need care whether there is confined air there or not; if the pressure becomes very great the gases will be dislodged and will bubble off at a point higher up the line of sewers, where the drains are not water-locked and where they will find an escape. Most sewers allow for fluctuation of their contents, and it is only at times that the house-drains will be so full as not to allow of counter-currents and through-drafts.

But the ground of this objection furnishes a very strong argument for the overhead ventilation through house-drains; for, when the water closes the mouth of the house-drain, and then rises higher still in the house-drain (as well as in the sewer), what is to become of the gas imprisoned in the drain itself, if there be no vent between the sewer and the traps, the pressure being such as will force the latter? We know that a three-inch seal only offers a resistance of a quarter of a pound for each square inch of surface. The answer to this first objection is partly the answer to the second.

2. The second objection to which I shall refer is that it is not safe to carry sewer-gas through a pipe in such close proximity to the walls of a house, as some of the gas might escape from the pipe.

(a) It is surely safer to have it pass through a pipe outside the house than to have it forced in undiluted form into a pipe inside the house.

(b) It must be remembered that, with the present system of half-clogged and infrequent openings, the contents are much more concentrated.

(c) In further answer to this objection, I would add that the lower part of the pipe, from the drain to a point a few feet above the ground, should be of cast-iron dipped when hot into melted pitch, and above that, of galvanized iron, which, with a good coat of paint, will remain perfectly tight. But, even if a pin-hole had existed here and there, what would that amount to in comparison with the volumes of gas wafted towards the unfortunate houses which happen to be situated opposite a street grating or untrapped gully?

3. Another objection made is that air will not enter the sewers down the long stand-pipes.

(a) Now, I would again answer that so long as the gas, when it does move, moves off overhead, we need not so very much mind its remaining in the sewer for awhile.

(b) But, as a matter of fact, a careful consideration of pneumatic laws and of the forces acting in sewers will show that the objection does not hold. The columns of gas or air on opposite sides of the street, if they are of the same temperature and density, will counterbalance each other; but let the sun shine on one side and immediately an ascensional action begins; or let a cold wind blow on the other, and a cold dense column begins to descend.

(c) Besides, the rising and falling of the liquid in the sewer will cause the gas to be expelled, or the air to be drawn in.

(d) Again, the air will blow up the sewers from their mouths; and, for this reason, flaps should never be placed on the mouths, —free vents being made all along the course of the sewer.

(e) The plea that the gratings are needed for inlets is met by the fact that we so often find them exhaling gases.

So far for objections. I need not refer to the various contrivances for propelling air into sewers and extracting gases from them, such as fans, pumps, steam-jets, and furnace chimneys. They are costly, and, alone, are insufficient and unsatisfactory. When plenty of free vents and good traps exist they are unnecessary, and when these do not exist they are dangerous, inasmuch as such propulsion will force traps, and such extraction will empty them by suction where free vents do not exist.

The true plan seems to be to make plenty of breathing holes, plenty of channels through which currents will continually pass, and which will discharge gases at a safe distance overhead.