

(b) *Cork Carpet* is made in two grades and several qualities and thicknesses. It differs from cork tiles in that the granules of cork when heated with linseed oil, etc., are compressed by rolling on to a backing of canvas, and it is obtainable in 6-ft. wide rolls which vary from 45 to 90-ft. long. The colour also varies according to the pigment added during the process. It is more absorbent than the tiles and is therefore not so easy to keep clean.

Certain proprietary coverings are advertised as cork tiles and carpet, but they more resemble the characteristics of linoleum (see next column) in that their composition (being a mixture of linseed oil, gum, sawdust and pigment, in addition to ground cork) is different and they are harder and more noisy of tread.

6. *Rubber* provides a durable, quiet, flexible, generally non-slip and dustless floor covering which is obtainable in a wide range of attractive colours. It is used for entrance halls, corridors, banks, cinemas, theatres, reading rooms, hospital wards, restaurants, etc.

There are two classes of rubber floor coverings, *i.e.*, (a) sheet and (b) tiles.

(a) *Sheet Rubber* is obtainable in rolls up to 100-ft. long, 6-ft. wide and $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ and $\frac{7}{8}$ -in. thick; a minimum thickness of $\frac{1}{16}$ -in. is recommended for good class work subjected to average traffic. It is divided into (i) ordinary, (ii) combination of ordinary and sponge rubber and (iii) inlaid. The ordinary sheet rubber is of the same material throughout. The second consists of a facing of ordinary sheet rubber backed with sponge rubber. The inlaid variety is of tiles of ordinary sheet rubber, cut to various shapes and of different colours, and arranged to conform to an extensive range of geometrical designs on a rubber backing to which they are vulcanized (see next column). The sheets are invisibly joined.

(b) *Rubber Tiles* are either cut from ordinary sheet rubber or are moulded. They are of uniform thickness, are more resistant to wear and less liable to coil than sheet rubber because of the extra pressure to which they are subjected in the process of manufacture. Tiles are also made having a moulded facing which is vulcanized to an asbestos-cement backing; skirtings of this material are also available.

Rubber may be laid on either a well seasoned wood or a concrete sub-floor.

A wood sub-floor must be adequately ventilated, otherwise dry rot may occur. Plywood (see p. 40) provides an excellent foundation. If boarded, any cupping of the boards or other irregularities must be removed by planing, otherwise they will cause excessive wearing of the rubber covering; for the same reason, nails must be punched and the holes stopped.

If the sub-floor is of concrete, as shown at L, Fig. 10, the level surface of the screed should be given a rough textured finish by the application of the wood float; this gives a good key for the adhesive. The surface *must* be free from dust, and the concrete *must* be thoroughly dry. Most specialist firms give a guarantee for their work, but this will not be forthcoming unless these conditions are complied with.

The rubber is secured to either type of sub-floor by a special adhesive of rubber solution or a moisture-resisting compound.

Manufacture.—Rubber is obtained from the latex (a white to cream coloured juice) tapped from certain trees grown in Malaya, Java, Sumatra, Ceylon, Borneo, Brazil and elsewhere. The latex is present in the cells between the bark and cambium of the tree. It is extracted by tapping, *i.e.*, narrow inclined channels leading to a vertical channel or cut are gouged in the bark. The released latex flows down these into a cup fixed near to the ground. The contents of the cups are collected and taken to the factory, where it is strained through sieves to remove any dirt and then coagulated by the addition of acetic acid. It is then passed through washing rollers to free it from impurities, after which the sheets are hung up to dry, smoked over wood fires and finally packed into chests ready for export.

Whilst this crude rubber is the basic constituent of rubber flooring, other ingredients, *i.e.*, fillers (which have a toughening effect in addition to cheapening the process), pigments (to influence the colour), sulphur (necessary for the hot vulcanizing process), etc., are necessary. The crude rubber is reduced to a plastic condition by passing it repeatedly between heated rollers. It is then taken to the mixer where the various ingredients are gradually worked in and thoroughly incorporated by the rollers, and passed between a second set of rollers from which it emerges in a thin sheet. The sheets are now vulcanized, *i.e.*, heated in the absence of air, and pressed. This takes place in a press consisting of several steam heated platens (hollow plates) between which the sheets are placed. The temperature of the plates varies from 100° to 150° C., and the duration of heating varies from a few minutes to three hours, depending upon the degree of hardness required and the composition of the rubber. Rubber tiles are vulcanized in enclosed steel moulds.

CARPET.—There is a tendency towards an increased use of the ordinary woven fabric carpet as a covering material in preference to the hard and noisy timber floor coverings mentioned at (1), (2), (3) and (4). This applies not only to domestic buildings but also to public buildings, now that vacuum cleaning plants are considered an essential part of their equipment, and the difficulty of keeping carpets clean has thereby been overcome. A comparatively cheap softwood boarded floor, together with an underlay of felt, is all that is necessary if a "fitted carpet" (*i.e.*, one that covers the whole area of the floor) is used. If a hardwood surround to a centrally placed carpet is required, an effective finish is obtained by covering the margin between the walls and the carpet with $\frac{1}{4}$ -in. thick plywood blocks or strips, as described in (3). This surround should not be fixed to the softwood floor until the carpet has been in use for several weeks and has thereby been stretched.

LINOLEUM AND CELLULOSE FLOORING are laid upon either timber or concrete floors. Linoleum consists of a mixture of linseed oil, gum resins, cork dust, sawdust and pigments; this mixture is spread on to a backing of jute canvas and hot rolled. Cellulose flooring is made in the same manner and of similar materials, except that the base is of gelatinized nitrocellulose instead of linseed oil and resin. The British Standard Specification, No. 810, divides plain linoleum into three types and nine thicknesses varying from 1.9 to 6.7 mm. (approx. $\frac{1}{16}$ to $\frac{1}{4}$ -in.); the rolls are 6-ft. wide. Cellulose flooring is in three grades— $\frac{3}{32}$, $\frac{1}{8}$ and $\frac{1}{4}$ -in. thick—and is in 6 $\frac{1}{2}$ -ft. wide rolls. An adhesive should be used for securing each covering to either type of floor. Concrete floors must be perfectly dry before being covered, and a timber floor covered with such an impervious material as linoleum must be adequately ventilated.