

pipes laid nearly horizontal, as in the case of house drains, and it may be seen by cutting out such a trap with a length of pipe at either end and, examining it. The length above the trap will be found foul, the length below the trap comparatively clean. If then, you do not by your seal oppose a barrier which air from the sewers cannot pass under a pressure due to even a slight compression, while by your trap you do oppose an obstruction to the outflow of drainage from the house, the practical advantage of a trap in this place is certainly not conspicuous.

Suppose you have no trap in your house drain, but carry an open and unobstructed tube from the sewer to and through the roof, what conditions have you? The sewer air is not commonly forced out under pressure, and if it was that pressure could not be maintained in a vertical tube open at both ends. You find that the air does not rush through your house drain and soil pipe, displacing seals and seeking escape into living and sleeping rooms through branch waste and fixtures, but moves in gentle, natural currents, sometimes up and sometimes down, according to circumstances. To ventilate sewers you do not need to blow air into them nor exhaust air from them. The failure of all such efforts has been conspicuous, and I do not need to refer you to the voluminous English literature on this subject, with which you are doubtless familiar. To ventilate sewers to the best advantage, it is only necessary to give them a chance to breathe. Why they should not breathe through pipes extending to the free air above our houses, as well as through the manhole covers over which we walk and ride, is a question to which I fail to find any satisfactory answer.

It will probably be claimed that by requiring ventilation for house drain traps above the seal, the objections which might otherwise hold against such traps are practically met with the single exception that a house drain so trapped contributed nothing to the ventilation of the public sewers. I could scarcely concede so much save for the sake of argument; but supposing it true, that absence of anything specifically objectionable in such a trap, so far as the individual housewife or tenant is concerned, would scarcely be a sufficient reason for imposing it as a requirement. I understand you are seeking advice from those of us who are enough interested in the matter to accept the honor of an invitation to meet you for conference, as to whether it is desirable or expedient for your board, in the exercise of its legal discretion, to require builders to put such traps in. I do not hesitate to respectfully offer it as my opinion that it is neither right nor proper to require a man to do an unnecessary thing, either when he is building his house or after it is done. I know of no evil connected with defective drainage which cannot be better corrected in other ways, or which would not be increased and intensified if reform began and ended with a trap in the house drain. The plumbing trade know this, and by forcing upon them a regulation which their practical experience teaches them is based upon a misconception, you weaken their confidence, alienate their sympathies and invite their hostility. Your honesty, sincerity and unselfish devotion to the public good, will not win for you friends enough to outnumber the enemies you would make by insisting upon a mistaken notion of this kind. The plumbing trade exercises a powerful influence in such matters with property owners. When you are right, as you are in most of your recommendations and requirements, you can afford to disregard the complaints of property owners and the clamor of the ignorant and prejudiced members of the craft. When you are even possibly mistaken you cannot, I think, wisely disregard the views of those who are neither ignorant nor prejudiced, but whose confidence rests upon sure knowledge.

As one deeply interested in the cause of public health and eager to co-operate with you in every possible way, I would advise abandoning the house-drain trap altogether. In new work, if you deem it expedient to prescribe materials and methods, insist upon good pipes, properly joined and open from end to end, with branch wastes properly trapped and vented at fixtures; in old work, correct the evils found to exist in the same way you would seek to avert them. If the individual citizen wants a trap in his house drain, there is no reason why he should not have it. The moral benefit of personal satisfaction at having interposed a few quarts of dirty water between him and the sewer into which his house drains, will probably offset any disadvantage resulting from it, but do not force this needless expense upon those who do not want it. Give property the benefit of the doubt, and property owners will the more readily support you in enforcing requirements which do not admit of intelligent objection.

Dr. Janeway reminded the speaker of a consideration which, in the estimation of the profession outweighed the practical objections to house drain traps which had been presented in the

argument. It was believed that contagion, especially the germs of typhoid fever, were communicated through the public sewers, and instances were cited in which it was considered probable that such diseases had been communicated from house to house through the sewers.

Mr. Wingate presented some extracts from well-known English authorities favoring house-drain traps.

Mr. Partridge thought it unnecessary to complicate the discussion by citing English authorities, as American practice was far in advance of English practice in house drainage, and there were gentlemen present whose opinion was worth more on a subject of this kind than that of any English writer quoted.

Mr. Many approved the position held by Mr. Bayles, and cited examples showing that traps in house drains cause great accumulations of foul matter in them, leading to worse results than are found to exist when such traps are omitted.

Mr. Mead held the same views, and cited instances in which serious evils in house drainage had been corrected by taking such traps out.

Mr. Bayles, in reply to Dr. Janeway, held that the fact claimed, if established, did not prove the advisability of a trap in house drains. If what he had said of the mechanical objections to such traps was well founded, and the testimony of the experienced practical plumbers who had spoken was important on this point, it was eminently worthy of consideration by the board whether the danger of locking contagion in the house was not greater than that to be apprehended from a free connection with the sewer. It should be remembered that in this discussion they were dealing with the worst class of dwellings—the tenement and apartment houses occupied by many families. Was it not possible that the danger of spreading contagious diseases through such houses, by encouraging the retention of disease germs within their pipe systems, would result in greater aggregate mischief than could be traced to the spread of disease through sewers.

From this point the discussion became general and lasted nearly two hours, without eliciting anything new on either side. At the request of the president, Mr. Bayles formulated the objections to house-drain traps substantially as follows:

1. They retard the outflow of house drainage and cause foul accumulations which are not found in untrapped house drains—presuming good laying in each case.

2. Even when such traps are vented above the seal, the air passing through the pipes is, on account of their foulness, ordinarily worse than that from the public sewer passing through an untrapped drain and out through a vertical soil pipe.

3. They oppose no obstacle to the passage of sewer air when, from any cause, a pressure is brought to bear upon them.

4. The danger of locking contagion within tenement and apartment houses is possibly greater than that which is assumed to attend the passage of sewer air through soil pipes.

Having thus defined in shape for further consideration the one point of difference which existed, the president endeavored to find out upon what points all were agreed. These were substantially as follows:

1. Good materials, especially the use of soil pipes of sufficient weight and free from holes.

2. Good workmanship, insuring tight joints.

3. The absence of traps in vertical lines of soil pipe.

4. The extension of all soil pipes to and above roofs, and the venting of every trap independent of the soil-pipe ventilation.

5. Giving all safe wastes, overflow pipes and refrigerators trap waste outlets wholly disconnected from the waste-pipe system and sewer.

6. Suitable protection for sewer pipes against frost.

7. So arranging soil and waste pipes that they shall be accessible from end to end.

8. Adequate trapping of all waste pipes under fixtures.

9. The discouragement of dependence upon deodorizers and disinfectants as correctives of bad drainage.

10. The prohibition of pan closets and all forms of closets having an air space within them which is not or cannot be ventilated.

Some, and perhaps all, of these conditions are likely to be insisted upon in houses which the law places under the jurisdiction of the board. The question of house-drain traps seems to have been left open for further consideration by the board. It is not likely that the fact of their objectionableness from a mechanical standpoint will be further doubted by the commissioners; but the question of their hygienic value in checking the spread of contagion through sewers receiving the discharges of typhoid fever patients and disease germs in other forms, is one which admits of further investigation, which we hope the commissioners