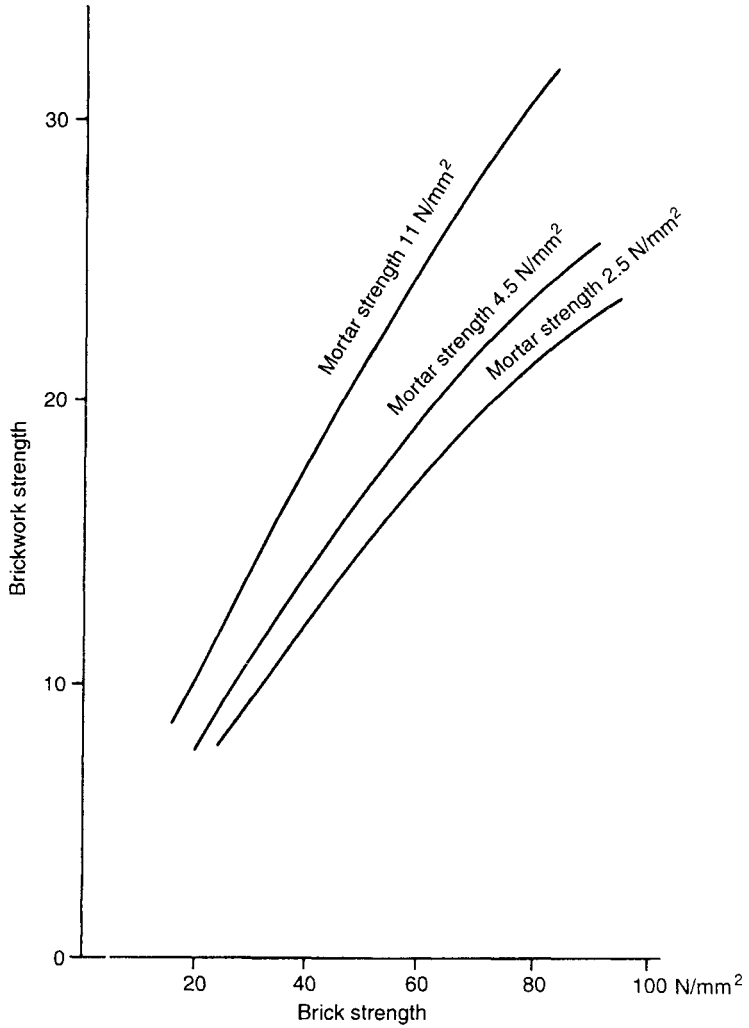

Fig. 3.1 Relationship between brick crushing strength and brickwork strength for various mortar strengths. Based on test results.

the compressive strength of the masonry. A corollary of this proposition is that, for a given unit height, increasing the thickness of the mortar joint will decrease the strength of the masonry. This effect is significant for brickwork, as shown in Fig. 3.2, but unimportant in blockwork where the ratio of joint thickness to unit height is small.

It follows from this discussion that the shape of a unit influences the strength of masonry built from it, and if units are laid on edge or on end

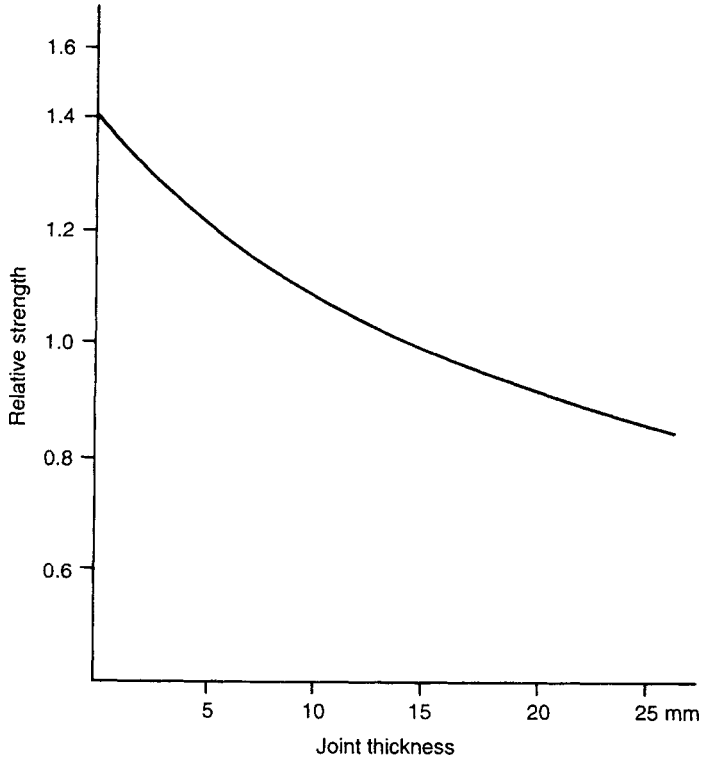

Fig. 3.2 Effect of joint thickness on brickwork strength.

the resulting masonry strength will be different from that of masonry in which the units are laid on their normal bed faces. The masonry strength will also depend on the type of unit: a highly perforated unit is likely to be relatively weak when compressed in a direction parallel to its length and thus result in a correspondingly lower masonry strength. This is illustrated in Table 3.2 which gives some results for brickwork built with various types of bricks. From this table it can be seen that, although there is a substantial reduction in brickwork strength when built and stressed in directions other than normal, this is not proportional to the brick strength when the latter is compressed in the corresponding direction. No general rule can be given relating brickwork to brick strength when compressed with the units laid on edge or on end.

Special considerations apply to masonry built with hollow blocks in which the cores may be unfilled or filled with concrete. In the former case the mortar joint may cover the whole of the bed face of the block (full-bedded) or only the outer shells (shell-bedded).

The strength of full-bedded blocks is taken to be that of the maximum test load divided by the gross area of the unit and the masonry strength is