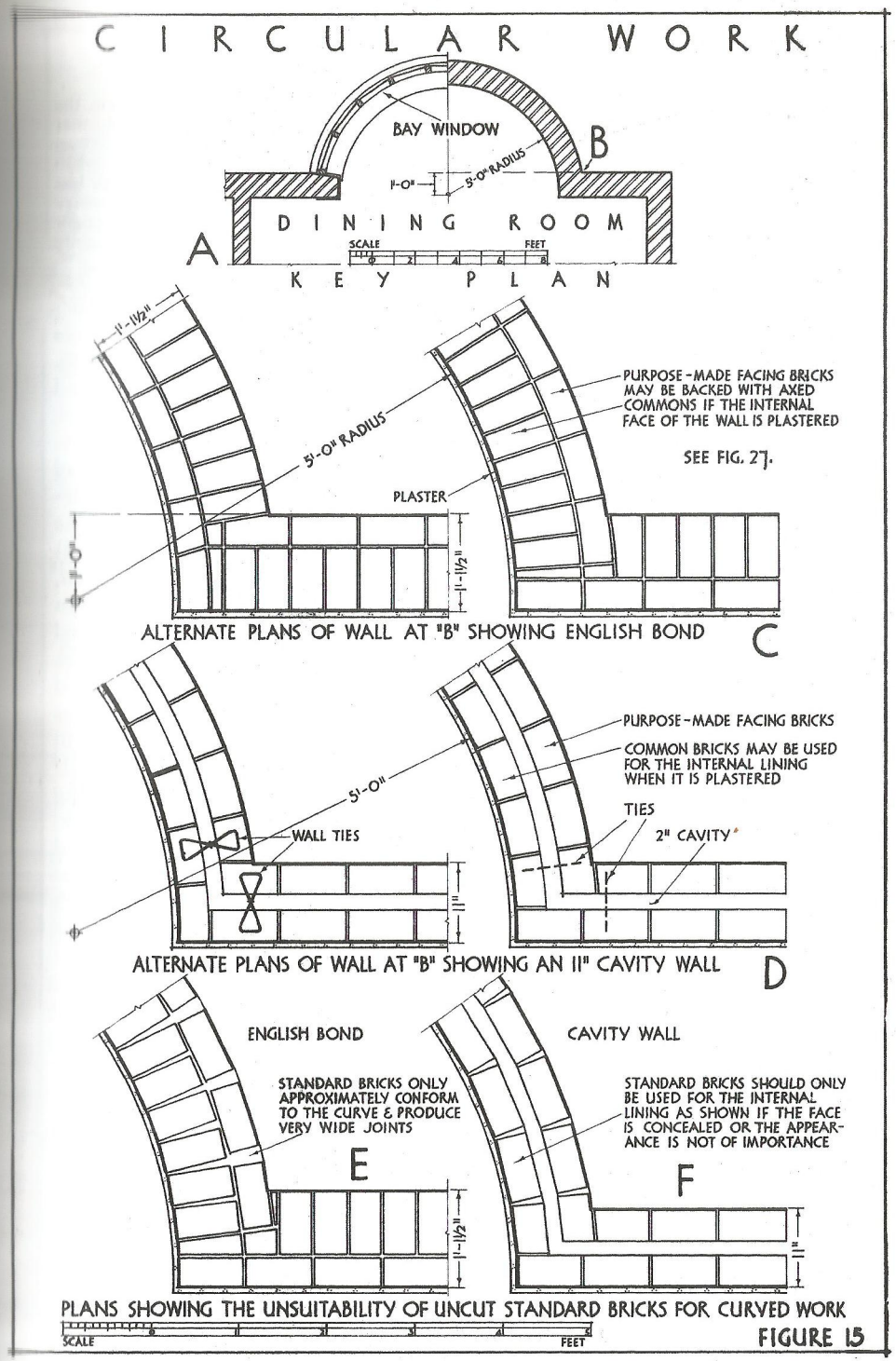

FIGURE 15

REINFORCED BRICKWORK

REINFORCED BRICKWORK (see Fig. 16) is receiving much attention at the present time, and its use is gradually being extended. It is brickwork which has been strengthened by the introduction of steel or wrought iron in the form of either flat or rod bars, woven wire or expanded metal. This reinforcement is placed in the joints or in grooves or perforations in the bricks. Such brickwork is capable of resisting tensile and shear stresses, in addition to compression stress. It is essential that the bricks shall be sound and well burnt, the work well bonded in cement mortar or cement-lime mortar, and the reinforcement effectively protected against corrosion. Rusting of the reinforcement may cause serious damage because of the resultant expansion. Bricks of the engineering type are most suitable when heavy loads have to be supported. The mortar is usually composed of 1 part Portland cement to 3 parts sand; $\frac{1}{10}$ part of slaked lime may be added. Lime mortar should not be used, as this may have an injurious effect on the metal. In accordance with the Model Bye-laws, 1939, a brick wall may be reduced in thickness by $4\frac{1}{2}$-in. provided it is suitably reinforced and such reduced thickness is not less than $8\frac{1}{2}$-in. Hence this type of construction increases the floor area of a building (or reduces the external size of a building) and decreases the dead load on foundations.

Reinforcement of brickwork also improves the longitudinal bond of thick walls. Whilst thick walls are strong transversely, they are weak longitudinally, as, with exception of the outer stretchers, they consist wholly of headers which only give a lap of $2\frac{1}{4}$-in. The details in Fig. 16 show how the provision of reinforcing metal strips increase the longitudinal tie.

Fig. 16 shows examples of reinforced brick (*a*) walls, (*b*) pillars and (*c*) lintels.

(a) *Reinforced Brick Walls.*—The walls at B are shown reinforced at every third course with steel meshed strips called Exmet.[1] This is made from thin rolled steel plates which are cut and stretched (or expanded) by a machine to a diamond meshwork form (see A). It is known as "expanded metal." The junctions between the meshes remain uncut. It is supplied in 270-ft. coils or bundles of 16-ft. long flat strips in three standard widths, *i.e.*, $2\frac{1}{2}$-in. (suitable for $4\frac{1}{2}$-in. walls), 7-in. (suitable for 9-in. walls) and 12-in. (used for $13\frac{1}{2}$-in. walls). Each width is obtainable in 20 (0·035-in.), 22 (0·030-in.) and 24 (0·022-in.) Birmingham Wire Gauge. In addition, $4\frac{1}{2}$-in. width of material in 22 and 24 gauge is also produced. The size of the mesh ($\frac{5}{8}$-in.) is constant. To prevent corrosion the metal in the coil form is coated with oil and then dipped in asphaltum paint. Flat lengths are galvanized.[2]

The Exmet is uncoiled and pressed down into the mortar immediately the latter has been trowelled on the bed. It lies quite flat when uncoiled and the

[1] Manufactured by Messrs The Expanded Metal Co. Ltd.

[2] One method of galvanizing, known as the *hot-dip process*, consists of cleansing the metal and removing any rust by placing it in dilute hydrochloric acid, washing it to remove the acid and then passing it through a bath containing liquid zinc.