

(3) Along each branch street to a single line of iron pipe, 5 inches diameter, laid about 5 feet below surface of street.

(4) Along each main street, two lines of 5 inches diameter iron pipes.

(5) Iron boxes at the intersections of the side streets with the main streets.

(6) Air pump engine and station for creating vacuum and receiving *fecale*, and appliances for making poudrette.

(7) Line of drains along each street for conveyance of storm waters and factory waste. This is really the item by which the construction cost of this system exceeds that of the water carriage system.

(8) Sale of manure in a dry powder a source of profit to the city.

(9) Profit to the nation from the return to the soil of the constituents taken from it by agriculture.

(3) A brick or pipe sewer about 4 feet diameter, laid on an average 10 feet below surface of street.*

(4) Along each main street, one large brick sewer, say 6 feet or 8 feet diameter.

(5) Numerous wells and overflows. Also man holes, which should occur about every 100 yards.

(6) Pumping engines for raising water with which to carry the *fecale* and to flush sewers. Also, in many cases, pumping works are required in order to provide outfall for the sewerage, also intercepting sewers.

(7) Diffusion of infection, a fruitful source of expense and suffering.

(8) Total loss of this revenue to the city.

(9) Entire loss to the soil of the nation of the nutritive results of agriculture.

It is a matter of fact that the City of Montreal is now daily pumping by steam power a quantity of water for use in water closets and for flushing sewers a great many times in excess of the quantity of *fecale* which the Liernur system would have to convey by steam power. This indirect item of cost has a considerable influence in swelling the taxes and the general cost of living, and although its expense is always charged to the Department of Water Supply, its cost should more properly be charged to the Department of Sewerage. The water carriage system performs its work by means of a pumped and otherwise expensive water supply, and yet many of its advocates say, "What can be simpler than this method of sewerage—by gravitation of course—so cheap—so easy?" forgetting that this gravitation must be supplied by expensive pumping and other works.

The Liernur system has the merit that all its cost is directly chargeable to itself—it is not complicated with a distinct other system of works, and it can be employed in localities and blocks of cities where the other system, if used, would require double

* Average depths of City Sewers as follows :—Providence, R. I., 10½ feet ; Jersey City, 12 feet ; Philadelphia, 10 feet ; Cleveland, 12 feet ; Chicago, 9 to 12 feet ; Hamburg, Germany, 13 feet ; London, England, 17½ feet ; Rugby, 10½ feet ; Penzance, 9 feet.