air. No ground is so solid as that there is not either air or water in the interspaces between the earth-particles. That this amount is very considerable you may easily test by filling a glass with dirt and seeing how much water you can pour in it. If the dirt is dry the amount of water that you thus pour in shows how much air was in the glass between the particles of dirt, for the water only takes the place of the air. If the ground is thus kept full of water it expels all the air except the little that mingles with the water itself. Now, we know that not air and water, but *circulating* air and *circulating* water are the two great agents for keeping the ground in a condition favorable to health. We secure both of these by securing a low water level in the ground, so that air can circulate down to it, and so that the water coming from the clouds can also circulate in the soil and not find it already full of stagnant water. To accomplish this, deep under-drainage is necessary. As the ground differs very much in natural degrees in different places, and as the soils and underlying strata differ very much, according to the geological structure and artificial additions, the depth at which it is necessary to lay tile in order to secure circulation in the upper ground and a low level of the ground water is very different. The farmer is not slow to find this out about his fields, and the builder who finds out whether he is building on clay, or gravel, or sand, or alternate layers of these or in a muck bed, is not slow to find out if he will. We knew a man who dug out a pond on a hill and built a house over it without any drainage except enough to carry off the standing water from the pond. It was a fine-looking house, but became notorious for chills and fever. We know an eminent engineer who claims that in most cities there is need of drainage to the depth of fifteen feet. This view is based on the fact that most cities are built near streams of water, where the natural water level is not very low; that as buildings shut out sunlight and air, evaporation goes on slower, and storm-water and the absence of prolific vegetation add to the ground moisture. This is all true. Many cities are now suffering from ground saturated with water more than from any other cause. This shuts out the air which would otherwise circulate and oxidize filthy matter and take care of it. It is wonderful what an amount of compost or organic matter the ground will take care of if only it can be allowed to have air in it and the water that comes from above circulating through it. But, if you shut these out, stop cropping the ground, and then by building on its surface increase dampness, you interrupt nature in one of its chief arrangments for health. Drains, therefore, ten to fifteen feet below the surface, are not extravagant for some parts of cities, but much will depend on the character of the soil. At any rate, no house should be built, either in city or country, until the builder bas arranged to make the usual level of ground-water many feet below the surface of the ground." Indeed, several feet below the cellar floor.

In cities, houses are sometimes built over city garbage—dead animals and all sorts of waste matters, mixed with ashes and road scrapings. This is simply dreadful, and the inhabitants of such houses could not be perfectly healthy. It would be better, as regards health, to build over a graveyard. In the course of a number of years the soil might become tolerably purified.

Many old houses might be made much dryer and healthier by thorough drainage under and around them.

### THE FOUNDATION AND CELLAR.

The time will probably come when there