

etc. This can readily be effected by putting field tiles around the outside of the house wall 6 inches below the cellar level, and having them connected with the glazed tiles which will then carry away the ground water to the sewer. This is much more important and successful than attempting to keep out the water by laying cement floors and covering the walls on the outside with cement and wood tar, although both these are of supplementary value. How much difference there is in soils may be seen in the fact that different sands hold by capillary attraction from 15 to 25 parts in 100 of water, loam some 40 parts and clay 75 parts.

It is, however, most desirable that besides this drainage, we have a non-conducting wall, since the moisture of a cellar is often due to the wall of stone or cement being a good conductor and so, by stealing away heat, condensing the moisture on the cellar walls. This can be overcome by a wall with hollow spaces, gotten either by using hollow blocks or making a two-inch air space between the plaster and the wall, and providing by windows or other method for circulation of air.

Having arrived above the ground level, locality, as regards the price of stone, cement, brick, wood, etc., will assist in determining of what materials the house will be built. As regards warmth and dryness, it may be said, speaking generally, that the thicker the walls the stronger and warmer the house; but to even a greater degree warmth depends upon the nature of the materials used and the mode of construction.

To illustrate, it may be said that a wall made of silver a foot thick would be nearly ten times colder than one built of iron, as its conductivity is 1,000 to 125, while one built of stone is 100 times colder than one foot of air hermetically sealed between two boards, and glass 50 times colder, and brick 25 times colder than confined air of the same thickness.

It will be seen that this fact depends upon the relative conductivity of different materials, and of all the best non-conductor is a dry gas. We have to-day in a cement hollow wall combined much more nearly than in any other material, the elements of strength, warmth and cheapness, since while air spaces can be had with wooden and brick walls, the former will not remain close owing to its drying and warping, while a thoroughly good grouted brick wall with a really good air space will be notably more costly than cement.

The æsthetic question must be decided in conjunction with these several other elements. Having, however, gotten the kind of walls settled upon we have something to determine regarding the lighting of the house. The long side of the house ought,