

to stop it up. But few reflect upon the immense amount of water that comes up from the ground, or through the sunk walls of a house. In basements and cellars the idea of keeping out water is too often lost sight of; though water constantly soaking in there is far more injurious, in a sanitary point of view, than a little coming through a roof occasionally when it rains. This dampness of basements and cellars is the less pardonable, inasmuch as it can be easily remedied. In digging for the foundations of a house, the trench in which they are to be laid is necessarily wider than the walls, and as deep. Let, then, a small tile-drain be laid outside of the foundation, at the very bottom, and let the vacuum above it be filled up with stone-shivers to the top. In this way the earth, which is continually circulating moisture, will not touch the walls anywhere, and any water in it will run off by the tile-drains, which should connect with the drain in the street. To prevent damp from rising up through the wall itself, as it will certainly do otherwise, a course near the bottom should be laid with water-lime, through which no water can penetrate. The basement rooms should be covered with gravel or shivers between sleepers of small cedar or tamarac scantling, rising about half an inch above the gravel; and the whole should be covered with water-lime up to the level of the scantling. The flooring should then be laid down so as to touch the water lime everywhere, and be nailed to the sleepers. This floor is completely water and rat-proof.

The stone wall of the basement, instead of being two feet thick, should only be eighteen or twenty inches thick, with a course of brick inside, bonded to the stone at regular intervals. This course of brick, if neatly pointed, requires no plastering.

This is incomparably better than lath and plaster, as it is both fire and rat-proof, and serves the same purpose, for breaking the connection with the outer temperature.

The other great point to which I wish to draw attention is just a continuation of this last precaution. If the house be of stone,

the same brick lining, with a vacuum, should be carried up throughout; but it is much more economical to make the walls above the basement of brick, in which case a wall 14 inches thick will be found sufficient for any ordinary house—namely, eight-inch brick-work outside, and four-inch brick-work inside, with a vacuum of two inches between; the two walls being bonded together. The inside wall may be of the cheapest soft brick, and plastered; the exterior wall should be of good, hard-burned brick.

A house built in this way has all the advantages of a solid brick wall of 12 inches lathed and plastered, while it is somewhat cheaper, occupies rather less space, and is entirely fire and rat-proof. The partitions in a house should in like manner be of brick from top to bottom; the bearing partition-walls being eight inches, and the others four inches thick.

An adherence to these simple and inexpensive rules would secure the following advantages:—

1. Entire freedom from damp and mouldiness, and consequent economy in keeping stores, and especially improvement in health.
2. Entire immunity from rats, which are no small nuisance in most cities and towns.
3. Great security against fire—for, even though a fire did take in one apartment, it could not, as in houses built in the ordinary way, run up inside the laths to all the other floors; nor penetrate from one apartment to another, except very slowly. Thus there would always be time to save nearly all effects, even if the fire was not extinguished in the room where it originated.

A much cheaper way of building is to erect a frame of strong scantling, upon 9 x 6 inch sills, boarding this frame with rough boards, lined outside with four-inch brick-work, attached to the boards by strong nails or pieces of sheet-iron. Each story should be built up about a foot high between the studs with solid brick-work, so as to leave no passage for rats, and the whole should be finished with lath and plaster inside.