

be passed without returning in substance to its point of departure; and generally no consideration is given as to whether it passes to a safe and proper place, without leaving on its way some of its noxious matter, or returning it under an altered, but still noxious form. It is needless to say here that these points must all be attended to, as well for immediate sanitary efficiency as with a view to the permanence and self-action of our drains. Before entering upon the subject of construction of a system of drains there are certain

PRELIMINARY CONSIDERATIONS

to be taken up, into which I do not intend to enter in detail, as yours is not an engineering journal, but to which I may briefly allude.

1. The *Area* of the locality will have to be considered in order to provide sufficient sewage accommodation, and yet not so much as to impair the flushing operation of surface water by too extensive a distribution.

2 The *Rainfall* will have to be considered with a similar object in view, and one must in addition consider whether the fall is equable or varying.

3. The *Geological and Physical* characters of the soil will also have a bearing on this question; and in addition bear upon the question of the care that must be exercised in building our drains, shifting and soakage of sewage into the soil being much more liable in porous than clay soil.

4. The bearing of *Water Supply* will be self-apparent.

5. As also the *present and prospective population*.

6. The nature of the *present sanitary appliances* must be considered.

7. And lastly the facilities for a proper *outfall* and *final disposal* of sewage; a most important and too much neglected consideration.

Viewed as to its objects we may make the three divisions of *surface drainage*, *subsoil drainage*, and *removal of the waste and excrementitious products of houses*.

As this latter division is the one in which we are most immediately interested as householders, and over which we have most control as individuals, I shall first address myself to it, and shall at once proceed to consider the

VENTILATION OF HOUSE DRAINS,

inasmuch as there are some points in this connection which I want to overtake in this number of your journal. I am aware