

OPERATING RESULTS OF "DIRECT OXIDATION"

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process and upon employment of an operator on each 8-hour shift at a salary of \$1,200 a year.

If we assume that the plant could be operated continuously at a normal rating (1,000,000 gals. a day) the unit costs would be materially reduced and would probably be approximately as follows:—

Without Pumpage—	
Hydrated lime, 3,720 lbs. at \$6.75 a ton .....	\$12.56
Water, 20 cu. ft. at \$0.003 per cu. ft. ....	.06
Electric power, 185.5 k.w.h. at \$0.0226 .....	4.19
Electric lights, 6¼ k.w.h. at \$0.0805 .....	.50
Heating .....	1.25
Labor and superintendence .....	15.00
Electrode renewals .....	1.00
Maintenance and repairs .....	1.50
	\$36.06
Add for Pumpage—	
Electric power, 117.7 k.w.h. at \$0.0226 .....	\$ 2.66
Water, 120 cu. ft. at \$0.003 .....	.36
Total .....	\$39.08

These figures are exclusive of allowance for interest and sinking fund charges and cost of sludge disposal. It will be noted that the lime has been increased proportionately to the flow as this quantity was added during the test. Should it later appear that the quantity of lime can be reduced without deterioration of the effluent there would be a corresponding reduction in cost of treatment. It is probable that the cost of sludge, pumping, treatment and disposal will be in the neighborhood of \$7.50 per 1,000,000 gals.

Conclusions of Engineering Division

Consideration of the performance of the plant as operated by the owners and as observed by the members of the Engineering Division of the department on December 4 and 6, 1918, lead to the following conclusions:—

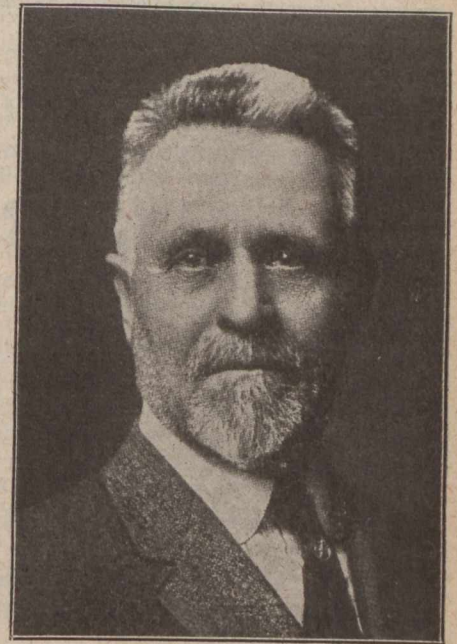
1. The combined action upon the sewage of the fine screen, lime treatment and the electrolytic cell render the sewage in such a condition that after sedimentation in properly designed tanks, the effluent can be discharged into a stream, affording a reasonable dilution of relatively clean water, without danger of creating a nuisance. It is, of course, assumed that the effluent will be discharged through properly designed outlet so as to cause dispersion in the stream.
2. The fine screen, lime treatment and electrolytic cell have a destructive action on bacteria of the colon group. If, however, the use of the receiving body of water demands a high degree of bacterial removal in sewage effluents discharged therein, it would be on the side of safety to provide for disinfection of the cell effluent.
3. Assuming fresh domestic sewage, proper design, operation and maintenance of the various devices, the treatment of sewage by the above described processes should be free from objectionable odors, with the possible exception of the removal and disposal of the screenings and the sludge from the final settling basins.
4. Similar screenings are being successfully disposed of elsewhere by incineration or burial and the sludge from the final settling basins should be susceptible of dewatering by presses such as are used in sewage treatment works, including the lime precipitation method.
5. The process should be extended by installation of some adequate method for treatment of sludge removed from the settling basins as discharge of this sludge with the cell effluent is not permissible.
6. The cost of installation of a sewage treatment works, including the above processes should not be excessive, but the cost of operation would appear to be higher than for other methods of sewage treatment in general use to produce an equal quantity of effluent.

Each proposed installation should be examined by com-

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PERSONALS

J. M. DIVEN, secretary of the American Water Works Association, who is planning the details of the next annual convention, which will be held in Montreal, Que., has resigned as superintendent of the bureau of water of Troy, N.Y., and will devote his entire time hereafter to the affairs of the association. Mr. Diven's headquarters will be in New York City, the association having secured rooms at 153 West 71st St. Mr. Diven's connection with the water works industry has been of long standing. In November, 1873, he was appointed as an assistant in the office of the Elmira Water Works Co., in Elmira, N.Y., and two years later became secretary-treasurer of the company. At first he was in charge of the office, but later he gradually assumed the outside work, and in



1886 he was appointed superintendent of the company. In January, 1905, Mr. Diven resigned at Elmira in order to go to Charleston, S.C., as superintendent of the Charleston Light & Water Co., which position he relinquished in 1912, when he was appointed superintendent at Troy. Mr. Diven was first appointed secretary of the American Water Works Association in 1889, and he served in that capacity until 1891, when he was elected president. The following year he became secretary-treasurer, but later those two offices were separated and since 1902 he has been secretary of the association.

D. W. MUNN, of Montreal, has been appointed professor of civil engineering at the Royal Military College, Kingston, Ont.

LEONARD DUNAWAY, who has been in the British navy for the past four years, has been appointed superintendent of the Vermilion, Alta., power plant.

M. J. BUTLER, managing director of Armstrong & Whitworth of Canada, Ltd., of Montreal, has resigned and is now living in Oakville, Ont. Mr. Butler was deputy minister and chief engineer of the Department of Railways and Canals from 1905 to 1910, when he resigned to become second vice-president and general manager of the Dominion Iron & Steel Co. and the Dominion Coal Co. He left the Dominion companies in 1912 in order to organize a Canadian branch for the well-known English firm, Sir W. G. Armstrong, Whitworth & Co., Ltd. Mr. Butler is a Companion of the Order of St. Michael and St. George, and is also a doctor of laws. He was called to the Illinois bar in 1897, nineteen years after he commenced practice as an engineer and Dominion Land Surveyor.

OBITUARY

FRANK J. LYMAN, managing director of the Lyman Tube & Supply Co., Ltd., Montreal, died suddenly two weeks ago at the age of 42. He was the founder of the business, which was the successor to the railway department of John Millen & Son, Ltd., Montreal, which department he managed for 10 years prior to the establishment of the Lyman Tube & Supply Co., Ltd.