

CHAPTER FIVE

SLATING

Syllabus.—Brief description of the preparation and characteristics of slates; sizes; terms; nails; eaves, ridge, verge, hip and valley details.

FORMATION.—Slate is a hard, fine-grained sedimentary argillaceous (clayey) stone. Originally, the particles of clay were deposited by water and subjected to vertical pressure which formed it into shale (intermediate between clay and slate); this was subsequently changed into slate as a result of tremendous lateral pressure and heat. It is owing to the latter action that the slate is laminated, and because of its numerous parallel *planes of cleavage*, it is possible to readily split a large block into comparatively thin sheets or laminæ which are known as slates.

The cleavage planes are oblique to the original bedding or sedimentation planes. Thus at the Honister and Yew Crag mines (Cumberland) the angle of the bedding planes is about 35° , whereas that of the cleavage planes is approximately 70° (see A, Fig. 68).

Slate is quarried in Wales (Penrhyn, Dinorwic, Bangor and Festiniog), Cumberland and Westmorland (Honister, Buttermere, etc.), Lancashire (Burlington) and Cornwall (Delabole). It is also quarried in Scotland (Aberdeen, Argyle and Perth).

QUARRYING.—Slate is obtained from either open quarries or from mines. Thus the Penrhyn, Dinoric (or Velinhelli) and Delabole slate is quarried, whilst that from Festiniog and Honister is obtained from huge underground caverns which are approached by galleries from the mountain-sides. Either gunpowder or gelignite is used in blasting the rock and dislodging huge blocks of the slate. Much useless rock must be removed in reaching the good beds, and it is estimated that less than 10 per cent. of the material which is quarried is suitable for the production of slates, the rest being waste.

CONVERSION.—After the blocks have been reduced in size by use of the mallet, chisel, etc., to permit of their convenient removal from the mine or quarry, they are transported to the sawmill, when the following operations are carried out: sawing, splitting and dressing.

Sawing.—A diamond or circular saw (see p. 34) is used to divide each block into sections which are from 18 to 24-in. wide and up to 14-in. thick. The saw cuts an average rate (Westmorland slate) of 9 lineal in. per minute.

Splitting.—The sawn blocks are now reduced to slabs which are about 3-in. thick, and each slab is divided by hand labour into thin laminæ or slates. A

“splitter,” with the slab resting against the side of one of his legs, drives a chisel into the slab at one of the sawn ends (see c, Fig. 68). The chisel used for Welsh slates has a broad edge and is driven in with a wood mallet; that used for the tougher Westmorland slates is less broad (see B, Fig. 68) and a hammer is used instead of a mallet. In splitting a slab, it is first divided into two or three sections, each of which is carefully split to form slates of the required thickness; the chisel is driven firmly “down the grain” and prised after each successive tap on it until the split is complete.

The thickness of the slates varies according to the quality and “order” requirements. Welsh slates vary from $\frac{1}{8}$ to $\frac{1}{2}$ -in., and for best quality Westmorland slates “five to the inch” (each being $\frac{1}{2}$ -in. thick) is preferred.

Dressing is the final operation and may be done either by machinery or by hand.

One type of machine, driven by electricity, consists of a cylindrical drum having two diagonally fixed knives; a measuring gauge (which resembles the size stick shown at E, Fig. 68) sticks out horizontally from one side of the machine: each slate is placed on the gauge in the notch which will give the required size; as the drum rotates, the superfluous slate is removed, leaving a straight edge which is somewhat splayed and rough on the underside.

If dressed by hand (and at the larger sheds thousands of slates are dressed in this manner) the “dresser,” when in a sitting position, places each slate on the *traverse* or *brake* (see G, Fig. 68); the slate is held with an irregular edge overhanging the edge of the iron and a clean edge is formed as he makes two or three downward blows with the *whittle* (see H, Fig. 68). He then uses the *gauge* or *size stick* (see E); lengths varying from 6 to 12-in. (advancing by 1-in.) and 12 to 24-in. (advancing by 2-in.) are measured; the metal point of the stick marks a line on the slate as the stick is traversed with the required notch held against the recently dressed edge (see F); the whittle is used to remove the superfluous slate by making a cut along this line; each edge is dressed in this manner. Sometimes the two top corners are removed as shown at P; this enables the slates when fixed to lie closely on each other (especially if the beds are not perfectly flat) and reduces their weight. As a rule the holes are formed either at the slater’s yard or on the building site (see p. 134). The slate is dressed