

Sewers should be egg shaped, and constructed of the very best materials, built with uniformity of design, and in the best practical manner, with a smooth interior face and made perfectly water tight.

They should also be frequently flushed and constructed so as to carry off, as rapidly as possible, all excreta and sink water, and whenever practicable, made to discharge their contents into deep and rapid running waters.

They should be designed with regard to economy, not only as regards the first cost, but their future maintenance, and made of just sufficient dimensions for the drainage required of them. Many drains are made unnecessarily large and costly.

If a 12 or 15 inch drain tile pipe were used instead of a three foot sewer, it would be found to be equally as cheap and, when well laid, perform its work much more satisfactorily. Their capacity is ample for the heaviest storm for a length of several squares, and are easily cleansed by flushing. When well laid they always give perfect satisfaction. They are always water tight when properly jointed and carefully laid to proper grades and curves, and owing to their smoothness rapidly receive and carry away all sewage. They admit of a smooth and neat connection with the house drains, thereby increasing their velocity. Another reason for adopting these pipes whenever practicable is, that they are much more easily ventilated than brick sewers, which require to be made of a larger capacity. The manhole being the same, a 12 inch drain pipe would stand a much better chance of having its air renewed, as it requires only one ninth as much as a three foot sewer, and, as the flow is more rapid, it would draw the air with it, and help the exchange; and further, as there is a quicker discharge and a smaller surface exposed to the air, there will be less to decompose and vitiate therein.

There should be a proper system of ventilation. A great deal has been said about ventilating drains from shafts carried up through the centre of a house and through the roof, thus made to answer the treble purpose of rain conductor, drain, and ventilator. This method of ventilation, although it has been found to answer well in some instances, we fear would, if generally adopted, be attended with bad results. So long as there is a strong upward current, no gases would enter through the closets or wash-basins, which, under any circumstances, should be trapped, but they have not been found to answer in all cases, being subject to downward draughts from different causes; but if these ventilating shafts were generally introduced, the result would be such an alteration in the atmosphere of the sewers, that there would be an equilibrium of temperature established, and the consequence would be little or no draught up them, so that the sewer gases, instead of being carried rapidly up into the air, would linger in the pipes and issue out of any imperfections in the traps or the shaft itself.

At present the principal ventilation to the sewers is through the gratings of the catch-basins, which is very objectionable to foot passengers, and far too near to dwellings. It would be better to trap the catch-basins and have in the centre of the streets strong perforated man-holes every two hundred feet apart. Double ventilating shafts, one longer than the other, might with great advantage be placed over sewers in certain positions. The necessity of the latter in winter is particularly obvious when all the gratings are closed with ice and snow; it is

then that a greater pressure of accumulated gases is forced against the water-traps, and is sure to pass through them. In every house, however, there should be a ventilating shaft to carry off the gases that accumulate at the traps.

PLUMBERS' WORK.

Here we have a host of imperfections. There seems to be a mystery about plumbers' work that must not be enquired into at all. The plumber (?) seems to have it all his own way, and there are no regulations laid down to guard against his imperfect workmanship; the consequence is that, after a house has been built, the closets and pipes are constantly getting out of order. There should be municipal regulations in accordance with the latest information that science affords us, and plumbers should have to obtain certificates of qualification before being allowed to do work, and their work should be inspected by an intelligent and honorable inspector.

To remedy the existing evils arising from bad drains in any city or town where an erroneous system of sewage has been adopted, is a matter of great importance; it is one that has for a long time been under discussion in Montreal and elsewhere, with very unsatisfactory results to the public.

One of the principal points, however, to which we desire to draw public attention, is to the absolute necessity of a strict superintendence over all new sanitary work performed in this city, either in street drains or the drains inside of dwellings. It is an undoubted fact that the most vital requisite in the construction of a new house is the adoption of a proper system of drainage and ventilation—these two should go hand in hand together—and then when a system has been decided upon, the next important step is to have the work so strictly superintended that the gross negligence and faults that have been so frequently complained of cannot again occur. The loose way in which tile drains have been laid and connected, and the plumbers' work has been performed, would almost lead one to suppose that the health of the people was the last consideration to be thought of, instead of the first. In fact, a large proportion of this important work is trusted to laborers' and plumbers' apprentices. No such thing as a system is ever devised, the principal object seems to be to stow away the pipes into holes and corners, where, when they get out of order, it is almost impossible to get at them to make repairs.

Of the loss arising from the want of a proper system of street and house drains in many cities, we have ample examples; thousands of dollars have been literally *drained* out of their treasury in what may be called mere experiments; and private citizens have been equal sufferers in paying large sums for a great deal of unnecessary and imperfect work in the construction of their house drains and other sanitary requisites.

There seems to be an entire absence of municipal regulations governing the details of house drainage and house plumbing. Proprietors and builders seem to do as they like, and carry out their own ideas; proprietors, governed by a feeling of economy, generally accept the lowest tender, however incompetent the party may be to perform the work; builders naturally follow the same system, if the drainage forms a part of their contracts; and plumbers endeavour to do the work as im-