

MUNICIPAL DEPARTMENT

IMPROVED METHODS OF SEWAGE DISPOSAL.

By CHARLES G. HORETZKY, C.E.
(Concluded).

Careful examination and inquiry as to the operation of the Reading sewage works have convinced me that this practical application of coke straining and aerated filtration is worthy of the very serious consideration of the London, Ontario, authorities, who still have the vexed (and to them doubtless most perplexing) question of their sewage disposal before them.

On account of several conditions essential to successful intermittent filtration through land which are not always obtainable, this plan is certainly far in advance of land disposal pure and simple, over large areas, as it is generally understood in Ontario by some people, and which I unequivocally recommended three years ago. But this is in reality a land disposal system in a much condensed form, with but a fractional portion of the duty imposed upon it as in ordinary cases, by reason of the prior removal of the bulk of the sludge by coke combustion as already described. Upon this account, and that of the reduced cost of construction, and future maintenance, as compared with other proposed plans, I unhesitatingly recommend it now.

The Pennsylvania Sanitation Co. of Philadelphia have offered to construct a disposal plant at the outlet of the Cove Road main sewer, much upon the same lines as that of Reading, (the London works, of course, to be a gravitation system), for the sum of \$23,000. This is upon a basis of one million and a half gallons of sewage to be treated daily.

I have carefully gone into the plan proposed by them for London, and feel certain that, with certain modifications, which include receiving chambers, coke ovens, furnace and chimney, besides provision for burning the rakings from the upper filter, an excellent system can be constructed for the sum of, say, \$33,000. The company would, I have no doubt, be glad to operate the works for one year, and guarantee a given satisfactory standard of purity in the effluent. The whole work necessary in caring for the filter beds, handling, and finally burning the clogged coke, could be performed by four men and a foreman. The weekly cost for coke (the only material requiring renewal, besides less than a couple of tons of sand daily) would be about 5 or 8 tons, the total weekly expenditure for materials for one week being: 8 tons of coke and say 12 tons of sand.

The cost of chemicals alone, per week of 7 days, would be, for the "International System," using 7 grains of "ferozone" per gallon of sewage (7 grains per gallon

of sewage are not sufficient, as I have found by actual experience; 10 grains are necessary), and estimating the cost of ferozone at ½ cent per pound (which is 50% less than I ever obtained it for): 10,500 lbs. at ½ cent = \$52.60 per week, or \$2,730 per annum.

So much for maintenance. Now for the cost of construction by either of the three plans proposed for the city of London.

LAND DISPOSAL.

40 acres of land at \$175.....	\$ 7,000
Preparing ditto.....	24,000
Syphon and other items.....	10,000
	\$41,000

INTERNATIONAL PROCESS.

Cost of construction as given	\$41,300
Plan now proposed.....	\$33,000

And the latter, besides being less costly, possesses the inestimable value of being entirely free from the sludge nuisance.

The interests of the city of London can be protected by the company's guarantee to keep up a certain standard of purity in the effluent during the period the works are operated by them.

The location of these works at the end of the Cove street sewer would, of course, obviate the necessity for a syphon as now proposed.

The city of Worcester, Mass., may safely be taken as a typical illustration of chemical precipitation for large cities, and the report for 1896 may be referred to, in which it is shown that, for maintenance and purification of one million gallons of sewage, the cost has been \$10.52, 53.9 per cent. of the organic matter having been removed; and yet Worcester is thinking very seriously of constructing, at great expense, a filtration plant as an auxiliary to their present method. The sludge from the Worcester works has always been found very difficult to get rid of, and when there in 1895, I saw very large areas covered with it to a depth of 12" or 18", small quantities of which the neighboring farmers could scarcely be prevailed upon to take away as a gift.

Enough has now been said on this head, and the method of precipitation as applied to large towns with its sludge concomitant may be dismissed with a quotation from Col. Waring: "The precipitation treatment buys and manipulates chemicals, coagulates the sludge, drains it, pumps it, handles it, and still has it."

It must not, however, be gathered from the foregoing remarks that the writer has

receded from his many previously stated convictions regarding "precipitation" methods.

There are, and always will be, cases arising where, in the absence of coke or suitable land, chemical precipitation will be found a powerful aid to the final filtration of sewage, either through natural or artificial media; and this applies particularly to the sewage disposal of small communities, e.g., as in some of our provincial institutions, or other small centres of population.

Since reading the above I have suggested a still further modification in the method proposed for London, which is to use 20 acres of land for the final filtration of the sewage, after straining through, and retention of the sludge by, coke.

This is a combination of the Reading plan with simple land filtration, and would effect a saving to London in cost of construction of nearly \$20,000, as compared with the original "All Land Disposal" plan and the chemical "International System."

Mr. Robert Surtees, city engineer of Ottawa, Ont., who held that position for twenty-four years, has been dismissed by the city council, owing to disagreement with certain aldermen. A successor to the position will be appointed immediately.

Referring to the appointment of Mr. W. M. Davis, of Woodstock, to the position of city engineer of Berlin, Ont., a Woodstock paper says: While we congratulate Mr. Davis on his appointment to an excellent position in the town of Berlin, we regret—in common, we believe, with all citizens—his removal as a loss to Woodstock. In connection with the engineering work of the town and of numerous municipalities of the district, Mr. Davis has been a most capable, painstaking and conscientious professional man. He is a man of ability and high character, strict, almost unbending in his ideas of professional honor. As an officer of the Dufferin Rifles, Major Davis has had few if any superiors in this district since the organization of our militia forces. He has shown himself enthusiastic and proud of his work. His removal would be a very great loss indeed to the 22nd Battalion, if he were not able to continue his connection with it, which we hope to see him do. In leaving town Major Davis will carry with him the good wishes of many friends.

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