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THE PRINCIPLES AND PRACTICE OF HOUSE-DRAINAGE TRAPS.

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THE WATER-SEAL AND OTHER TRAPS, constituting one of the most essential elements of plumbing work, have for some time past occupied the careful attention of all who are interested in the improvement of house drainage. Few who have applied their ingenuity to the subject have failed to invent and patent a "sewer-gas" trap. I took out a patent for a trap of this sort myself some years ago,—probably one of the least successful of the whole list. The best of the efforts of others, thus far, have been only measurably successful. I am still using one or two of them in my own work, because they are passably good, and because nothing else has offered that seemed better. The successful accomplishment of the object in view offers probably the most hopeful field to which sanitary inventors can now turn their attention. Devices intended to meet existing difficulties have not all been confined to the form and construction of the trap itself. Much the most widely recommended and successfully enforced effort to meet the difficulty has been to supply what is known as the "back ventilation" of traps. Having known of the early failure of this device, before it was generally recommended to the public and taken up in the compulsory regulations of health boards, I have never been able to look upon it with favor. There is no doubt that under many circumstances it does good, but I believe that *on the whole* it does more harm.

Not only as confirming my own view, but as an illustration of very thorough and careful experimental work, attention may properly be called to an investigation carried on for the City Board of Health of Boston, by J. Pickering Putnam, Esq., an architect of that city. These investigations have been set forth quite fully in illustrated communications to the "American Architect," which papers certainly mark a very important step forward in sanitary literature. The deductions to be drawn from these investigations are these:

While a sufficient vent hole at the crown of a trap will prevent its contents from being withdrawn by siphonage (suction), insufficiency in such an opening, resulting from whatever cause, defeats the purpose for which it was made. Insufficiency may be due to several things. (*a*) The opening may originally be made too small. (*b*) It may, and very often does, become reduced in size, or entirely closed by the accumulation of foul matter thrown into it during the use of the trap. (*c*) As its efficiency is due entirely to the admission of air fast enough to supply the demand for air to fill the vacuum caused by water flowing through some portion of the pipe beyond the trap, it is not only a question of having an adequate current led freely to