

possible, otherwise special provision would be required for their support. Hence, a suitable material is lightweight concrete consisting of a mixture of Portland cement (or Portland blast-furnace cement or aluminous cement) and aggregates such as clinker, coke breeze, pumice, foamed slag and expanded slate. These aggregates are described on p. 29, Vol. II. The composition varies from 6 to 12 parts aggregate to 1 part cement by volume; sand is sometimes added. The aggregate must be crushed to pass through a $\frac{1}{2}$ -in. sieve. Both solid and hollow slabs are made.

The solid type at B, Fig. 13, is that referred to in the British Standard Specification, No. 492—1933; there are many sizes, but the standard dimensions are $17\frac{3}{4}$ and $23\frac{3}{4}$ -in. by $8\frac{3}{4}$ and $11\frac{3}{4}$ -in. by 2, $2\frac{1}{2}$, 3 and 4-in.; the radii of the tongue and groove are $\frac{7}{16}$ and $\frac{9}{16}$ -in. respectively. The hollow type is covered by the British Standard Specification, No. 728—1937, and the specified sizes are similar to the above, with a minimum thickness of $2\frac{1}{2}$ -in. That at C is one type of cellular slab; others have rectangular voids and some have tongued and grooved vertical edges.

Slabs are made on a large scale by hand-operated machines of which there are several types. The concrete, machine mixed, is fed into a steel box of the moulding machine after a wood pallet has been placed inside on the bottom; after consolidation by means of a steel plate, operated by a hand lever, the pallet with the slab is automatically ejected by operating a foot pedal and taken to the drying shed to fully mature for preferably three months and not less than four weeks. Thorough maturing is essential if cracks in partitions due to shrinkage of the concrete are to be avoided. Lean mixes (*i.e.*, when the concrete mix is not richer than 1:8) also reduce the tendency for cracks to develop. Hollow slabs are moulded in boxes containing cores, and consolidation is effected by vibration of the pallet and by pressure applied at the top and bottom; the slabs are extruded over the cores. Approximately one hundred and six slabs can be moulded per hour by one type of machine.

The concrete is also hand compacted with a metal tamper in lieu of the plate. Alternatively, slabs are cast in wood frames and simply compacted with the back of the shovel.

Concrete slabs are bedded and jointed in cement mortar. Plastering of the surfaces (some slabs only require one coat of plaster on each side) completes the partition.

The slabs can be readily cut with a bolster or broad chisel, and most (excluding clinker slabs) will firmly hold screws and nails.

Some concrete slabs, such as pumice, have good fire-resisting qualities, but others (*e.g.*, coke breeze) are combustible. Because of their porous nature, lightweight concrete slabs have a good heat insulation value, but they are not very resistant to the passage of sound.

Pre-cast concrete blocks are made in a similar manner to the slabs. Gravel and broken brick or stone are used as aggregates, in addition to those employed for lightweight concrete. They are generally used for load-bearing partitions in addition to walls. The British Standard Specification, No. 834—1939, applies to these blocks. Their standard dimensions are $17\frac{3}{4}$ -in. by $8\frac{3}{4}$ -in. by 4, $4\frac{3}{8}$, $4\frac{1}{2}$, $8\frac{3}{4}$ and 9-in.; blocks not exceeding $4\frac{1}{2}$ -in. in thickness may also be obtained in $23\frac{3}{4}$ -in. lengths. The mixture shall consist of not more than 1:6 by volume,

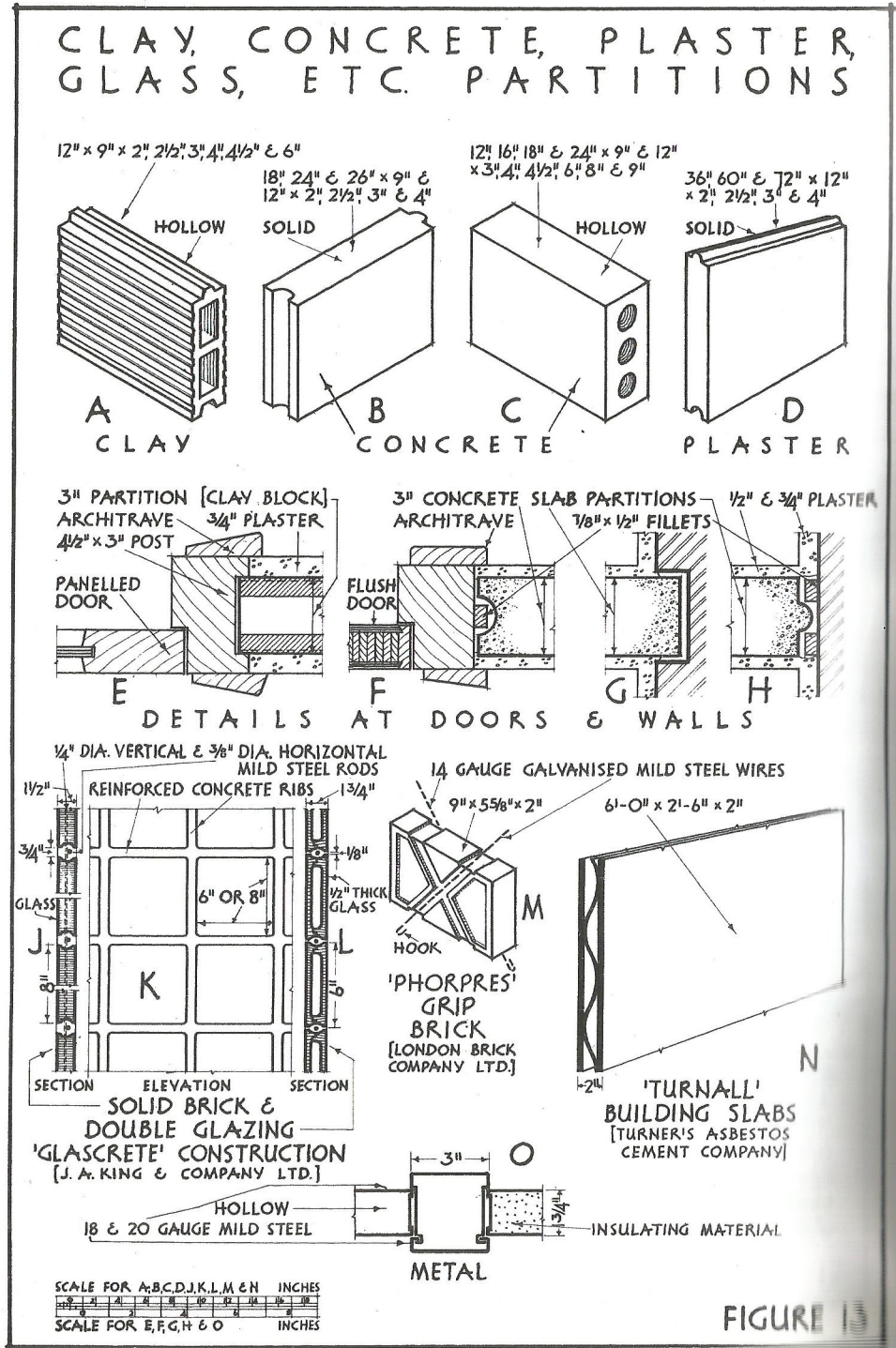


FIGURE 13