

## MUNICIPAL DEPARTMENT

### THE DRAINAGE SYSTEM OF A TOWN.

Mr. C. D. Dempsey thus summarizes the principles underlying the drainage system of a town :

**STATEMENT OF PRINCIPLES.** — First. That the drainage of a town comprehends the means and processes of removing from it all the refuse waters and other matters produced by the population.

Second. That among these means is to be included the adequate supply of water, and among these refuse waters is to be included that resulting from the fall of rain upon the entire surface of the town, after it shall have been made, as far as may be necessary, subservient to the process of removing other refuse matters.

Third. That the total of these refuse matters shall be converted by chemical or other means to the most useful purposes for which they are or may be made applicable.

Fourth. That the combined operations of removal and conversion shall be conducted in such a manner as shall not impair or endanger the health of any part of the population.

Fifth. That, subject to the maintenance of the fourth principle, the measures for the drainage of towns shall be instituted and carried on with the utmost economy of capital and labor.

Sixth. That the total of matters to be drained from any town consists of (1) the used water supplied to the town for domestic and other purposes ; (2) the excrementitious matters produced in the town ; and (3) the quantity of water which falls upon its surface in the form of rain.

Seventh. That the only other sources of water as subjects for drainage which can be added to the proper drainage matters are (1) drainage from lands lying without the town, and (2) springs within the town ; and that the first of these should be intercepted outside the town, and thus prevented from access to it, by encircling catch-water drains, and the second should be applied to useful purposes, if possible, and the refuse afterwards conducted to join the stream of proper drainage.

Eighth. That efficient town drainage, therefore, properly requires a conducting only of the natural refuse water from the surface, and of the artificial refuse water which is or should be delivered either at or above the surface.

Ninth. That the proper channels for the conveyance of drainage matters are continuous lines of drains or sewers, which should convey the matters committed to them rapidly to the appointed receptacles or places of collection ; to be subsequently treated and dispersed for agricultural purposes. And that, in order to ensure this proper action of the sewers, they should be designed, constructed,

laid, and fitted according to the following rules : (1) That the entire length of the sewer shall be thoroughly impervious to the escape of any of the liquid discharged into it ; (2) that the dimensions of the sewer shall be proportional to the service required of it, and adequate for that service, without such excess of capacity as might retard the current through it ; (3) that the sewer shall be laid underground, but at the least practicable depth, so as on the one hand to secure it against injury, and on the other to facilitate access to it whenever required ; (4) that the sewer shall be laid with such declivity towards the receptacle into which it discharges as shall secure the constant motion of its contents, and with the greatest attainable rapidity ; (5) that the form of the sewer shall be such as will afford the maximum resistance against the external pressure of the soil in which it is laid, and at the same time aid the action of the sewer by preserving the full effect of small quantities of liquid ; (6) that the construction of the sewer shall combine economy with durability, and be such as will maintain the smoothest possible surface for the passage of the sewage ; (7) that all inlets to the sewer shall be effectually and permanently trapped, so that no effluvia can escape from the sewage into the buildings or thoroughfares of the town.

Tenth. That in order to attain a general uniformity in the size and functions of main sewers, which is desirable with a view to the general simplicity and efficiency of the system, the distance of the several places of collection from each other should be graduated according to the density of the intervening population, the nearer should be the collecting stations.

Let all the details of the drainage of a town be carried out in accordance with these principles, and their combined effect will be found to result in a system of considerable, if not perfect efficiency, in which public and private nuisances will be reduced to a minimum, and security afforded against the spread of pestilential and epidemic disorders among the population.

The Board of Arbitrators has been sitting for several days at Barrie, Ont., taking evidence on the valuation of the waterworks plant, which is proposed to be taken over by the town. The Waterworks Company have finished their part of the arbitration evidence, and the town solicitors are now being heard.

### PERSONAL.

Mr. Geo. S. Counsell, who had been clerk of the county of Wentworth for thirty-six years, died at his home in Hamilton on the 23rd inst., as a result of heart trouble. The deceased was in his 65th year. When a young man he studied medicine, but never practised the profession. During the many years which he held the position of clerk of the county, he was considered a faithful officer, and was greatly respected by the county councillors.

Mr. Hurd Peters, C.E., who has had charge of the harbor improvements at St. John, N.B., was recently the recipient from his employees of a complimentary address, expressive of the appreciation of his services, and of the pleasant relations existing between himself and those under his charge. Accompanying the address was a gold headed ebony cane, suitably inscribed, as well as a silver ice pitcher. In acknowledging the gift, Mr. Peters referred to the fact that for forty years he had been connected with the city works, and had always had pleasant relations with his subordinates. The presentation, he said, was as a complete surprise.

The new waterworks system at Stouffville, Ont., which was designed by Mr. John Galt, C.E. and M.E., of Toronto, and constructed by Messrs. McQuillan & Company, of the same place, was thoroughly tested on the 15th instant. Several streams of water were easily thrown over the highest buildings. The system is by gravitation from springs and reservoirs in the ridges, three miles distant, and cost about \$25,000.

There was cast at the Londonderry Iron Works, Londonderry, N. S., last week, a water pipe which the company claim is the largest pipe of its kind ever manufactured in Canada. The pipe is forty-two inches in diameter, made of Nova Scotia iron, and weighs nearly three tons. It was ordered for a culvert on the P. E. Island railway and will be placed in position in a few weeks. The largest water pipe heretofore cast was thirty-six inches in diameter, and the casting of this monster forty-two inch pipe was watched with some anxiety, but the process was very successful. This class of water pipe is now being largely used in the construction of railway culverts.

### CHARLES HUGHES - Milton West, Ont.

All Kinds of Municipal Work

### CURBING, CROSSING, CHANNELLING, FLAGGING, ETC.

Rough Heavy Lime-stone for Breakwater Cribbing, Etc.

Credit Valley Grey Dimension, any size, Sills, Steps, Coursing, Bridge Blocks, Engine Beds.

— Estimates Given for All Kinds of Cut Work —

### BELLHOUSE, DILLON & CO., 30 St. Francis Xavier St., Montreal

Sole Agents for the Compagnie Generale des Asphaltes de France (Rock Asphalt).

## PORTLAND CEMENT NORTH'S CONDOR

Paving and Fire Brick a Specialty

SITTING LION and WHITE CROSS Brands

NORTH'S "CONDOR" BRAND AWARDED FIRST PRIZE AND GOLD MEDAL AT THE ANTWERP EXHIBITION