

Percolating Filters

Percolating filters, where necessary, should be of ample size, so as to prevent overworking. It should be remembered that in the colder climates the bacterial action in the filters is much slower than in milder climates. Therefore, to produce the same results, filters must be considerably larger than would be necessary in a southern climate. Certain tests at Milwaukee, Wisconsin, indicated that, on very hot days, percolating filters could be operated efficiently at the rate of 4,000,000 gallons per acre per day, whereas, in colder weather, only 400,000 gallons per acre per day could be applied to obtain the same results. The Division of Sanitation recommends that percolating filters in Minnesota be designed to operate at a rate of 1,200,000 gallons per acre per day, where the average depth of stone is at least six feet.

Resettling Tanks

A resettling tank, having an average holding period of about one hour, shall be installed wherever percolating filters are used. This tank shall be provided with cross baffles. The bottom shall be hopper-shaped. Adequate provision for sludge removal shall be provided. The sludge-drying bed shall be constructed in a manner similar to the bed for drying the sludge from Imhoff tanks. This bed shall have a net area equal to at least one-half a square foot per capita.

Sand Filters

Sand filters have not been entirely successful under Minnesota conditions, due to freezing in cold weather. They cannot be operated at rates much exceeding 100,000 gallons per acre per day, and require a great deal of attention.

With the exception of a very few cases, not much attention has been given to the appearance of sewage treatment plants. It is the opinion of the Division of Sanitation that some of the litigation brought on by alleged nuisances at sewage treatment plants could have been avoided had a little care been exercised in designing the plant so that it would have a pleasing appearance. A small amount of money expended in parking and landscape work at sewage treatment plants will do away with a great deal of the objection to them.

There are many phases of the sewage treatment plant problem which need investigation, such as the treatment of dairy and other trade wastes before admitting them to the sewage system; the disinfection of sewage, if necessary, to prevent its being the cause of injury to cattle pasturing along streams which receive sewage; and the question of installing mechanical apparatus for the purpose of breaking up scum, stirring the sludge, etc.

Rules for Operation of Imhoff Tanks

Any material, other than sand and grit, which may collect in the inlet chamber, should be forced through the opening into the settling chamber. Sand and grit should be removed and deposited upon the surface of the ground. The inlet chamber should be kept clean at all times. Any material which rises to the surface of the sewage in the settling chamber which does not sink readily when broken up should be removed to the vents. Any sludge which deposits on the walls of the settling chamber should be forced through the slots into the sludge chamber. The walls of this chamber can be kept clean by daily scraping and forcing any adhering deposit through the slots.

Any scum which collects on the surface of the sewage in the vents should be thoroughly stirred up daily, so as

to liberate the entrained gases and facilitate the settling of the solid material. If the scum in the vents should reach a thickness of over 6 inches, a portion of it should be removed. The surface of the sludge in the sludge chamber should never be allowed to reach a point higher than 2 feet below the slots, equivalent to a point about 9 feet below the surface of the sewage. The level of the sludge in the sludge chamber should be lowered about 2 feet each time the sludge is removed, except in the late fall, when about 4 feet should be removed to allow for the winter's accumulation. The operator should be provided with a sampling outfit by means of which bottle samples of sewage in the sludge chamber can be collected at various depths and the exact location of the surface of the sludge determined.

The surface of the sludge should be determined at least once every two weeks.

Ice which may collect on the surface of the sewage in the settling and vent chambers should be removed immediately.

When the sludge on the drying bed reaches a depth of about 1 foot, it should be removed. Since a portion of the sand will adhere to the sludge removed from the bed, it will be necessary to replace the top layer of sand on the bed from time to time.

Escher Wyss & Co., Montreal, have moved their offices from 211 Coristine Bldg., to 112 Coristine Bldg.

The weight of steel in a reinforced concrete ship 205 ft. by 32 ft. by 19½ ft. has been found to be about 42½ per cent. of that in a steel ship.

Economy in using oil fuel is recognized on the Southern Pacific Railway system by a distinctive mark on the locomotive of each class which makes the best record on its division. This decoration consists of bright red paint on the circular number-plate on the front of the boiler.

The "Commonwealth Statistician" states that the 444 strikes in Australia last year affected 1,941 establishments, representing 173,970 workpeople, who had 4,689,316 workless days and a loss of over \$13,000,000 in wages. Industrial disputes in New South Wales totalled 296—in Victoria, 52.

A very simple test which may be applied to determine whether a coal is likely to ignite spontaneously is given in an article by J. F. Springer, in "Power." Take a convenient quantity of the coal and weigh it pretty accurately. Heat the sample to 250 deg. Fah., hold it at that temperature for three hours, and then weigh it. If the weight has gone up 2 per cent. or more, the coal is a dangerous one from the point of view of spontaneous combustion. The sample must be dry coal, the drying being done at about 100 deg. Fah.

"Among those who came to Canada in 1913 to attend the 12th International Geological Congress was a certain German, Geheimrat Bergrat Professor Doctor Fritz Frech, of Breslau," says a recent issue of "The Canadian Mining Bulletin." "This Prussian professor has recently published a work ('Die Kohlenvorräte der Welt; Stuttgart, 1917') which contains a statistical review of the coal resources of the world. The statistics appearing in this work are taken mainly from the well-known report issued under the auspices of the congress, but they have been wonderfully distorted for German consumption. With regard to the coal resources of Canada, the author of this work remarks: 'The impression is gained that the classification of coal of the Canadian Commission had only been adopted in order to conceal the inferior quality of the Western lignite under the veil of unintelligible formulas'; and he further suggests that the small output of Canadian coals is evidence of their poor quality. In short, Professor Frech has juggled with the statistics until he has apparently mesmerized himself into believing the conclusions he desires to impress upon his readers, which are to the effect that England has coal for two, or at the outside three, centuries, Germany for fifteen centuries, and that, from the point of view of a German coal policy, the possession of Belgium is indispensable to Germany."