The purpose of the tanks at the mills is to remove the suspended solids, hair, leather and other heavy material from the mill wastes by sedimentation, and any chemical or biological action that may take place in the tanks, so that the combined mill and domestic sewage may be purified; also to avoid the clogging of city sewers or unnecessarily burdening the sewage disposal plant.

The size of the tanks to be constructed or used at any mill that is connected with the sewer system of the city of Gloversville shall be sufficient for the purpose for which they are intended, and they shall be constructed with such features and of such dimensions as may be required by the common council.

Tanks must be regularly cleaned at such intervals as their operation proves necessary, or at any time when the city engineer deems they should be cleaned. In cleaning the tanks no solids shall be emptied into the sewer or outlet from the tanks, nor in any other way shall solids from the tanks be permitted to enter the sewer in cleaning. If the tanks are not properly cared for or if they are not cleaned when necessary or when directed by the city engineer, they will be cleaned by the city and the expense thereof charged to the owner of the mill.

Free access to the tanks must be given to the common council or their representatives at any time for either the purpose of measurement, analysis, experiments or inspection, or for any other purpose connected with the operation or regulation of said sewer system.

It has been found when the tanks are kept properly cleaned that their efficiency is very satisfactory. Occasionally the quantity of suspended matter is slight, while at other times it is very high, occasionally exceeding 2,500 parts per million. Over 90 per cent. of the suspended matter has been removed in some cases, and it appears that there will be little difficulty in maintaining an average efficiency of 70 per cent. in all cases. If an efficiency of 90 per cent. could be maintained, all of the effluents would pass a standard of 300 parts per million of suspended matter. Difficulty has been experienced in securing the full co-operation of some of the mill-owners in cleaning the tanks, so that the results of this preliminary treatment have not been as satisfactory as had been hoped. It has been found necessary to establish a systematic inspection of the tanks, and to require the owners to clean them whenever the accumulation of sludge is so great as to interfere with their efficiency.

It has been found that a single tank has retained over 8,000 pounds of sludge (10 per cent. solids) in a single day, and in several cases from 3,000 to 3,500 pounds has accumulated in the same length of time. As a result of tests made at one time it was found that the tannery waste contained as much as 61,600 pounds of sludge in a single day, and that of this amount over 26,000 pounds were retained in the mill tanks. Had a uniform efficiency of 70 per cent. removal been secured, over 43,000 pounds of sludge would have been produced.

After removal of a large part of the suspended matter in the settling-tanks built by the tanneries, the sewage at Gloversville was subjected to experimental purification by means of sedimentation and septic tanks, sprinkling filters, and then further sedimentation followed by sand filtration. The important point established by these processes was the fact that the chemicals in the tannery sewage did not prevent bacterial purification, though such action was, perhaps, somewhat retarded.

Undoubtedly the most striking result of the whole investigation by Messrs. Eddy and Vrooman is the establishing of the fact that by the use of settling tanks at the tanneries the sewage from these places could be made to contain a low proportion of suspended matter, so that they conformed nearly to the standard of ordinary domestic sewage This fact is of practical importance to every tannery which has to consider actual or prospective litigation over the disposal of its wastes.

DISPOSAL OF WASTES FROM FACTORIES LOCATED UPON LOW GROUND.

Albert Priestman.

The general prohibition against river pollution has caused an increased interest to be taken by mill owners in the recent applications of compressed air for sewage disposal purposes. It frequently happens that long horizontal lengths of delivery mains are necessary to connect existing sewer systems (which have formerly emptied into the nearest stream) with the main sewers of the district. Consequently a back water check valve must be generally made use of and whenever some solid matter prevents a complete closure of this valve it may happen that considerably more sewage leaks back from the rising main into the sewage receiver than the flow into it from the sewers, and consequently not only is power wasted but the lifting capacity of the sewage raising appliance is proportionately reduced.

The new method of using compressed air expansively and independently of the conditions within the sewage receiver has enabled a valuable application to be made of the sewage holding capacity of the delivery main, and if desirable to eject the entire contents of same at each discharge and to do so economically.

By using measured charges of compressed air of predetermined volume, as is accomplished by a new type ejector, the horizontal run of delivery main laid at an elevation lower than that of the crown of the sewage receiver, may be emptied at each discharge and employed for sewage receiving purposes with the advantage that only the volume of sewage in the vertical, or rising portion, of the delivery main will require to be held in place by means of a back pressure check valve, and if the lift is not a high one a small volume of additional air is all that is necessary for expelling this sewage, because the expanding force of the increased measure of air will eject it as the head of liquid in the vertical or rising portion diminishes.

This feature appears to us to be one which may have a more or less general application in connection with low level sewage problems, but in any case will be of interest to those called upon to deal with the question of handling wastes from low-lying factories.

PATENTS.

The following is a list of Canadian patents recently issued through the agency of Messrs. Ridout & Maybee, Manning Chambers, Toronto, from whom further particulars may be obtained:—

Stratford Mill Building Company, driving mechanism for sifters and screens; Andre Conte, footwear; Andre Conte, ventilating device for footwear; Charles Trigger, combined hay and stock rack; Frank Van Slyke, breaking plow; C. Cahn and E. Seeberger, method of laying conduits (Case 1); C. Cahn and E. Seeberger, method of laying conduits, (Case 2); D. K. Morris and G. A. Lister, Electrical switches and the like; E. A. W. Beemer, door knob fastenings.