

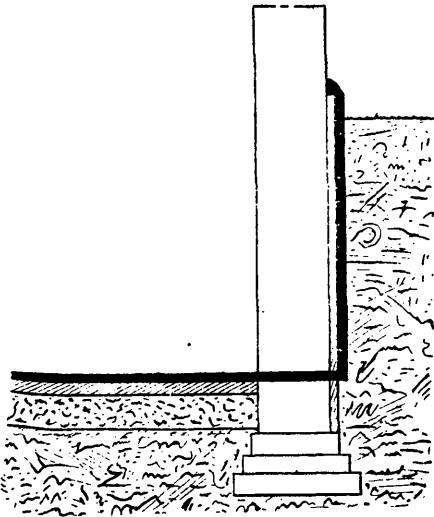


FIG. 3.

Prepare the cellar bottom, and lay, say 3 to 4 inches of sand, rolled down firm and even. On top of this put a coat of cement, $1\frac{1}{2}$ inches thick, over the whole surface of the cellar, and lay off around the cellar walls in the cement flat gutters of slight descent to the sewer or waste pipe.

There are clay soils sufficiently solid for walls of dwelling houses. But the clay in wet seasons retains so much moisture that it does not seem to be carried away into the earth, but rises and penetrates through the cellar bottom, and keeps the cellar damp nearly all the time. This is a serious difficulty to overcome, but I have known the following method to be carried out with success:

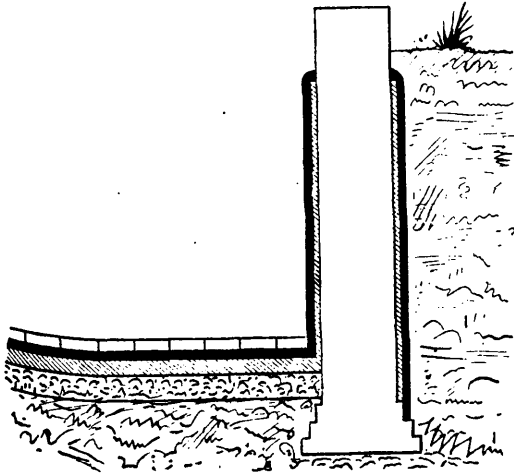


FIG. 4.

Excavate the foundations to the depth required to put in the footings, and in the cellar bottom 4 to 5 inches of sand rolled hard, on top of which lay a coat of cement, not less than 1 inch thick; and when this is as dry as possible, put a coat of asphaltum over the whole surface up to the lines of the inside walls, and through one course of brickwork around the whole structure, care being taken to cement the outside wall, and coat it with asphaltum, same as the cellar floor. This is the best course to pursue where there is no chance for a drain.

Another method to secure a dry cellar is as follows: Perform such levelling to the cellar bottom as may be required; spread over this sand to the depth of three to five inches, and roll or pack firm on top of this; cover the whole surface with 1-inch thickness of cement mortar, Rosendale or American brands; carry it well against the inside of the outer walls. Coat the outside walls with cement one-half to three-quarters of an inch thick in the same manner up to the dry line. Then on top of this lay a coating of asphaltum, tar and sand, applied hot; carry

the asphaltum through the wall (this should be provided for when foundation walls are being built), and coat the outside wall to dry line with hot asphalt. When the asphalt is sufficiently dry to walk on, dip heated brick into asphalt and tar, and lay closely the whole surface with brickwork. When it is not possible to carry the asphalt through the wall to the outside, carry it up on the cement on inside.

The best mixture of asphalt is to mix with the asphalt 10 per cent. of coal tar and 25 per cent. of sand and use while hot, to form a cement for bedding brick for damp cellar bottoms.

A damp cellar sends up through the walls of a house a great deal of moisture by capillary attraction; it is, therefore, too often the unsuspected cause of rheumatism and colds.

NEW DISEASES.—Prof. Winckel, the director of the Royal Lying-in Institution at Dresden, has reported to the Congress of Children's Doctors, lately held in Berlin, observations upon a mysterious children's disease, which he had an opportunity of clinically studying in his own institution. An epidemic broke out toward the end of March. Of 23 children attacked, 19, or 82%, died, and the average duration of illness in the fatal cases was 32 hours. The illness began with a sort of sudden stupefaction of the children. The respiration became hoarse, accompanied with groaning and occasional foaming at the mouth. The change in the blood was remarkable. Dr. Winckel made incisions in some cases, but it was only by using pressure that he was able to squeeze out any blood. It was a thick, brown-black fluid, of the consistency of syrup. The body became flacid, the liver much swollen; presently convulsions supervened, during one of which the child expired. The President of the Congress, Privy Councillor Dr. Gerhardt, of Wurzburg, suggested that this new disorder should be designated "Winckel's disease." Another disease has become apparent in the heart of a very crowded portion of London. It is a new form of Cyprus fever, and a diagnosis of a recent malignant case shows the patient to be suffering from hallucinations and lowered vitality. The faculty ascribe the disease to impure water, and have given it the name of detophobia, and, though it is seldom fatal, the sufferer remains but a shadow of his former self.

GEOGRAPHICAL PROBLEMS SOLVED.—Within the present generation, and mainly during the present decade, nearly all the great geographical problems left us by our adventurous ancestors have been solved; all the great lines of exploration have been taken up and worked out with a success that leaves to the future only the details to fill in. The northwest passage was completed more than a quarter of a century ago; the Australian interior has been crossed and recrossed within the past few years; several bright lines now break up the once mysterious darkness of the "Dark Continent;" the sources of the Nile have been traced, and the course of the Congo all but laid down; the Russians have filled up many important blanks in Central Asia; there is now no mystery to speak of for geographers on the North American Continent, and none of any magnitude on the South; even the great outlines of the ocean-bed have been chartered, and now at last, after a struggle begun more than 300 years since, the northeast passage has been made with an ease that makes one wonder why it was not done long ago. A matter-of-fact Swedish professor has shown that with a suitable ship at the proper season this long sought-for passage to the "Far Cathay" is a question of only a few weeks. Of Arctic feats there now remains only the "dash at the Pole," and that the North Pole will be reached sooner or later there can be no doubt.

EXPLOSIVE FORCE OF DYNAMITE.—We learn from the *Scientific American* that there is a misconception about dynamite exciting a greater force downward and gunpowder upward when exploded. Nitro-glycerine (the explosive agent in dynamite) yields on exploding about 800 times its volume of gas; gunpowder about 300. This gas, suddenly liberated, must displace a portion of the atmosphere, which presses with a weight of about nine tons upon each square yard of surface. To lift such a weight in the exceedingly short space of time occupied in the explosion of a charge of nitro-glycerine (in the form of dynamite or otherwise) would require a force greater than to split a rock, and the rock yields. Gunpowder yields but one-third as much gas on exploding, and the complete combustion of its grains requires an appreciable amount of time. Nitro-glycerine explodes all but instantaneously.