mentary rock, and slates are produced by splitting the block of slate along the cleavage planes (see also Chapter Five, Vol. I). Sandstones and limestones are sedimentary rocks (see pp. 88-94, Vol. II), and those converted for roofing purposes are highly stratified and capable of being split (known as *fissile*) along the natural bed or bedding planes (see also " Tilestones," p. 89, Vol. II).

Some of the quarries from which these stone slates are obtained exist in Yorkshire, the Cotswold district, Northamptonshire, Rutland, Somerset, Dorset and Sussex. Certain of the original quarries are worked out. The Yorkshire stone is sandstone, and that from the Cotswolds is an oölitic limestone.

Whilst true slates of good quality are practically impermeable, those used in stone slating are not. It is for this reason, and also because the blocks of stone cannot be readily cleft into very thin slabs, that stone slates are much thicker than true slates. Yorkshire stone slates, grey to brown in colour, which often darkens on exposure, are obtained by splitting the blocks along their bedding planes with hammer and chisel or wedges. Cotswold stone, greyish-brown in colour and coarse grained, is readily split by a hammer after the blocks have been allowed to stand during the winter and exposed to frost action.

Stone slates vary considerably in size, shape and weight. Yorkshire sandstone slabs are the largest, thickest and heaviest. The limestone slates from Sussex are also thick and heavy. Those from the Cotswold district and Northamptonshire are generally lighter, as they are smaller and thinner. They are all used in random sizes. They are rough in texture, uneven in thickness, and some of the Cotswold slates especially are very irregular in shape. The exceptional beauty of well designed roofs stone slated by skilled labour is due to these qualities and to their agreeable colour.

Hanging and Pitch.—The old method of hanging these stone slates is by wood pegs. Sound oak pegs are tightly driven into holes drilled near the heads of the slates to receive them. The number of pegs per slate varies from one to three, according to the size and weight of the slates. Whilst this method is still adopted, there are certain objections to it. Thus, the pegs may decay, or they may work loose on account of shrinkage, or they may be broken by shear stress, especially if the slabs are exceptionally heavy and steeply pitched. It is therefore considered preferable to use for this purpose either brass screws or stout copper or composition nails.

Another traditional method consisted of bedding the stone slates on mortar placed over roof boarding between thin horizontal battens. This is objected to as the timbers are liable to decay owing to the lack of ventilation and dampness, which latter condition may exist for some considerable time before drying out. Gradual disintegration of the slates may also result.

The pitch given to stone slated roofs depends upon the weight of the covering. Thus, those covered with heavy Yorkshire stone slates, especially if pegged, are given a pitch varying from 25° to 35°. Steeper pitches are given to roofs when lighter stone slates are used. Thus, in the Cotswolds, the pitch varies from 47° to 60°, 55° being common.

The slates are of random sizes in width as well as length ; the latter may vary from as much as 36-in. to less than 6-in. They are sorted on the job, the slater using a special rule for the purpose.

Peculiar names are sometimes given to the slates according to their size. In the Cotswold district, for instance, a 23-in. long slate is known as a " long sixteen ". The following are additional local names with their lengths in brackets : " long fifteens " (21½-in.), " long fourteens " (20-in.), " long thirteens " (18½-in.), " long twelves " (17-in.), " long elevens " (15½-in.), " long wippets " (14-in.), " long nines " (12½-in.), etc. The above are in " shorts " as well as " longs," the former being ¾-in. less than the latter. Hence a " short sixteen " is 22¼-in. long and a " short nine " is 11¾-in. in length. A " short beck " is 8½-in. long. A " muffity " is 8-in. long, and the length of a " tant " is 5¼-in (see A and B, Fig. 48).

The longest and thickest slates are laid at the eaves and the lightest and thinnest at the ridge. The gauge varies accordingly. The diminution is not regular. Thus, there may be three courses laid to an 8-in. gauge, followed by two at 7-in. gauge. Occasionally the gauge of a course may be slightly in excess of that preceding it.

Lap.—This depends upon the pitch, degree of exposure and size of slates. A common lap is 4-in., although for a steeply pitched roof, such as is seen in the Cotswold district, it may be much less. A uniform lap is not always maintained ; thus, whilst a 3-in. lap may be given to the slates near the eaves, this may be gradually reduced to 2-in. at the ridge.

Eaves Detail.—A typical example is shown at B, Fig. 48. This shows a stone wall and a cast iron gutter supported by adjustable brackets on bars driven in at the bed joints (see Q, Fig. 75, Vol. I). Heavy slates, sometimes called *cussomes*, are used to form the under-eaves course. These are bedded on mortar, slightly inclined (about 15°) and projecting 5 to 8-in. They are tailed down by the first batten, as shown, and the heads are notched at the spars as required. Tilting is thereby prevented. The next course, providing the double eaves course, is followed by a course of *followers*. The traditional method of hanging by oak pegs is shown. The dimensions of the gauges and lengths of margins give some idea of a typical arrangement of courses.

Ridge Detail (see A, Fig. 48).—Comparing this with B, it will be seen that the slates at the ridge are much smaller than those at the eaves, the lap is 2½-in. and the slates are shown fixed with either screws or nails.

The thickness of the slates at the eaves is about 1½-in. (these often taper as shown) and that at the ridge is only about ½-in. Long sixteens, long fifteens, short fifteens, long twelves, short nines and short becks (see above) are shown dimensioned in these details. It will be observed that the gauge varies from 10 to 4½-in.

The finish at the ridge is traditional, and as such is considered most suitable for this type of covering. These stone ridges are produced from 9-in. wide blocks of stone which are from 2 to 3-ft. long ; a series of parallel cuts, 1½ to 1¾-in. apart, are made by the saw and each V-shaped unit is then cut square at the apex and lower edges. These are bedded, jointed and pointed in mortar.