

I would therefore commence at the house from whence the sewage comes. Here we have to deal with two points: first, the internal regulations, viz., the plumbing appliances, and secondly, the private drain from the house carrying the sewage into the main drain. With regard to the first we have to consider the best form of closet, and the best means of intercepting the flow of sewer gas into the house. With regard to the closet, one of the simplest, cleanest, and most efficient seems to me to be the self-acting hopper. To enter into the details of plumbing and ventilation would require a paper to itself, written by an expert, but in this connection I may say that we have here a plumbing by-law, which I hope in time to see properly enforced—which deals fully with the weight of the pipes to be used, the style of closet, the method of ventilation, and the placing of the inside drain. At the present time we have two inspectors whose duty it is to see these regulations properly carried out.

I think that all drains within the limits of the walls of a house should be so placed as to be capable of being easily examined without any excavation or damage to the structure. This could be done, I venture to suggest, by in all cases using a sufficiently heavy soil pipe which should extend a specified distance into the outside private drain. With regard to the outside drain, I am inclined to believe that its defective construction, and connection with the soil pipe, is the cause of a great deal of sickness. Too often it is found that actually no connection has been made at all, the result being the formation of a cess-pool just outside the walls of the house, and as a consequent result, infiltration of sewage matter under the house itself, with results to the health of the occupants which can easily be imagined.

Another source of trouble with respect to the private outside drains which I have referred to, is the careless manner in which the drain pipes are laid: the joints are but too frequently imperfectly formed, and consequently infiltration of sewage takes place. I have quite recently learned of a case where the owner of the premises, to his astonishment, discovered that the outlet end of the drain was actually at a higher level than the point of connection with the soil pipe. Imagine the result. Then again, in light sandy soil there is considerable danger of the support giving way,

causing a break in the drain. This should, in some way or other, be obviated. I would suggest that in all municipalities where such drains are used, that no private outside drain be allowed to be covered in until the same has been inspected by a competent officer, and a certificate given to the effect that it is in proper condition to be used for the purpose for which it has been laid down. Having thus briefly dealt with the question of sewage within private limits, we have to consider how best to deal with the accumulated mass. And first of all, to deal with the sewers themselves, it goes without saying that every possible precaution be used in the laying of them, both with regard to the material forming the sewer, whether pipe or brick drain, proper levels and proper ventilation. With regard to the latter, it has always seemed to me that our large factory chimneys should in some way be made use of as ventilating shafts for the main sewers, and thereby relieve the traps placed between the public sewer and the private house from a considerable pressure of sewer gas; and in this connection I may mention what I know to be a fact, that at the upper ends of some of our long sewers in Toronto, the pressure of gas has at times been found to be enormous. Let us now assume, for the purposes of this paper, that our plumbing arrangements, our private outside drains, and the connecting sewers, are all that they should be, where are we to deposit, and what are we to do with, the general mass of water carried sewage? In the first place I think the general consensus of opinion is in favor of one or more large off-take sewers; but the next point or the question of where these should be discharged, and what to do with the discharge, appears to be a vexed question. I am totally opposed to the method which obtains in Toronto, of emptying the whole sewage of the city into an adjacent watershed, no matter whether it be into lake water as here, or into running water, as in other places. In my humble opinion, such a course must necessarily be fraught with danger. We have, if I understand it correctly, three other modes of dealing with sewage matter, viz., irrigation, precipitation, and filtration. The question is, which of these is the most feasible and the best adapted to remove danger to the public health. To consider these various means as they should be considered, would be far beyond the scope of this simple paper. I will only say, that in my opinion,