

down. The decayed wood becomes friable and falls to powder under pressure by the fingers, it is dry (hence the name applied to the rot), the surface becomes uneven, and cracks extend both with and across the grain to divide it into *cubical* pieces. The colour is brown or dirty red, the wood is reduced in weight, it has little strength and the member ultimately collapses. Sometimes the decay is entirely internal and there is no external evidence of it.

*Prevention.*—The following precautions should be taken to prevent timber from becoming affected by dry rot.

1. All timber should be sound, well-seasoned stuff of good quality. It is important to note that timber having a moisture content of less than 20 per cent. is unlikely to become attacked by the disease (see p. 7), and therefore all timber required for building purposes should not exceed this percentage of moisture content. Timber may have become infected during storage in the holds of ships or when piled in timber yards, but adequate kiln seasoning destroys such infection.

2. The timber must be kept dry, hence an additional reason why dampness in buildings must be avoided. The absence of efficient damp proof courses and site concrete has been a frequent cause of dry rot in ground-floor timbers; dampness due to defective eaves gutters, fall-pipes, roof coverings and drains may cause decay. Gutter and flat-roof timbering has also been subjected to rot because of the penetration of moisture through parapet walls. Infected firewood stored in damp cellars or similar accommodation may be the means of introducing the decay. Built-in timbers, such as wall plates, ends of floor joists etc. (especially if the walls are of cavity construction—see p. 43, Vol. II), should be adequately treated with a preservative; embedded wood fillets used in solid flooring (see Fig. 9, and B and C, Fig. 10) must be thoroughly preserved (preferably under a pressure process—see p. 12), and the whole of the concrete should be covered with bitumen of a minimum thickness of  $\frac{1}{8}$ -in. before the floor boards are fixed. A narrow band of bitumen should be applied to one face of an internal wall which has a solid floor on one side and an open wood floor on the other.

3. Adequate circulation of fresh air round all timbers must be provided, as stagnant moist air is particularly favourable to the growth of dry rot. Provision must therefore be made for sufficient *through* ventilation under all wood floors, especially ground and basement floors (see Fig. 32, Vol. I, and c, Fig. 20, Vol. II). The air bricks or gratings should have sufficient clear opening area (the British Standard Specification, No. 493, requires a minimum total unobstructed area of one-fifth area of air brick), and a minimum of  $1\frac{1}{2}$ -sq. in. of open area per foot run of wall should be allowed; this is obtained if 9-in. by 6-in. air bricks are provided at 6-ft. intervals. Dead pockets of air must be avoided and cross-currents of air must be induced, hence the need for honeycombed sleeper and partition walls to allow the air currents through the vents in the outer walls to be unobstructed. If a solid floor prevents this (such as a concrete scullery floor at the rear of a wood living-room floor) it is advisable to embed 3 or 4-in. diameter horizontal drain pipes during the laying of the concrete floor at 6-ft. intervals

between openings in the division wall and ventilators in the outer back wall. An air brick or opening must be provided at each angle to obtain free circulation at the corners. Through ventilation under wood floors of halls and corridors is often omitted and is a frequent cause of dry rot. Air spaces round ends of built-in floor joists should be provided (see s and v, Fig. 32, Vol. I). This also applies to the lower ends of roof rafters, as extensive damage to roof timbers at the eaves has been caused by solid beam-filling (especially when the walls are thick and leaks through the roof covering have caused dampness) preventing the circulation of air round the timber. Dry rot to wall panellings and skirtings is also caused by dampness penetrating through outer walls, affecting the plugs and grounds and spreading to the back of the exposed woodwork.

4. Site concrete should be well brushed and pieces of wood, shavings, etc., removed before the boarding of ground floors is fixed. Outbreaks have been traced to affected debris of this description which is liable to dampness. Trench and concrete sub-floor setting-out pegs should also be removed.

5. Linoleum and similar covering should not be laid on new wood floors, especially wood-covered concrete floors, before they have had time to dry out.

*Detection and Remedial Measures.*—Dry rot may be recognized by the presence of any or all of the following symptoms: (a) The appearance of the fungus described on p. 14; (b) warping, “cubical rot” (caused by cracks—see preceding column) and other signs of infected timber already referred to; (c) decay or collapse of timber members (the backs of skirtings and the underside of floor boards may be extensively decayed—the latter being readily broken by stamping the heel on them); (d) an objectionable musty smell indicating dampness; and (e) a deposition of red-coloured powder (which teems with the spores) below a floor.

The curative measures necessary to eradicate the disease depend, of course, upon its extent. Drastic steps must be taken in serious cases, and the various operations must be thoroughly and carefully carried out if a recurrence and extension of the disease are to be prevented. Thus, taking a bad case as an example, the following would be the sequence of operations if an examination of a ground floor disclosed the decay to be extensive and general.

1. The whole of the timber is removed. This includes the skirtings, floor boards, joists, wall plates, plugs and grounds; it may also be necessary to splay-cut and remove the feet of architraves. This decayed or unsound timber is carefully taken outside and immediately burnt. Any plaster behind which the fungus may have spread must also be removed.

2. The faces of the walls below the floor, including the timber pockets and the surface of the site concrete are well cleaned down with a wire brush. These sweepings, in which the spores of the fungus will be present in countless numbers, are carefully conveyed to and spread over the wood fire and destroyed.

If no site concrete exists (and there are many buildings without it), the top 4-in. or so of the earth is excavated, removed and buried; this earth is probably teeming with the spores which have fallen from the affected timber, and its removal should therefore be done with care to prevent droppings providing