

unless the webs of the blocks are 1-in. or less in thickness when a 1 : 4½ mix may be used.

A relatively new concrete product which is being used to an increasing extent for the manufacture of slab partitions is known as *wood-wool cement* or *fibrous wood cement*. This consists of a mixture of wood-wool (wood shavings) and Portland cement; gypsum may be added. Long shavings from ½ to ¼-in. wide are coated with liquid cement, consolidated into slabs by means of a machine press, and are then stored to mature. These slabs are very light, the average weight of the material being only about 30-lb. per cub. ft.; brickwork weighs from 100 to 140-lb. per cub. ft. Further, the slabs have good heat and sound insulation qualities, are highly fire-resistant (the cement coating serving as a protection to the wood shavings), can be easily fixed and sawn, and provide a good key for the plaster which is applied to the surfaces after fixing. The slabs of Thermacoust,¹ illustrated at N and V, Fig. 14, are made of this material, their dimensions being 84-in. by 23½-in. by ½, ¾, 1, 1½, 2, 2½, 3, 4 and 5-in. The thicknesses recommended for partitions are 2 and 3-in. when the height does not exceed 8 and 10-ft. respectively. The slabs are bedded and jointed in ordinary lime mortar or, frequently, gypsum plaster, and the vertical joints are staggered. The surfaces are covered with two coats of plaster. See p. 49.

Efficient slabs and blocks suitable for partitions are made of *sawdust concrete*, so called because it is a mixture of cement and sawdust. Besides being light in weight, these units have a satisfactory heat insulation value, they will take nails and screws, and they can be readily cut or sawn. They have a tendency to expand and shrink, and cracking or crazing of the plaster covering may result.

Another type of lightweight slab is made of *aerated* or *foamed cement*. This material is produced by adding water to a mixture of cement and powdered aluminium; hydrogen gas is evolved, an increase in bulk results and the structure becomes a mass of small voids separated by films of cement. A similar result is achieved if a soapy liquid substance is used as the foaming agent and stirred briskly with the cement.

Briefly, slabs of aerated cement are made in the following manner: Portland cement and powdered aluminium in the proportion of 1 : 1,000 by weight are mixed and water is added. A metal mould is partially filled (to approximately one-third its depth) with this liquid paste, which gradually rises to completely fill the mould. The upper surface is trowelled smooth after any excess has been struck off; the slab is then allowed to harden in the mould.

This is an excellent material for the construction of non-load bearing partitions, although shrinkage cracks will occur if the slabs are not thoroughly matured.

Time and labour are saved in erecting concrete slab partitions if temporary wood liners or frames are employed as described on p. 45, the horizontal slats being fixed at centres to suit the height of the slabs. Otherwise each slab has to be carefully plumbed.

¹ Proprietors: The Cementation Co. Ltd.

4. **PLASTER SLAB PARTITIONS.**—These are made of calcium sulphate (burnt gypsum or plaster of Paris). This is mixed with water, and sand may be added to the mix. The slabs are made by casting the material in wood or metal moulds. They set very quickly. One form of slab is shown at D, Fig. 13. Whilst many slabs are cast without tongues and grooves, the rigidity of partitions is increased if such provision is made. The vertical edges are also sometimes tongued and grooved. In order to decrease their weight, many of the thicker slabs at least are cellular and resemble that shown at C. Sawdust is also sometimes added to reduce their density.

There is a big range of sizes, but those specified at D are common. The slabs are bedded and jointed in lime mortar; hair (1-lb. of hair to 3-cub. ft. of lime) and plaster of Paris (usually 10 per cent.) may be added. Those cast in metal moulds are smooth faced and are not subsequently covered with plaster. When the partitions are to be plastered, the plaster slabs are cast with keyed or rough surfaces and only one coat of plaster is normally required. The slabs can be readily sawn. Plaster slabs are less subjected to shrinkage cracks than concrete slabs.

Wood liners, described on p. 45, may be used effectively in the erection of plaster slab partitions.

Fixing of Concrete and Plaster Slabs.—Special precautions should be taken to ensure sound fixing at doors, windows and walls. Two door details are shown at E and F, Fig. 13, and two wall details are given at G and H. Detail E shows the door frame rebated to receive the end of the partition consisting of slabs with square vertical edges, such as those at A, C and D. If the slabs are like B, a small wood fillet may be fixed to the door frame, as shown at F, and this engages in the grooves of the slabs. Alternatively, metal ties with turned-up ends screwed to the post may be built in at some of the bed joints. Certain slabs, such as those composed of coke breeze, pumice, wood-wool, etc., are well spiked to the frames. At G, a chase has been cut in the main wall to receive the ends of the slabs, and at H, two fillets are plugged to the wall, and between them the tongues of the slabs (similar to B) are fitted. See also V, W and X, Fig. 14.

Reinforced Plaster Partitions.—There are several methods of forming thin partitions which consist of expanded metal (resembling that at A, Fig. 16, Vol. II) or similar metal reinforcement, covered with plaster. The following is one method: The sheets of expanded metal are wired to ½-in. diameter vertical mild steel rods which are spaced at about 16-in. intervals and securely fixed at their ends to the floor and ceiling. Similar rods, at 20-in. centres, are then wired horizontally to the vertical rods (on the opposite side to the expanded metal) after their ends have been built into the side walls (or screwed to door, etc., frames). One side is plastered, and when this has set a coat of plaster is applied to the other side. These coats are well scratched before setting, and a second coat is then applied to each.

5. **ASBESTOS-CEMENT PARTITIONS.**—A portion of a sheet of asbestos-cement (see pp. 120 and 121) which is used in the construction of partitions and flat roofs is