tions, $\frac{11}{8}$-in. diameter holes being drilled by an ordinary brace and bit to receive the $\frac{5}{16}$-in. diameter galvanized screws which are $4\frac{1}{2}$-in. long (see enlarged sketch J). These are driven in, and a watertight joint is assured if, as shown, an *asbestos washer* H and a *lead-cupped washer* G above it are employed. A sheet is secured at six positions, namely, two at the head, two at the tail and two at the intermediate purlin, the screws being adjacent to the side laps and in similar positions to those shown at Q.

The alternative connection to a steel purlin is shown at M. A $\frac{5}{16}$-in. diameter *galvanized hook bolt* F is used for this purpose. The length of this bolt depends upon the size of the purlin and is either 3-in. (for intermediate fixings) and $3\frac{1}{2}$-in. (for lapped connections) longer than the flange of the purlin. Thus, for the 4-in. by $3\frac{1}{2}$-in. by $\frac{3}{8}$-in. purlin shown (which is adequate for trusses spaced up to 14-ft. centres), the hook bolts are either 7 or $7\frac{1}{2}$-in. long. The hook is engaged in the edge of the purlin and is made secure by a nut ; lead-cupped and asbestos washers are again used to ensure watertight joints. Each sheet is fastened at six points as stated above. The cross-section at Q shows two hook bolts at the side joint.

The eaves detail at K includes an *eaves filler piece* which is used to fill in the underside of the corrugations. A sketch of this unit is shown at O. The depth and pitch of the corrugations are similar to those of the general sheeting, and when hook bolted (or screwed, if the purlin is of timber) a tight fit results and weather is effectively excluded. Alternatively, patent close-ended corrugated eaves sheets are available. The unsupported overhang of the sheets should not exceed 1-ft. and therefore, as shown, the bottom purlin should be placed well down the slope.

The asbestos-cement ridge shown at N is in two pieces ; the left-hand piece (see sketch at P) has an external collar or flange and is slightly longer than the small roll wing which has an internal collar. The corrugations of the wings fit closely those of the sheets. These wings and the upper ends of the sheets are secured by either hook bolts (see on the left of the detail N) or driving screws shown on the right. The top purlins must be correctly positioned, and, as shown, the fixings should be $6\frac{1}{2}$-in. from the centre.

These sheets may be fixed from left to right or vice versa, commencing at the eaves. If laid from left to right, the first sheet is fixed uncut, but the remaining sheets in the eaves course must have the top left corner splayed. An ordinary hand saw is used for this purpose. The remaining sheets (with certain exceptions, such as at verges and ridge) have both top left and bottom right corners also cut. Each splay cut removes a corner which measures 6-in. (head lap) along the " vertical " edge and 2-in. (side lap) along the " horizontal " edge. The sheets can be thereby correctly shouldered or mitred.

These corrugated sheets, because of their strength, durability, fire-resisting and heat insulating qualities, are particularly suited for large roofs of buildings such as factories, workshops, offices, garages, gas works, generating stations, farms, etc. Low initial and maintenance costs and speed of construction are additional merits.

" Bigsix " sheets are also made reinforced with $\frac{1}{2}$-in. meshed wire. Because of their additional strength the maximum purlin spacing may be increased from 4-ft. 6-in. to 5-ft. 6-in.

Standard Corrugated Sheets.—The dimensions of four standard " small section corrugated sheets " are specified in the aforementioned B.S.S. No. 690—1936. The overall depth of corrugation is either 1 or $1\frac{1}{8}$-in. The cross-section at R is through the side lap of sheets manufactured by Messrs Turner's Asbestos Company. The width is 2-ft. 6-in., the lengths vary from 3-ft.—6-in.—10-ft., and the thickness is $\frac{1}{4}$-in. There are $10\frac{1}{2}$ corrugations per sheet of 1-in. depth and $2\frac{7}{8}$-in. pitch. The head lap is 6-in. and the side lap is equal to approximately $1\frac{1}{2}$ corrugations or $4\frac{1}{4}$-in. The spacing of the purlins is up to a maximum of 3-ft. centres.

These sheets are fixed as described for the " Bigsix " sheets, two $\frac{1}{4}$-in. diameter hook bolts (2 to $2\frac{1}{2}$-in. longer than the steel purlin) or driving screws (3-in. long) being provided near the side lap at each purlin. Lead-cupped and asbestos washers (slightly smaller than those shown at G and H) are used to render the joints watertight. The ridge capping, in two pieces, is slightly smaller in the wing than that shown at N, and the top purlins are arranged to allow the fixings to be $5\frac{1}{2}$-in. from the apex.

Dimensions of what are called " large section corrugated sheets " are also listed in the above specification. The overall depth and pitch of the corrugations are 2 to $2\frac{1}{8}$-in. and $5\frac{3}{4}$-in. respectively, the width is $41\frac{1}{2}$ to 43-in., and the length and thickness are as stated above.

Curved sheets to a radius from 3-ft. 6-in. upwards are available.

Galvanized Corrugated Iron Sheets.—These have been used extensively for covering roofs of sheds, workshops, huts, etc. The standard sizes are 2-ft wide, 4-ft.—6-in.—10-ft. long and of 18, 20, 22, 24 and 26 gauge ; some $2\frac{1}{2}$-ft. wide sheets are also made. They are fixed through the crowns of the corrugations by hook bolts, screws and nails, with curved washers.

Such covering rusts comparatively quickly, especially at the connections, unless it is protected by painting at suitable time intervals. It has been largely superseded, particularly for better class work, by the aforementioned asbestos-cement products. The latter are more durable and do not require to be painted.

Protected Metal Corrugated Sheets.—These consist of a light gauge steel core which is adequately protected against corrosion by being entirely encased by asphalt saturated asbestos felt, the latter being securely bonded to the steel under high pressure. The natural colour is black, but aluminium and other colours can be imparted by an additional outer coating. This roofing material is strong, durable, light in weight and heat insulating. Cellactite and Robertson Protected Metal are examples of this covering.

STONE SLATING

The material used for *stone* slated roofs is either sandstone or limestone and *not slate*. As explained on p. 97, Vol. II, a true slate is a metamorphic sedi-