

MUNICIPAL DEPARTMENT

COMBINED VS. SEPARATE SYSTEM.

In a recent report to the city council of Galt regarding the best sewerage system for that city, Mr. Willis Chipman, C. E., gives the following synopsis of his views regarding the comparative merits of the separate and combined systems.

When sewers are designed of sufficient size to carry off the storm water as well as the sewage proper, the system is known as the "combined" system. This is the system of the older cities of Europe and America. The quantity of sewage from an acre of land in a densely populated part of a city is, however, so small as compared with the rainfall that in designing the combined system the sewage flow may be entirely neglected. This is evident from the following consideration.

The sewage proper from an acre of land in the most densely populated part of any city does not exceed 500 cubic feet per 24 hours, or 21 cubic feet per hour. At times this rate may become 63 cubic feet per hour. One inch of rainfall on one acre represents about 3,600 cubic feet, and a rainfall at the rate of two inches per hour is not uncommon, and much higher rates have been recorded in Ontario. Assuming half this rainfall to reach the sewer, the proportion of sewage to rainfall is about one in forty.

For several years after the construction of combined sewers everything may work satisfactorily, but year by year as streets are improved and sewered, buildings erected, sidewalks built, etc., the amount of storm water entering the sewers increases until the carrying capacity is exceeded, then cellars are flooded, and relieving sewers become necessary. This has been the history of the combined system in nearly every city in America.

If the liquid house wastes and excreta only are to be removed by the sewers, the system is known as the "separate" system. In this case the sewage to be carried is a comparatively fixed quantity and may be taken as approximately equal to the water supply.

The removal and disposal of the storm water is a mechanical problem that can be best studied in conjunction with street improvement.

THE COMBINED SYSTEM.

The "combined system" is open to many sanitary objections:

1. The sewers are generally too small for excessive rainfalls, which therefore gorge the sewers and force sewage, water and dirt into the connecting cellars. Action against the corporation are common in towns thus sewered.

2. The sewers are so large that the dry weather flow (which is the sewage only) cannot remove the mud and sand carried in by rains, consequently these deposits

become saturated with sewage, which decomposes and produces offensive odors, and may become a menace to health.

3. The rainfall is usually relied upon for flushing the sewers. As, however, sewage commences to decompose in two days, and rainfalls may be weeks apart, it is evident that the sewers cannot be in a good sanitary condition at all times.

4. The ventilation and flushing of large sewers cannot be done economically or thoroughly.

5. If a stoppage occurs in a sewer from any cause, cellars become flooded, and if the cellar trap becomes dry, sewer air may enter the building. In some cases the discharge of closets, etc., on an upper flat in a building, through a vertical soil pipe, will cause a back flow of sewage into the cellar or through the trapped inlet.

6. The catch basins along the street, if made water tight, become foul if not cleaned out frequently; if not made water tight the contents may soak into adjoining basements and cellars.

When it is necessary to remove storm water by underground channels, and where the raw sewage can be disposed of readily without chemical treatment or disposal on land, it may be more economical to adopt the combined system, but this system has nothing in its favor from a sanitary standpoint.

THE SEPARATE SYSTEM.

The advantages of the "separate system" are as follows:

1. The rainfall being excluded, the flow of sewage proper is comparatively small, but of uniform quantity. The sewers, therefore, may be made much smaller than in the combined system.

2. The sewers being small, no deposits occur, as they can be flushed out daily by automatic flush tanks placed at every dead end of the sewer system.

3. The cellars generally have no connection with the sewer proper. A stoppage in the sewer cannot, therefore, cause flooding with sewage.

4. The sewers can be ventilated easily and thoroughly and in some proportion to the quantity of sewage disposed of. This is accomplished by allowing each soil pipe to pass directly through the building connected, with no obstruction on it or the drain from the house to prevent a flow of air between the sewer and the air above the building.

5. The cost is less than half the cost of the combined system, consequently a larger area can be served with the same amount of money.

By adopting this system the cost can be kept within reasonable limits, a large proportion of the population can be served, and a simple system of payment can be adopted.

In Petrolea, Ont., water has hitherto been brought from a distance in cart tanks, and sold for one cent a pail. But the waterworks now nearing completion will give Petrolea an ample supply of water for domestic purposes. The water will be brought from Lake Huron, a mile or two above Sarnia. The distance from the lake to the town is about eleven miles.

REDUCTION OF WATER WASTE IN BOSTON, MASS.

For some months the consumption of water in Boston has exceeded the supply and measures have been taken to curtail all possible waste, and to prevent too great a draft on the storage basins. In a statement issued recently Water Commissioner Murphy reports that the daily supply and consumption are now about equal, while in September the stored supply was called upon for 474,100,000 gallons. To detect the waste the Deacon system of waste water inspection was re-established, and showed that in some parts of the city the waste had increased from 100 to 200 per cent. since 1894, when the last test was made. The most probable causes of the waste seem as follows: Use of garden hose outside of regular hours, leaky fixtures of water-takers, excessive use by city departments, the practice of allowing water to be taken in many instances by steamboats through hydrants unmetered, and increased number of water posts, to which everybody has access. At present the daily consumption of water is about 64,000,000 gallons. Mr. Murphy thinks this can be reduced to 50,000,000, and says that if the consumption goes on increasing as it has for the last two years, the situation next year may be worse than it has been this.

AN INTERESTING DECISION.

A judgment was rendered in the Court of Appeals recently which is of great interest to all municipal corporations. It was in what is known as the Montreal injunction case. The court unanimously decided that the Legislature has power to override the authority of municipal corporations over their streets and to grant special privileges to gas, electric light, telephone or other companies to dig them up to lay down pipes, conduits, etc. It was for the corporations to take precautions to protect their rights when such bills were before the Legislature, whose wisdom it was not the business of the courts to question, whatever might be thought of the expediency of granting such powers. Judge Wurtel delivered the judgment of the court, which was unanimous. It maintained the judgment of the court and the injunction of the Standard Light and Power Company, and dismissed the Montreal City Corporation's appeal with costs.

WINNIPEG BOARD OF CONTROL.

The city of Winnipeg is about to establish a Board of Control, similar to that existing in Toronto. The duties of the board are summarized under three heads: 1. To prepare the whole of the estimates. 2. The absolute control of the officials, to be appointed by the council, and the appointment of all subordinate and temporary clerks. Should the board dismiss an official he can only be re-instated by a two-thirds vote of the council. 3. The conduct of the public works, letting of contracts, etc. The council will recommend works to be done; the board will be the executive body.