

RIDGE DETAILS.—That shown at A includes a half-round ridge tile. The ridge under tiles are nailed to $1\frac{1}{4}$ -in. thick battens which give the required tilt to the tiles to ensure the tails biting the tiles below (although, unlike slating, this is often unnecessary for cambered tiles). The margin between these tiles and the ridge mortar pointing is equal to the gauge of 4-in. This mortar should tone with the colour of the tiles.

A hog-back ridge, closely bedded down, is shown in the detail at B. Here the ridge under tiles are nailed direct to the wood ridge as an alternative to the above. Note that the tiles are shown nailed at every fourth course.

A V-shaped ridge, as shown at F, Fig. 42, may be used. *Lead covered ridges* (see B, J and H, Fig. 73, Vol. I) *should never be employed for plain tiled roofs.* Exposed leadwork clashes with the colour of most tiles. Also, the uniformly straight hard "roof-line" presented by such a ridge is the very opposite to what is required for association with richly textured plain tiles. Little, if any, lead is visible on plain tiled roofs of good-class buildings.

The details at M and N, Fig. 41, show alternative groundwork for tiles. That at M shows boarding, felt and battens. It is not satisfactory, as decay of the battens may result by the lodgment on their upper edges of driven rain and snow. The detail at N shows the employment of two forms of *feather-edged boarding*. One type is rebated (see P) to receive the thin edge of the adjacent board (see N) and the other is of section shown at O. The latter boards are laid to overlap (as indicated at N) by a varying amount according to the gauge. These boards are nailed along both edges to prevent them warping and tilting the tiles. Neither form of this boarding is recommended, for, whilst it has a certain insulating value, felt cannot be conveniently employed, and thus snow and rain may gain access, causing dampness and possible decay of the timber. It is used for cheap speculative or competitive work.

HIP DETAILS (see Fig. 42).—The *granny bonnet hip tile*, shown at B and applied at A, C and D, is generally preferred to the angular type (see E, F, G and H) because of its rounded form and the bold effect which it produces. Its name is expressive of its appearance. As shown, these hip tiles are bonded with the general plain tiling. Each hip tile is well bedded down with haired mortar (1 : 3) on to the back of the tile below and is secured with a sufficiently long nail to the hip rafter. This mortar adds to the attractive appearance of the hip, especially if its colour conforms with the brickwork jointing below, and is given a rough textured surface which is cut back at least $\frac{1}{2}$ -in. to produce a shadow. The adjacent side plain tiles are cut and mitred to the sides of the hip tiles, tile-and-a-half tiles being often used for this purpose to ensure that each is secured with two nails. Such cutting is sometimes unnecessary with suitably pitched hip tiles. A side view should show these hip tiles well tilted, namely, the tailed edges should be given an adequate inclination to ensure the top of each curve well above the back of the tile below. Flat bedded tiles (those which fit closely to each other and show only the minimum of bedding material) greatly detract from the appearance.

A suitable finish of a hipped end at the ridge is shown at C. The top pair of bonnet hip tiles is mitred under the ridge, which may be of the hog-back (as shown) or half-round type. The end length at least of the ridge is given a slight tilt upwards and the open end is either filled with mortar cut back at least $\frac{1}{2}$ -in. or preferably partly filled in with pieces of plain tile (as shown) or a small section of the upper curved portion of a ridge tile. Care should be taken during fixing to prevent the edges of these insets being stained with the mortar, and the latter should be cut back slightly; this gives a more interesting finish than that provided by a solid-ended ridge tile (compare with F). The slight tilting of the end ridge pieces is also desirable at chimney stack intersections and at verges (see p. 111).

A satisfactory treatment of the lower end of a bonnet hip is shown at A and D. The eaves under tiles are mitred at the intersection (see the plan D) and partly covered with a 2 to 3-in. wide piece of plain tile, called a *tongue*, which is tailed into the mortar. Alternatively, the eaves under tiles may be rounded off at the external angle to the curve of the hip tile. In addition, a relief to the mortar infilling at this lower hip tile is obtained by two plain *tile insets*, described above, or by the insertion of a piece from the upper portion of the tail of a bonnet.

The *cone hip tile* is another type which produces a rounded hip. This tile is $10\frac{1}{2}$ -in. long and has a segmentally curved tail, 9-in. wide, which tapers towards its head like the bonnet tile. The plain tiles of each slope at the hip are cut to an open mitre and the cone hip tiles are bedded upon them; they are nailed at their heads to the hip rafter. In appearance this hip is much inferior to the bonnet hip.

Half-round hip tiles, similar to those for ridges, are also used (see O and P, Fig. 69, Vol. I). When used for this purpose the effect is distinctly unsatisfactory.

Purpose-made hip tiles, known also as *angular hip tiles*, are often adopted. Such a tile is shown at G. An enlarged elevation of the lower portion of a purpose-made hip, slightly sprocketed, is shown at H; a plan and a sketch of a portion of an angular hipped end are shown at E and F. As these hip tiles are bonded in with the general tiling, it is necessary that they conform within certain limits to the dihedral angle of the roof. The method of determining this angle is similar to that for valleys and is briefly explained at M. To ensure the proper bedding of these tiles, and to allow for twisting which may occur during the drying and burning processes of manufacture, the angle of the hip tiles used is generally 5° less than the geometrically determined dihedral angle. Each tile is nailed at its head. The appearance of this form of hip, with its hard angle and neat mechanical line, is unattractive.

Cut and Mitred Hip Tiles with Lead Soakers.—Whilst this type is excellent for slates (see G, Q and R, Fig. 69, Vol. I), it is one which is not advocated for tiling, partly because of the difficulty in making such work watertight (especially in exposed positions) and partly on account of the neat and mechanical appearance which it presents.

VALLEY DETAILS.—The *swept* or *circle valley*, illustrated at J and O, Fig. 42,