

drain, or the accidental openings of a thousand kinds, which may occur in a large city, would render them unable to exhaust beyond these openings. But, supposing that the sewers were all tight, and that they were not liable to any of these accidents mentioned, the area of the main sewer from which they exhausted, was a hundred times less than the areas of the branch sewers connected with it, so that the velocity of 100 miles an hour, in the main sewer, would not secure a current of air a mile an hour in the branches. But there is another objection to this system, viz., that after a certain velocity was reached, the portions of traps within the sewers were relieved of a pressure of the atmospheric air, and the outside pressure caused them to untrap themselves, or in other words, the drag was so great, that it would force open any drain or house trap.

The plan proposed will obviate these objections. It consists of an exhaust connected with a pipe which passes through, or above the sewer which is to be ventilated as its size may determine through which pipe are openings for the admission of sewer gas at sufficient distances, for the ventilation of a given length of sewer, the openings near the exhaust being smaller than those more remote—care, however, having been taken that the areas of these openings are not in excess of the area of the tube itself, except the necessary allowance in area being made for friction :

For example, in the profile drawing,* the letters A represent the sewer to be ventilated, and B exhaust pipe above it, with the small tubular openings, C, entering the sewer and through which the sewer-gas is conducted through the exhaust pipe to the receiver, *a*, and thence to the exhaust D. F represents a gully with grating of suitable size for the admission of atmospheric air, which would have its purifying or oxidizing effect on the decomposing organic substances and reduce them to their simplest compounds. It is evident that, when a partial vacuum is produced in the pipe B, by the exhaust D, a current of sewer gas is drawn to the tubular openings C, in the exhaust pipe, and also a current of atmospheric air is directed from the grating to fill the partial vacuum there produced. The sewer gas having been

*See next page.