THE BUILDER

[THIS DEPARTMENT IS DESIGNED TO FURNISH INFORMATION SUITED TO THE REQUIREMENTS OF THE BUILDING TRADES. READERS ARE INVITED TO ASSIST IN MAKING IT AS HELPFUL AS POSSIBLE BY CONTRIBUTING OF THEIR EXPERIENCE, AND BY ASKING FOR PARTICULAR INFORMATION WHICH THEY MAY AT ANY TIME REQUIRE.]

Half Trussed Roof.

An excellent method of trussing and tieing a roof of moderate span, is shown in the accompanying diagram (Fig. 1). It is supposed that an attic, which may be made avoidable if desired, is provided above the regular upper storey; therefore the walls are carried a foot or more above the ceiling joists as shown in the diagram. On top of the wall, resting on band timbers, is placed a scantling, 2 x 6 inches—or of other suitable dimensions—on edge, with one end projecting over the building and forming a "lookout" onto which the soffit or planceer of the cornice may be nailed. The outer end of the "lookout" is cut off plumb, to the right length from the face of the wall. The inside end runs into the building far enough so that the end of it can be spiked to the stud as shown. These studs should form part of the side of the wall and should be well spiked to the ceiling joists and set plumb before the "lookout" is nailed to it. After the studs, "lookouts" and joists are nailed together, the rafters may then be raised in place and spiked fast to the "lookouts" and to the

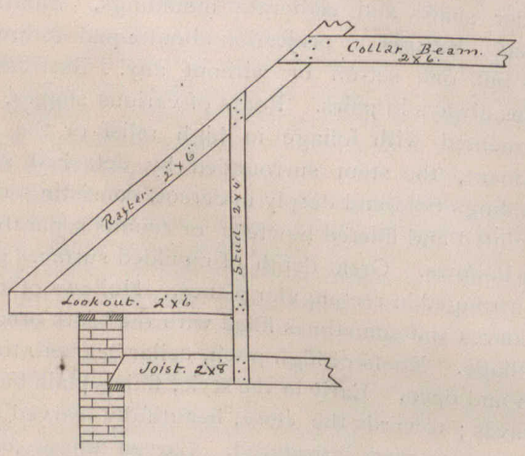

FIG. 1.—METHOD OF TRUEING A ROOF.

studs, after which the collar beams may be nailed to to the rafters, care being taken that they are placed to the right height to insure a sufficient space between them and ceiling joists to make a good room or rooms. The diagram is, to a great extent, self-explanatory, and is drawn to scale. The studding may be placed any distance from the wall, and if the building is of extensive span, the studding may also be attached to the collar beam as well as to the rafters. A roof built in this manner, if the work is well done, is very strong and is not likely to be affected by the winds or by any ordinary snow storm. If the roof is to be framed of heavy timbers, the same principles of construction may be adhered to, two joists being employed at the foot of the studs or struts, instead of one. The joists should be placed one on each side of the strut, and one or two bolts should pass through the joists and struts and the whole three pieces drawn tightly together.

Roof Gutters and Leaders.

Among the petty annoyances connected with buildings, is the freezing and bursting of gutters and conductor pipes in cold weather; or more properly speaking, the freezing of the slush which collects in them and which upon thawing cracks and bursts both of these fixtures. Scientists tell us that water is the one element which expands when congealing, and probably the initial injury is done at the moment of freezing, and is probably aggravated when the expansion and disturbance due to melting takes place. Formerly gutters were made of wood, and the leaders were attached to them in a very crude manner, and continual leaks and delay were chronic; the water was either discharged on the sidewalk or on the ground, thus undermining and destroying the foundations. Modern practice has substituted metal for wood in gutters, and corrugated and square pipes for leaders instead of the circular ones; and the conductor pipes are now connected with the soil pipes and thus affords an easy outlet for roof-water, besides being a convenient and safe ventilator for the sewer system. There are three methods of roof drainage ordinarily adopted: First, the metal gutter and leader, second, the parapet wall and box leader, third, the soil pipe roof leader. Each of these methods have their advantages and their failings. Let us deal with the first method: Flat roofs, of tin, or galvanized iron, generally have a metal gutter at their lowest end. This gutter is secured to the roof timbers by strips of iron, and soldered with a close joint to the tinning. At one end it is pierced by the leader, and the grade of the gutter is towards the leader; this leader should, and generally does, connect with the soil pipe and becomes the conduit for conveying the water into the sewerage system. This does very well during the mild seasons, but in a climate as uncertain and as variable as ours, the system speedily becomes unserviceable, defective and troublesome, often being the cause of great internal damage to a building. The trouble arises in this way: At certain seasons the melting snow is arrested in the gutter by a sudden change of temperature which reduces it to a viscid consistency, usually denominated "slush." As this hardens into ice, the gutter and leader become choked and obstructed. The expansion of the ice, and contraction of the metal will combine to warp, and finally rupture the joint between the roof tinning and the gutter, and the weight of ice firmly congealed in the gutter will have a tendency to break it away from its moorings under the tinning. Thus, a large gap is often made through which the water finds