5. Alterations may leave some pipe open or unsealed.

6. Disuse of a trap for a long time will allow evaporation and emptying of the trap, giving room for free passage backwards of gas.

7. Corrosion of pipes and traps, or bad workmanship in joints, will often allow escape of gas.

8. By absorption through the contents of traps, gas is often taken up and given off. Dr. Fergus, of Glasgow, experimented with ammonia, and found it transmitted through an ordinary trap in about twenty minutes.

This may be obviated by having a second main ventilating-tube, and these two will form a circulation (as shown in the tubes A and B in the diagram), preventing foul air from accumulating—stagnant—at the trap.

In a system of house-drainage, one of these two tubes may be secured by running a 3 or 4 inch pipe (B) from the sewer, just outside the house wall, up to the roof, clear of cornices, chimneys and windows; whilst the other will be obtained by continuing the soil-pipe (A) up through theroof. A difference of temperature in the pipes will cause the air to circulate through them. The last named pipe (A) will save the traps opening into it from being forced by gas from the sewer and drain. The traps of the baths and lower closet—all traps in fact below the uppermost one—must be saved by their own vents (v, v, v, v,) from being syphoned by sudden liberations of water above. These vents may open into the extended soil-pipe above the highest trap.

In the diagram, pipes (k, k, k,) will also be seen rising from a point below the hopper of the closet, a little above the water in the trap. These pipes may serve a double purpose. By branches from the water-closet tanks they may act as flushers to the water-closet-traps, and they may also ventilate the water-closets. They may lead to the outer air or the chimney-flue of an isolated kitchen in constant use, but never into a bedroom chimney or any other not used *constantly* in the strictest sense of the word. *And never should any tubes which have direct connection with the drain open into the chimney of a dwelling-house.*

As for the trap shown between the house wall and the street sewer it might be left out, were the system to become generally adopted (as it should be by by-law), the drain being then carried directly to the sewer as shown by the dotted lines; for, as remarked before, a point away up thirty feet or so above our heads is surely the best place to discharge the gas from our sewers, and not at our feet. But if the plan were not general then it would not be advisable for the individual to make his ventilating tubes the means for ventilating the whole sewer of his street; though even that would be better, than ventilating the whole sewer by a grating opposite his hall door and sitting-room windows. The best plan even in a general system would be to leave the trap in the position shown and have a third ventilating pipe running up on to the roof from a point just outside of the trap and between it and the sewer. We would thus lessen the danger of even *diluted* sewer-gas finding its way into apartments through corroded pipes or defective plumbing, whilst at the same time overhead ventilation of the sewers would be secured.