LEAKY CELLARS AND HOW TO REMEDY THEM

CORRECTING LEAKY CELLARS: BY A. S. ATKINSON

Leaky cellars unfortunately have the power to make even the finest and most expensive homes little better, from a sanitary standpoint, than many tenements in congested quarters. The constant infiltrations of a naturally wet soil can keep a cellar in a state of dampness, making it unsuitable for storing vegetables or other articles of food. It also can cause sickness that may foil the skill of physicians.

It is well known that much of the sickness in country homes can be traced either directly or indirectly to dampness of houses. Colds, sore throats, chills and eventually fevers of a more serious character often mark the course of a family's experience if the cellar of their house is unsanitary. Like leaky roofs and smoky chimneys, the land is full of damp cellars, and the problem of correcting them often baffles the most earnest efforts.

Today it is possible to build houses the cellars of which are almost as dry as the upper rooms, and this is done on naturally wet soil as well as on that which is well drained. Years ago it was regarded as impossible to build a house in a hollow without the resultant accompaniment of a damp, leaky cellar. But architects and builders are now able to construct houses on the wettest kind of soil and to guarantee for them dry cellars.

The problem we are considering, however, concerns more particularly houses already built and which are subject to what might be termed "wet feet." Many such houses stand in soil that is naturally wet, and in the spring when frost is coming out of the ground and heavy rains are frequent the cellars are wet or partly flooded for weeks at a time. The water seeps through walls of even stone or brick, or rises from the bottom of the cellar as though there were a spring underneath.

Many people attempt to seal up their cellars, thus compromising with the trouble, but partial remedies will not suffice. The cause must first be removed, and this can be accomplished only from the outside. Even if a good cement floor is laid in the cellar and the side walls plastered with an inch or two of cement, the water will not be kept out. Sooner or later it will leak through the new coating and make conditions worse than before, because the water will stay in the cellar longer than formerly and it will be constantly wet.

An excellent way to obviate this difficulty is to excavate a trench on the outside, two or more feet wide, extending it all around the house. If the water comes in only through the side walls, it may not be necessary to dig the trench more than a few feet deep, but as a rule it pays to make it the same depth as the cellar. This work can be done in sections or at one side of the house at a time. At the bottom of the trench a V-shaped tile drain should be placed and connected with lateral drains to carry the water away from the house.

Another most satisfactory method of draining a leaky cellar is to dig a deep hole on the lowest side of the site, at a distance of six to eight feet from the building, and to fill it with stones. All the tile drains around the house should slope gradually toward this hole, a short lateral drain being connected with it. In this way the surplus water will be conducted into the drain hole.

Before filling up the trenches the outside cellar wall should be cleaned off with a stiff brush so that all dirt and loose mortar are removed, and then filled in with cement mortar wherever the joints show wide crevices or other signs of weakness. This will help to strengthen the foundation and to prepare a better finish for the asphalt.

Next boil some clean asphalt and apply it to the outside wall, while very hot. Force it in position with as much pressure as possible and smooth it off with a trowel. The asphalt will work into the irregular surface of the wall and stay there. This substance cools rapidly, but it is well to let it harden over night before filling in the trench. Asphalt applied when boiling hot makes an excellent waterproof material, and it is more durable than many others. The next day the surface should be gone over to see if a clean finish has been obtained, and if any cracks or crevices show they should be filled in with more hot asphalt. This work should be well done, since much depends upon it.

Then the trench should be filled in with cobblestones, coarse gravel and sand, in the order named. The large stones should form the bottom layer, the fine sand being added gradually for the top. Tamp the stones and sand down firmly, but not so hard as to injure the asphalt covering of the wall. A top soil, a few inches deep, sufficient to
nourish grass sod, should finish the job. This layer of top soil will hold only a little surface water during rainstorms, and the asphalt coating of the wall will prevent it from filtering into the cellar.

This treatment will overcome the most aggravated case of wet cellar, except where the soil is of peculiar composition. Sometimes a cellar does not get its moisture from leaky walls, but from the floor. In this event the fault is due either to the presence of underground springs or to the formation of the subsoil. For instance, a layer of sand several feet beneath the surface may carry the drainage from higher levels toward the cellar and deposit it in a pool at the bottom. Thus the walls may be perfectly dry while the floor is always wet.

The simplest way to handle such a difficulty is to excavate either the whole cellar or one corner of it to a greater depth and to fill it in with stones. Another successful method is to dig a hole at one end of the cellar and to sink a big hogshead into it. The floor of the cellar should then be sloped in this direction. Fill the hogshead with stones, put a layer of stones and gravel all over the cellar and on top of this lay a concrete floor.

The water flowing down underground from higher levels will naturally strike the layer of stones and gravel and will be conducted to the hogshead in the corner. This will keep the water from flowing back into the cellar before the hogshead and drains are full. There are a few instances where even this method fails, but they are exceptional and require heroic measures. Either the cellar must be excavated to a considerable depth and filled with stones, or underground drains must be connected to carry the water away from the cellar.

In one such place in the country the cellar of the house was continually wet from underground springs. In rainy seasons it was impossible to keep the water from flowing into the cellar. A firm smooth concrete floor made little difference, and likewise a drainage system as above described failed during prolonged wet seasons. The only way the difficulty could be obviated was to install a small two-horsepower gasoline pump. A trap was fitted into the hogshead, and a rubber pipe inserted. Whenever the rains continued for more than a couple of days the pump was started. Half an hour of operation a day was usually enough to keep the water down to a proper level, so that it could not flow into the cellar. The cost of operation was insignificant, and the only real expense was the first investment. But a few hundred dollars spent for a pump and engine saved in the end doctor's bills that might have run into a much larger sum.

From wide experience in building houses, besides that gained from helping people to select sites for homes, it has been learned that too much attention cannot be paid to a thorough preliminary examination of the subsoil of a building site. It does not follow that because ground is low it must be very wet. Sometimes comparatively high ground holds far more water than low ground, and after a house has been built over underground springs it is too late to think about the natural conditions of the site.

To make sure of the nature of the subsoil before building, some sort of tests or borings should be made. A good method is to dig a hole about five or six feet deep and then wait for a rainstorm. The hole need not be larger than will admit a man's body. Watch and see what happens. Cover the hole securely, raising a little ring of soil around it to keep out surface drainage. After each rain, examine the bottom of the hole and observe how much water has accumulated in it. After a hard rain the water in the hole may be a foot or more deep, but if surrounding drainage underground tends toward the site the hole will fill nearly to the surface of the ground.

If there are underground springs in the immediate vicinity they will be evident in a short time. The hole will never get really dry, and the bottom will always have more or less water in it. If it is pumped out, even in dry weather water will accumulate in it. It is very doubtful if such a location would ever be a proper site for a home, and it would be better to build somewhere else. Surface drainages can be taken care of as described here, but underground springs present difficult problems to solve. They invariably cause more or less trouble and expense.

Frequently in the country a site chosen for a house is very wet and subject to overflows from underground springs, but twenty or thirty feet away the subsoil may be comparatively dry. Much depends upon the slope of the land below the surface. Preliminary tests and examinations of the soil do not cost much, and in the end they often prove of the utmost value and importance.