

## THE DISPOSAL OF CHEESE FACTORY WASTE.\*

A considerable amount of putrescible organic matter is daily to be got rid of by cheese factories. In some cases for want of drainage facilities it is allowed to accumulate about the factory, in others it is discharged into streams to drag its filthy course sometimes a considerable distance below. This is unsanitary. In consequence of the bad odors engendered and the filthy surroundings the factory hands become careless, the milk is not handled in a cleanly manner, the milk producers get into slovenly ways and produce dirty milk. Flies are encouraged about the place (often they swarm). If the discharge is into a stream the water below is contaminated and is not good for man or beast.

In order to decide on the most representative factory in the east and in the west of easy access and to study the problems involved, factories in five districts, the Niagara, the Woodstock, the Stratford, the Colborne, and the Campbellford districts were visited to the number of twenty-five. These factories varied in size from those capable of handling 5,000 lbs. of milk a day to those with facilities to handle 30,000 lbs. a day. Thanks to the untiring energy and enthusiasm of the dairy instructors these factories were almost invariably in very fair sanitary conditions. On all hands those who know would tell you that the chief improvement had been during the last few years and yet one could frequently locate the factory by the characteristic odor of the whey tank and the accompanying dirty areas.

The quantity of water used for cleansing in the various factories was great or small, not in proportion to the quantity of milk handled but to the quantity of water available.

Most of the factories were situated well away from habitations. But many of them were a nuisance at greater or less distances on account of the pollution of the ditch or stream receiving the waste.

Much fat runs off with the water, and this takes a long time to purify and sticks to much on its way down, and gives rise to very foul odors. In the summer time when the streams are low, the small quantity of water used is not sufficient to dilute the waste or to flush it away.

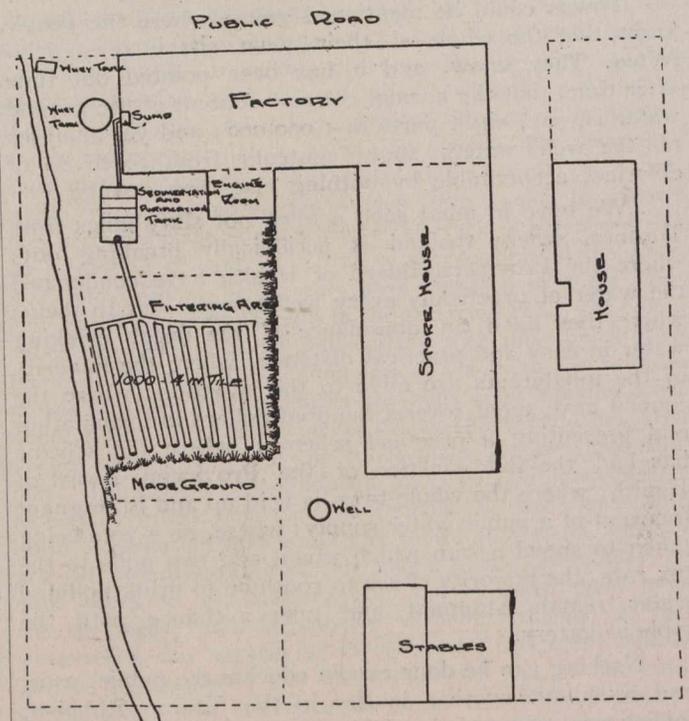
Every cheese factory visited was provided with a steam boiler for power, for sterilizing and for hot water.

To realize the problems involved one should follow the process of manufacture. After the curd in the vats has sufficiently formed and reached the necessary acidity, the whey is strained off. In most factories this flows over the floors and back into the drains to the whey tanks, carrying with it any dirt that lies on the general floor of the factory. Many of these are of cement and well constructed, and drained to a sump, to be pumped or run directly into the whey tanks. Some are of wood and well caulked and swollen by being kept moist, and drain off well to the tank. Some are defective, and the whey runs under the floors and all about, resulting in filthy conditions. The whey tanks are often too small, the pipes leading to them are too often defective and leak, so that soaking of the ground in the neighborhood is common, and when putrefaction takes place a nuisance results. Flies are encouraged, and are a great source of danger and annoyance. In the springtime, when the farmers are busy and are short of pigs to feed and the roads are bad, the whey is not carried away for two or three days at a time; then also on Monday morning, when the Sunday as well as the Monday milk is done, overflow into the neighboring water-

courses becomes necessary, with the consequent nuisance. After the curds are transferred to the sinks for turning over and draining, the vats are flushed out onto the floors, the floors are flushed off. In most places this is run off into the watercourses and constitutes the greater part of the sewage of the factory. The only legitimate reason for not putting it all into the whey tank is that the water quantity would dilute the whey too much and thus reduce its food value, but beyond its flavor there is comparatively little food-stuff in it in any case. There is an objection to carrying water by horse-power back to the farms. To object to it on account of the dirt on the floor is hardly reasonable, for the first whey rids the floor almost completely of dirt.

The curds are now rarely washed in the process of manufacture. During the various turn-overs they receive, more whey and much fat runs away. This all goes to the whey tank. During the pressing of the curds more whey but very much fat is squeezed out. In some factories this fat is made into butter and realizes a fine bit of pin-money for the cheesemaker. The rest of it reaches the whey tank. Then all the utensils are washed up usually just with hot water, and this water runs away to the tank or into the watercourse.

### INNERKIP CHEESE FACTORY WASTE TREATMENT EXPERIMENT



The towels, head cloths and large sheets used are washed in water with the aid of some cleansing compound. This water now becomes sewage, so that we have whey, diluted whey, dirty water and wash-water to deal with.

Much by-product could be saved. From the dripping from the presses much good butter might be made. When the whey is collected without floor washing, the fat might very profitably be collected and rendered into very useful oil. It has been suggested by some that it be separated by the centrifuge and made into butter. When the whey is to be used for food the feeders might object to this diversion of the fat.

In small factories when the least amount of water possible is used, for washing, and in large factories when only the first washing is to dilute the whey **all should be run into**

\*From the Annual Report of the Ontario Provincial Board of Health for the year 1909.