

The head lap varies from $2\frac{1}{2}$ to 3-in., depending upon the pitch (see I.). The minimum pitch is 35° . The side lap is 2-in. (see G).

The groundwork may consist of 2-in. by 1-in. battens, fixed at the gauge apart to the spars which have been previously covered with untearable felt. Alternatively, 1-in. boarding, covered with felt, may be used. The gauge equals length of tile - lap = $15\frac{1}{2}$ -in. - 3 (or $2\frac{1}{2}$)-in. = $12\frac{1}{2}$ or 13-in. In addition, a 3-in. by $\frac{7}{8}$ -in. vertical batten is fixed between each pair of unders at $11\frac{5}{8}$ -in. centres (see G), otherwise very long nails would be required to secure the overs. A vertical batten is fixed immediately a row of unders is completed. The unders are fixed to the battens or boarding with $1\frac{1}{2}$ -in. copper nails, and 3-in. nails are used to fix the overs to the vertical battens. A true plan of a portion of two courses, showing the setting out, is given at H, a part elevation is shown at K and a section at an eaves is shown at L. The detail at T (see next column) may be adopted also.

As shown at K and L, it is usual to provide a course of plain eaves under tiles at the eaves. Besides presenting a satisfactory finish, this affords a suitable bed for the unders and the mortar which is used to fill in the hollows of the eaves over tiles. The mortar should be cut back for about 1-in. to give a shadow.

The finish at the ridge is similar to that shown for pantiling, half-round tiles and galleting being usually employed. The hip, valley and verge details are also similar. A balanced effect at the verges is obtained by using overs upon plain tile undercloaks.

These tiles, which are highly textured and obtainable in several colours, present a bold and distinctive appearance, which is especially suited for large roofs.

(b) SINGLE ROMAN TILING.—A single Roman tile is shown at D, Fig. 46. It is rectangular on plan and is $13\frac{1}{2}$ -in. long by 10-in. wide by $\frac{1}{2}$ -in. thick. A flat portion, $6\frac{3}{4}$ -in. wide at the head, tapering to 6-in. at the tail, has one edge slightly upturned and its opposite side is in the form of a fairly bold slightly tapered roll. It is thus a combined under and over Italian tile described on p. 116. Like a pantile the hand-made tile has its two opposite diagonal corners splayed. Some are provided with two holes on the flat near the head, whilst others are without holes. Each has a continuous nib.

The head lap is $2\frac{1}{2}$ to 3-in. and, as shown at C, the side lap is 2-in. Being another example of single-lapped tiling, the gauge is $10\frac{1}{2}$ -in. when the head lap is 3-in (see M). The minimum pitch is 35° .

A detail showing a suitable finish at the eaves is given at M. Here the groundwork is simply battens nailed to the spars which are covered with untearable felt. Other groundwork may consist of tiling battens fixed to felt-covered boarding, or tiling battens nailed to counter-battens nailed to felt-covered boarding. Vertical battens are not required, as the tiles, when nailed, are not secured at the 2-in. high rolls.

The finish at the ridge, hips, valleys, abutments and verges are as described above. In order to present a balanced appearance at verges, purpose-made

single Roman tiles are available, each having a double roll, for the left-hand verges.

In appearance, a roof covered with these tiles is similar to, but less vigorous than, an Italian tiled roof.

(c) DOUBLE ROMAN TILING.—These tiles, shown at E, are 15 to $16\frac{1}{2}$ -in. long by 11 to $13\frac{1}{2}$ -in. wide. Each has two rolls, hence the name. The left-hand tail corner is splayed and a portion of the middle roll is shouldered at the head, as shown. As indicated at E, these tiles are laid with "break joints," and therefore special half tiles are required at alternate courses at verges to complete the bond. Purpose-made left-hand verge tiles, provided with three rolls, are available to give a symmetrical roof.

The head lap is usually 3-in. and, as shown at F, the side lap is at least $1\frac{1}{2}$ -in. The minimum pitch is 35° . Nailing is not required, as the tiling is tightly fitting and cannot be lifted by the wind.

The groundwork and the finishes at the ridge, eaves, hips, etc., are as described in the preceding column.

SPANISH TILING

Spanish or *Sicilian tiling* is very similar to Italian tiling, the only difference being that the under tiles are not flat like the Italian type but are concave-shaped.

An over is shown at N, Fig. 46, and an under at O. The length of each is 14-in. The overs taper down from the tail to the head and the unders from the head to the tail (see the dimensioned end views). The width of each is not standard, there being a slight variation in some of the tiles produced. They are hand-made. Like Italian tiles, each Spanish under is secured by two copper nails and each over by one nail. Vertical battens must be provided to take the 3-in. nails securing the overs; the unders are also skew nailed ($1\frac{3}{4}$ -in. nails) to these 3-in. by 2-in. battens (see S and the heads at N and O). The spacing of the vertical battens for tiles of the dimensions indicated is $10\frac{1}{2}$ -in. centres (see P and S). As shown, the top edges of these battens are slightly chamfered to provide the necessary clearance for the unders; sometimes these battens are tapered to 1-in. at the top.

The minimum pitch is 35° , and the head lap varies from $2\frac{1}{2}$ to 3-in. The gauge is therefore either $11\frac{1}{2}$ -in. ($14 - 2\frac{1}{2}$ -in.) or 11-in. ($14 - 3$ -in.). The forms of groundwork are as for Italian tiling.

The bold character of the appearance may be gauged by the part elevation at Q. This appearance is sometimes modified by the use of shorter overs at the eaves (and correspondingly longer ones at the ridge) and thus their tails are lower than those of the unders except at the eaves line.

The treatment at the eaves may be as shown for Italian tiling at L and M. Alternatively, a very attractive appearance is obtained when, as shown at T, the tiles are brought over the outer edge of the eaves gutter. In this detail the bottom course of plain eaves under tiles and the bottom course of unders are purpose-made and provided with holes (see also Q) to allow the water passing down the channels to enter the gutter. The cast iron gutter, which is given