shown at L, M and N are continuous and that at O (with the sketch at P) is an example of an isolated or non-continuous corbel. The latter is used to support concentrated loads (as transmitted from large floor beams) and the stone pad is provided to distribute the load more effectively.

OVERSAILING COURSES.—These are frequently employed as decorative features, as for example in the construction of *cornices* (a crowning member of a wall), *string courses* (provided between the base and top of a wall), *eaves* (top of a wall adjacent to a roof) and *chimney stacks* (the upper portion of brickwork which encloses chimney flues—see Figs. 38 and 73). Simple examples of brick oversailing courses are shown at E, Fig. 17, D, Fig. 38, and G, Fig. 69. Stone cornices, etc., are detailed in Figs. 24 and 26.

BUTTRESS CAPPINGS.—Buttresses have been referred to on p. 13. These are usually completed with simple cappings (see Fig. 11). The section at Q shows the capping to consist of two courses of splay bricks of the type illustrated at R and S, Fig. 2; a sketch of this capping is shown at R. The sketch at T shows another weathered capping formed of ordinary bricks which are tilted or tumbled into the wall; the section at S shows the cutting of the bricks which is involved.

As mentioned on p. 13, the vertical sides of doorways and window openings are known as jambs. The top or head of such an opening consists of a *lintel* or an *arch*, or both, and the bottom of a window opening is called a *sill* whilst the bottom of a door opening is usually provided with one or more steps or *threshold*.

LINTELS

A lintel is a member of wood, brick or concrete which is fixed horizontally and used to support the structure above the opening.

In the class in Building Science the student will study the behaviour of lintels or beams when loaded. Experiments will show that if a wood beam is loaded as indicated at T, Fig. 12, it will change its shape as the load increases. The beam will bend, and if it is ultimately broken it will be seen that the fibres of the upper portion are crushed and those of the lower portion are torn apart; the bending action tends to contract or compress the upper fibres and to stretch the lower fibres. Hence the statement that the "upper part is subjected to a stress called *compression* and the lower portion to a stress known as *tension*"; the fibres along the centre of the beam are neither in compression nor tension and this horizontal plane is called the *neutral axis*. In addition, the load tends to produce either vertical, horizontal or diagonal cracks which indicate failure in *shear*. Lintels must of course be sufficiently strong to resist failure due to the forces of compression, tension and shear.

Wood Lintels.—These are usually of redwood (see p. 60). The size depends upon the thickness of the wall, the span (distance between opposite jambs) and the weight to be supported. The depth is approximately one-twelfth of the span with a minimum of 3-in.; the width may equal the full thickness of the wall—as is necessary for internal door openings (see B, Fig. 54)—or the width of the inner reveal as shown at B, Fig. 12, and B, Fig. 15. Additional examples showing the application of lintels are illustrated in Figs. 14, 46, 50, 52, 56, 62, etc.

A 9-in. by 3-in. wood lintel used in conjunction with a rough relieving arch is shown at B and C, Fig. 15. An alternative to this lintel would consist of either two 4½-in. by 3-in. or two 4-in. by 3-in. pieces. Built-up lintels may be used for larger spans; the section at B, Fig. 12, shows such a lintel which comprises three 7-in. by 3-in. pieces bolted together with ½-in. diameter bolts

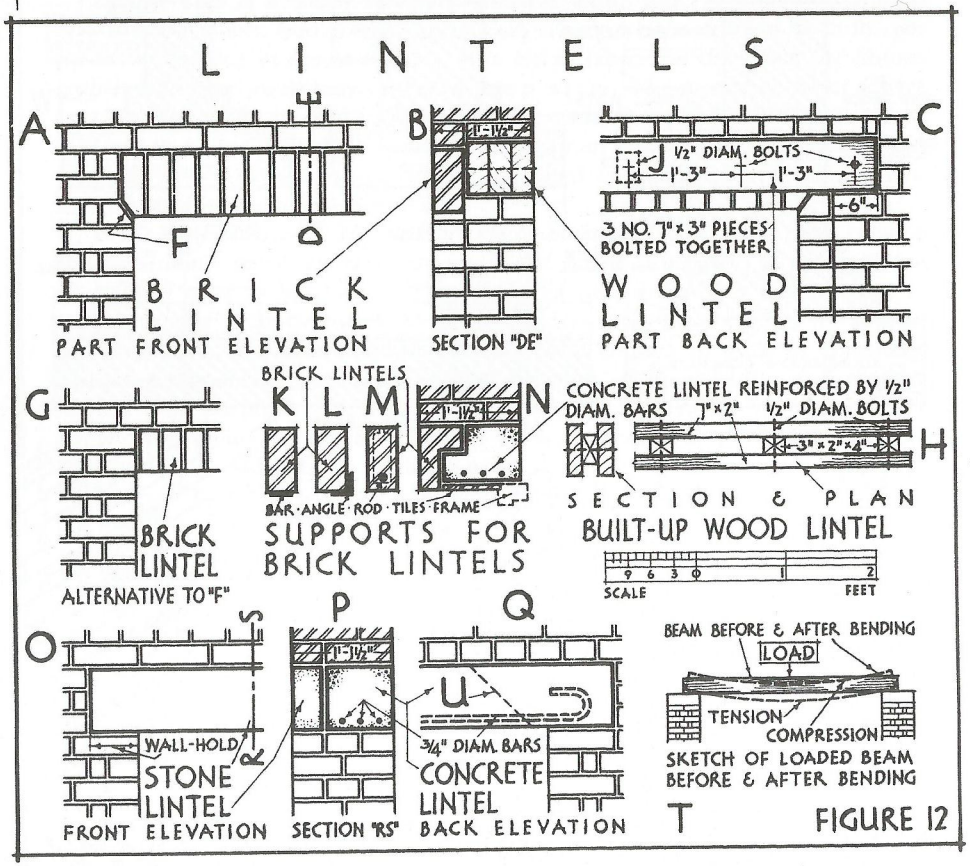

FIGURE 12

near the ends and at every 15-in. of its length; a part elevation is shown at C and indicates the bolts which are provided with the necessary nuts and washers (see J, Fig. 77). An alternative to this built-up lintel is shown at H; this consists of two 7-in. by 2-in. pieces (which bridge the opening and have a 6-in. bearing or *wall-hold* at each end) and 2-in. thick packing or distance pieces at the ends and at 15-in. centres; holes are bored through the continuous pieces and packing pieces through which bolts are passed to secure them and ensure that the pieces will act as one unit; the elevation of lintel H is similar to that