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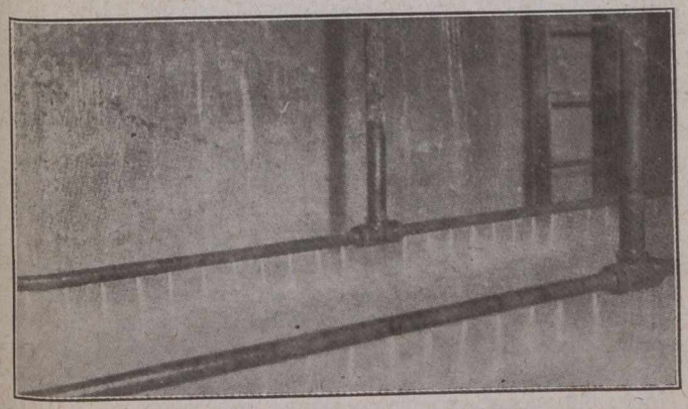
ACTIVATED SLUDGE PLANT AT EDMONTON

DETAILS OF AERATING CHAMBER, MOTOR EQUIPMENT, AND AIR PLANT —ACCOUNT OF EXPERIMENTAL WORK BEING DONE IN WESTERN CITY

THE following facts concerning the experimental work being done at Edmonton, Alta., in connection with the activated sludge process of sewage disposal are taken from a pamphlet on the subject recently issued by Geo. T. Hammond, engineer in charge of the Sewage Experimental Station, Brooklyn, N.Y.

The plant at Edmonton was designed about two years ago when little was known about the activated sludge process, and as the plant was not solely for experimental purposes the precaution was taken of building an Imhoff tank alongside of the aerating tanks.

The following data concerning what is known in Edmonton as the Ross Flats sewage disposal plant were



Showing Flush-water Passing Through Apertures in Bottom of Air Supply Grid.

furnished by Mr. A. W. Haddow, acting city engineer, and used in the pamphlet referred to.

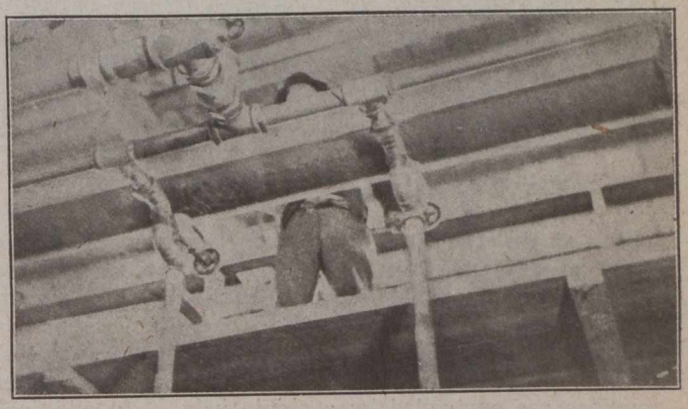
The system is combined and has a contributing area of 294 acres with a population of 4,500. The dry-weather flow averages 33,600 cubic feet per day.

The maximum storm flow to be treated is 54,000 cu. ft. per day, equal to 75 Imperial gallons per head of population. The balance will overflow into the North Saskatchewan River through the present outlet. The nature of the sewage is non-septic with very little trade waste. All contributing sewage has to be pumped and enters the pump well through a cage for rough screening. This cage can be lifted to the floor level of the pump-house when it is necessary to be cleaned. There is no suction lift, and the maximum force lift from the bottom of the well to the baffling chamber is 45 ft. The pumping equipment consists of one 4-inch single-stage, vertical spindle, centrifugal pump, electrically driven, and automatically controlled by a float. Capacity under trial was 60 cu. ft. per minute pumping against an average head of 42 ft. plus friction. One duplicate pump complete in all respects is held ready for emergency service.

The motor equipment consists of one 11-h.p. motor directly connected to each pump. The power consumed is 4 kw. per hour, which equals 1⅓ kw.-hour per 1,000 cu. ft. pumped.

The aerating chambers, which were originally designed for live earth beds, number six. The fill-and-draw principle is used, but changes could easily be made by which the continuous-flow principle could be used. The length of these chambers is 44 ft. with a width of 10 ft. and a depth of 8 ft. The depth of sludge is about 2 ft. and capacity of each 3,420 cu. ft. The working capacity above sludge is 2,500 cu. ft.

The Imhoff tank referred to was originally designed



Showing Connections at Top of Air Pipes.

at a suitable elevation to take effluent from what are now the aerating tanks. It is now being used for independent experiments and takes part of the raw sewage direct from the grit chamber. It could take effluent or sludge from aerating tanks if it was ever decided to try such an experiment. At present the effluent goes direct to the river. This Imhoff tank has a total depth of 21 ft. The capacity of the flowing-through chamber is 3,780 cu. ft., while the capacity of digestion chamber is 6,340 cu. ft.

The Air Plant and Air Distribution.—For this there is used one Connersville high-pressure blower, size No. 31. The capacity of this blower against a working pressure of 3½ pounds through a 4-inch discharge is as follows: Low speed (255 r.p.m.), 180 cu. ft. of free air per minute; high speed (330 r.p.m.), 240 cu. ft. of free air per minute. The maximum may be increased later by altering the belt drive. The blower has capacity to spare for the one tank in operation, but a blower of a larger size will be ordered if all the tanks are fitted up for aeration, when the present blower will act as a spare. The air-main along the centre of the tanks has been started off at 10-inch diameter in view of this. This 10-inch main is of cast iron, as we find it best for tapping