOD OF WATER PURIFICATION.

The Ontario Provincial Board of Health have issued the short circular here reproduced. The recipe is the outcome of experiments made by Drs. G. G. Nasmith and R. R. Graham.

In connection with the recipe a short word of warning is necessary. Chloride of lime is the base which is relied upon to produce the free chlorine necessary to act as a germicide. The amount of free chlorine obtainable from chloride of lime is by no means a fixed quantity. The lime may contain any quantity of chlorine from practically nothing to between 40-50 per cent.

The recipe appears to be based upon a chloride of lime containing about 30 per cent. available chlorine. It is well to warn householders that they obtain chloride of lime which is fresh or has been stored under due protection, and in connection with which a warranty can be given by the vender.

Chloride of lime very soon loses its efficiency as a disinfectant if exposed to the air or kept in a damp place.

Copy of Recipe.

A level teaspoonful of chloride of lime should be rubbed into a teacup of water. This solution should be diluted with three cupfuls of water, and a teaspoonful of the whole quantity should be added to each two gallon pail of drinking water. This will give .4 or .5 parts of free chlorine to a million parts of water and will in ten minutes destroy all typhoid and colon bacilli or other dysentery-producing organisms in the water. Moreover, all traces of the chlorine will rapidly disappear.

This method of purification has been tested with Toronto Bay water inoculated with millions of bacteria. Every germ