

SLATE FOR ROOFING.

In discussing the subject of slate and slate roofing a writer in an exchange makes the following comments which may not be without interest to some of our readers: The most prominent feature of slate is its cleavage along parallel lines. Roofing slate is prepared by splitting the blocks of slate as they come from the quarry into thin slabs. For this purpose a broad, thin chisel is used, and the blocks are split first into two more or less equal parts, each part split through the middle again, and so on until the entire block is divided into slabs of the proper thickness. During this process the edges of the block are kept moist, to facilitate the accurate cleavage of the stone.

After the slates are split to the proper thickness they are trimmed to size by a sort of cleaver process, the cleaving instrument being struck across the plate over a shearing edge on a block. Ordinarily this process is operated by hand power machines, which are set to trim the slates to any size desired.

Slates ordinarily occur in such colors as dark blue, bluish black, purple, gray and green. Reddish and lighter yellowish color slates are also occasionally found, but are not as common, and are consequently considerably higher in price for the same quality of slate. Some slates are marked with spots of a different color. For instance, dark purple slates frequently have spots in them of light green. These spots are not injurious to the quality or durability of the slate as a rule, although they mar its appearance.

A good slate should be hard and tough, although liability to abrasion does not always indicate an inferior material. Some softness indicates good weathering qualities. If it is too soft it will absorb moisture, nail holes will become enlarged, and the slate becomes loosened. A good slate

would give a sharp, metallic ring when struck. It should not splinter under the slater's axe, nor should it be tender or friable at the edges. It should not absorb water to any appreciable extent. An excellent test is to place a slate on edge half its depth in water, and if after 12 hours the line of absorbed water has reached the top of the slate, it should be rejected. If it does not rise more than $\frac{1}{8}$ inch, it may be considered as practically nonabsorbent. Good slate should not absorb more than one-half of 1 per cent. of its weight of water.

Slates are made of a wide variety of sizes, the larger sizes being used upon large areas of roof, such as factory buildings. The small sizes are more commonly used on residences and roofs of lesser area. A common size for house roof is from 6x12 inches and 10x14 inches.

Bands, ribbons or veins of a darker color running entirely through a slate are always dangerous, especially when they run along the length of the slate, as the slate will nearly always break or split along such a line. Even if this does not occur, these bands will generally decompose on exposure to the weather, causing a failure in the slate and a leak in the roof.

Slates are generally laid on wooden sheathing, preferably of fair thickness, matched and dressed, covered with a tarred paper of felt. Sometimes the slates are laid on roofing laths nailed to the rafters at such intervals as to permit of nailing the slates to them. This, however, does not make as good a roof. On iron roofs slates are frequently laid directly on small purlins spaced like the roofing laths, and in this case the slate is fastened with wire passed through the holes in the slate and twisted around the purlins. Special forms of metal fasteners are also on the market for this purpose.

In laying slate on wooden sheathing copper composition or galvanized iron

nails are ordinarily used, about $1\frac{1}{4}$ inches long, with ragged shank, driven through holes punched for the purpose in the slates, one near each corner. Some skill is necessary in properly nailing slates to a roof, as if the nails are not driven snug enough the slates will have some play upon the nails, while if they are the least bit too tight there is danger of the slate cracking, either when the nails are placed, or afterward, due to some movement in the roof surface.

The top courses of slate along all ridges and hips upon roofs, and also from 2 to 4 feet from gutters, should be bedded in some proper cement that will make these parts entirely water proof, throughout all joints and miters. Care should be taken that the lower edge of every slate fit as closely as possible to the exposed surface of those below it, and that the vertical joints between slates be as close as possible, and occur only on the centre line in the next course below.

PUBLICATIONS.

Arthur Foley Washington-Ingram, Lord Bishop of London, contributes an interesting paper to the November Cosmopolitan on "The Overcrowding of Great Cities and Remedies for It." He also has hit at American intellectual life in the twentieth century.

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