

# MUNICIPAL DEPARTMENT

## TO MUNICIPAL OFFICERS.

The *CONTRACT RECORD* is desirous of publishing, as far as possible, advance information regarding projected works of construction in all parts of Canada, such as sewerage and waterworks systems, railways, street pavements, public and private buildings, etc. Municipal officers would confer a favor upon the publisher by placing at our disposal particulars of such undertakings which are likely to be carried out in their vicinity, giving the name of the promoter, character of the work, and probable cost. Any information thus furnished will be greatly appreciated.

## MUNICIPAL STATISTICS.

According to the Ontario Bureau of Industries, the population of municipalities in 1895 is fixed at 1,957,390, and the total assessment is \$821,466,166. The taxation was \$12,316,429, the rate per head being \$629, or a fraction short of 15 mills on the dollar. The upward flight of assessments and taxation has been checked, but there is no abatement to the increase of the debenture debt, there being a net addition in 1894 of \$1,741,344. This brings the municipal bonded debt up to \$49,724,587, or an average of 25 68 per head of population, as compared with 16.37 in 1886. The interest paid on this debt and on temporary loans amounted in 1894 to \$2,552,607. Of the above outstanding debenture debt \$4,805,897 is on account of railways and \$3,989,317 for school purposes. The amount of floating liabilities of the municipalities was \$6,336,567, of which \$3,151,628 was for temporary loans. The municipalities constituted in 1895 in Ontario represent some 492 townships, 96 towns, 137 villages, 13 cities and 38 counties. The total increase in population in ten years amounts to 128,895, or about 6 per cent. The local officials are requested to make suggestions concerning the municipal law. Many recommend a system of provincial credit, but the department makes no suggestion concerning the subject.

The County Council Act, passed at the last session of the Ontario Legislature, has risen to an anomaly in the law relating to the council of towns, townships and large villages, inasmuch as under the new regulation with respect to the counties the usefulness of deputy-reeves in townships and villages and reeves and deputies in towns is destroyed. Under the old system these officials were members of the county councils; now there will be vested in them no more power than in the ordinary councillor and their office ought therefore to be abolished, and the number of councillors increased if the present ratio of representation must be maintained.

## AMERICAN UTILIZATION PROCESS OF GARBAGE DISPOSAL.\*

By W. E. GARRIGUES.

The two chief principles of garbage disposal—destruction and utilization—it is not the province of this paper to discuss relatively. Both have their merits and local conditions must always cast the deciding vote between them. The former is essentially an engineering problem, while the application of chemistry is hardly less important to the latter. The fire destructor produces, of course, an ash only, and as this has no commercial value, disposal by cremation is a total loss of both substance and expense. The utilization scheme on the other hand—as its name indicates—seeks to recover from the refuse, products of distinct value. These are 'to-day, grease and manure—what may be the possibilities of the future cannot be predicted. One grave objection to utilization schemes is the seemingly general disposition of city governments to let only short time contracts, the first cost of plant being so much greater than for destruction. These contracts are for terms varying from one year in Philadelphia to ten years in St. Louis, with an average of only three or four years. Especially in the chief centers of population a 30-year contract would be more reasonable, and would, no doubt, conduce to lowering the annual cost to the city.

It is my intention to present in the following paper a brief account of the various methods in use in this country for extracting grease from garbage and obtaining the solid residue in a saleable condition, either as a complete fertilizer or as tankage for use in compounding such a fertilizer. A few of these processes have been described singly here and there in different journals, but not unfrequently with such grave errors that the description was utterly valueless—perhaps even harmful—to the seeker after facts in a new and as yet undeveloped field.

The different systems will be divided for convenience into three classes, according as they vary in fundamental principle, viz:

- A. Grease extracted by steam.
- B. " " " sulphuric acid.
- C. " " " naphtha.

### CLASS A.

**ARNOLD SYSTEM.** Philadelphia and New York. (The contract for New York was let during the present year and I am not informed as to the date operations have or will commence.)

The garbage is dumped from the wagons in to a horizontal conveyor discharging into a bucket elevator. This deposits it on the upper floor again into a conveyor by which means it is discharged into the digesting tanks. These are upright steel tanks of five to six tons capacity, and here the material is subjected to live steam introduced at the bottom for 6 or 8 hours, the pressure maintained being thirty pounds. When the vegetable matter has been thoroughly

disintegrated, the envelopes enclosing fat globules destroyed or softened and the bones so changed in physical property that they may be crushed between the fingers, the whole mass is dropped through a twelve-inch valve into a box-like receiver, one of which connects with four digesters.

After settling, the free water and grease are run off by means of drop pipes into separating vats—a series of catch basins—and the remaining sludge elevated by a bucket pump into filter cloths. The manner of performing this operation, which is really the essence of the process, is as follows:

A cloth is spread out on a low car about 5 x 6 feet. The turned-up edges of the cloth are supported by a wooden frame 6 inches deep and slightly smaller than the car, the ends of the cloth hanging down over it on all sides. After pumping this frame full of the sludge from the receiver, the loose ends of the cloth are folded over the surface of the sludge, thus enclosing it on all sides. The frame is lifted off, a wooden slatted plate placed over the first layer, and the frame again on top of it. Another cloth is fitted in and pumped full, and so on, the operation being continued until the bags of sludge separated by the slatted plates have reached a height of about 5 feet on the car. The latter, which stands on a track, is then pushed under a screw press operated by steam power. These presses are supplied with 3 different gears, varying in power, which are applied consecutively, beginning with the least.

This operation forces down a smooth iron plate on top of the bags of sludge—just as a common copying press operates—the result being the expression through the cloths of water and grease. The liquid is carried by covered troughs in the floor to the separating vat before mentioned, where the clear grease rises to the surface and is skimmed off ready for shipment. The expressed water, colored a deep brown from the organic matter in solution, is run into the river.

The solid cake left in the presses, which still contains about one-fourth of the water originally present in the garbage, is charged into horizontal cylindrical dryers, heated by steam jackets, and is kept constantly stirred up by a revolving reel. The operation of drying occupies about 3 hours for 2 tons of dry product. The dryers are exhausted of vapors by steam jets and the vapors subsequently condensed by cold water.

The dried "tankage" is screened ready for market and the coarse tailings consumed under the boilers. The tankage is used by manufacturers of fertilizers as a component of complete manures.

**HOGEL SYSTEM.** Rochester. Of this plant I have only a very slight knowledge and as I cannot speak from observation the merest outline must suffice for description. The garbage is digested by steam under considerable pressure, the result being pressed in a hydraulic press to separate most of the water and grease. A hot air dryer is used for drying the tankage, which is then conveyed to a mixing pan where additions of phosphates and potash salts render it a complete fertilizer.

(To be Continued.)

\* Abstract of a paper read before the Engineers' Society of Western Pennsylvania.