

The closet-pans and traps were arranged on a new and very simple plan of downward ventilation, which, when properly attended to, has proved most satisfactory. As I regard this system of the very highest value, not merely in large public institutions, but also in all private residences, I deem it advisable to give the following brief explanation of it.

No matter how expensively or handsomely any water-closet may be constructed, unless it is provided with an efficient means of ventilation downwards through the pan, offensive smells will frequently be felt in the apartment. If instead of the foul air finding escape upwards out of the pan, it be carried away in another direction, and a constant flow of fresh air into the pan be secured, no disagreeable smell will ever be felt: on the contrary such an arrangement becomes an efficient ventilating agency, not merely as regards this apartment, but also in relation to others adjacent.

In the first place, a sufficient iron trap, with inlet not less than 4 inches, is to be inserted between the pan and the soil pipe connecting with the sewer. The latter should be perfectly airtight, and should never be conducted for any distance inside the basement of the house. The trap should be placed low enough to allow the surface of its contained water to stand  $1\frac{1}{2}$  or 2 feet below the bottom of the pan, with which it is connected by a 4 inch down pipe. In this pipe 6 or 8 inches above the water level, is a circular opening of 3 or 4 in diameter, for reception of an air pipe, which is to be carried to the nearest constantly acting chimney. This proximity to the requisite draft can always be secured in primary construction, by locating the closet, in private houses, contiguous to the kitchen chimney. In my own present residence, I have adopted this plan. The air pipe, of galvanised iron, is only of 2in. diameter, and in all only 16 or 17 feet in length, with two elbows. It enters the kitchen chimney just under the ceiling. No smell has ever been perceived in the closet, nor in fact ever can be perceived, for the downward draft is at all times strong, and whether water be let on or neglected, is, so far as mere atmospheric purity is concerned, a matter of indifference. Were this plan of water-closet construction universal, our water commissioners would find no occasion for issuing threatening notices to their customers, to prevent waste of water, in this service: a short air-pipe is of course preferable to a long one. but if the chimney draft is strong, the pipe may be of almost any length. The water-closets of the Orillia Asylum were at a distance of at least 100 feet from the chimney stack of the kitchen, laundry, and boiler-house. The air-pipes were