

A limpid, sparkling and non-putrefactive effluent was obtained from domestic sewage drawn from a sewer near the laboratory. Ordinary tank effluent from the Manchester Corporation sewage works at Davyhulme has been rendered non-putrefactive on incubation. So far only approximate estimates can be given of the amount of iron salt required and the duration of the blowing process. Experiments would indicate that 1 grain of iron-salt per gallon is the maximum need, and that a total of twelve hours' tankage—i.e., six hours' aëration and six hours' settlement—will be sufficient.

As regards the inoculation of the organism, once the growth has been established in a tank there appears to be no difficulty in maintaining it. The fact that large bodies of water in the old colliery workings at Worsley, near Manchester, are teeming with the organism, is sufficient evidence of its vitality. An experimental plant has been erected at the University of Manchester which will permit of accurate observations of this process to be made, and sufficient data to be collected to serve as a basis for work on the larger scale. It is already evident that the conditioning factor is the cost of an air blast; the pressure of air will, of course, depend simply on the depth of water to be blown through, and a number of engineering conditions will naturally affect this part of the problem.

It is reasonable to suggest that much of the power required could be obtained on the one hand from gas collected from the fermentation of the main bulk of the sewage solids, either in Emscher tanks or by some kindred process, or the fall available from the aërating tank might often admit of the water-head being turned into power. In any event the authors believe that they are justified in bringing the idea forward at this congress in order that it may be discussed from different points of view.

Experiments on the aëration of sewage in different ways have, of course, been made by different observers. Dr. Dupré and Mr. Dibdin, in Vol. 2 of the Report to the Royal Commission on Metropolitan Sewage Discharge, in 1884, describe a large number of experiments on the aëration of London sewage. In 1888, Mr. Hartland, in conjunction with Mr. Kaye-Parry, patented an aëration chamber for purification of tank effluent. In 1892, Mr. Sydney R. Lowcock conducted experiments on the aëration of filter-beds by a forced air supply. Dr. Adeney's long series of careful researches have thrown great light on the chemical changes occurring when sewage is completely oxidized by prolonged aëration. In 1897 one of the present authors carried out extensive experiments on the aëration of tank effluent under various conditions, and recently Messrs. Black and Phelps have carried out a number of experiments on the aëration of New York sewage, while the subject is also being studied by the chemists of the Massachusetts State Board of Health.

The advance claimed in the present communication is the use of a specific organism found in nature, together with iron salts, to effect the clarification of the effluent—that is, the coagulation of the colloidal matter as distinct from the purification of the effluent taken as a whole. To use a simple illustration, the addition of a little rennet does not appreciably alter the composition of milk as a whole, but separates it into a solid and liquid portion. The endeavor of the authors has been to obtain a similar result in the case of a sewage tank effluent; to collect the precipitated colloids, and purify the liquid portions by high-speed filters, or it may be in large tanks stocked with suitable aquatic plants.

PUBLIC HEALTH MEASURES IN QUEBEC.

Public health legislation in the Province of Quebec began in the reign of Louis XVI., when Canada was still under the French regime. The system has been steadily extending since Canada passed under English domination in 1795, until the present decade, which has witnessed a marked spread of recognition and power.

The provincial by-laws concerning municipalities, establish a standard which all municipalities have to obey, but in no way prevents them from making municipal regulations, which would be more adapted to their needs, provided that, in the opinion of the Provincial Board of Health, such municipal regulations are at least equivalent to the provincial provisions.

In October, 1909, the Board organized a sanitary engineering division, which took charge of waterworks and sewerage systems, and which makes a systematic sanitary survey of all the rivers of the province. Up to date, the Ottawa River, the des Prairies River, and the Richelieu River have been surveyed.

In 1910 it was decided to divide the province into ten sanitary districts, six of which have since been organized, with an inspector located in each.

At the present time careful attention is being given to the important question of the pollution of streams. As so many of the cities and towns of Quebec are using these streams to supply the citizens with the water necessary for drinking and domestic purposes, it is regarded by the Provincial Board of Health as absolutely imperative that proper legislation be enacted to prevent streams being polluted to such a degree that it might increase unfairly the burden of the municipalities which have to go to these streams for their supply of water.

TUNGSTEN.

The tungsten bearing mineral scheelite has been found at a number of localities in Canada, but the only place at which it has been worked commercially is at Scheelite Mines, Moose River district, N.S., according to report by J. McLeish, in Economic Minerals and Mining Industries of Canada. Here it occurs in quartz veins cutting the quartzites and slates of the gold bearing series. The quartz veins also carry mispickel and several other minerals but are not gold bearing. A mill has been erected and about 15 tons of concentrated ore (72 per cent. scheelite) have already been shipped. Scheelite also occurs in the Malaga gold mining district, Halifax county, while at one locality near South East Margaree in Inverness county, C.B., from 300 to 500 lbs. of hübnerite (Fe, Mn) WO₄ were recovered from a large detached mass of quartz. The mineral has also been noted at New Ross, in Lunenburg county, and at Perry Lake, West Waverley, Halifax county, N.S.

In the province of Québec, scheelite has been found in Beauce county, in a quartz vein traversing Pre-Cambrian rocks, while in Ontario it is found occurring in small nodular masses in parts of the veins around Pearl Lake, Porcupine gold mining district.

In British Columbia its occurrence has been noted in quartz veins on the Meteor claim, Slocan City mining division, West Kootenay, and also in the Cariboo district at Hard-scrabble creek where the scheelite appears to be very irregularly distributed in the country rock.

In the Yukon territory at Dublin gulch, scheelite is encountered in small water worn nodules of yellowish color, which are caught in the sluice boxes at Hight Creek.

The mineral is employed in the steel manufacturing industry making a tungsten steel of high tensile strength.