Norwegian timber is stencilled with the shipper’s initials in blue letters painted on the ends. Swedish timber is stencilled with red letters or devices, the inferior qualities in blue. Prussian timber is scribed on the sides near the middle. By scribing is meant that the distinguishing letters are roughly cut in with a gouge. Russian timber is dry-stamped or hammer-branded on the ends. American (Canadian) timber is stencilled in black and white. United States timber is marked with red chalk on the sides.

To fit timber for use in building construction the super­fluous sap and moisture contained in the green wood must be evaporated, either by natural or artificial means. During this process the wood shrinks considerably, and unless much care and attention are given to the drying wood it will warp and shake sufficiently to unfit it for practical uses. After the log is converted into scantlings, or “ lumber," as it is termed in America, it is stacked in the timber yard under covered sheds with open sides to enable it to "season.” The wood is carefully piled in tiers or courses, with strips of wood about an inch thick between each layer, so as to allow of the free circulation of air all round each piece. This is the natural and best method of seasoning, and timber treated in this way is more durable than that seasoned by artificial methods; the time taken, however, is much longer. For joiners’ work the drying of the wood is often hastened by stacking the timber in well-ventilated rooms kept at a tempera­ture of from 80° to 150° F. The time taken in seasoning wood by this desiccating process is not more than one-tenth of that occupied in the natural or open-air method. Where it is convenient, timber is sometimes treated with a water seasoning process which enables it to be more easily dried. The wood is placed in a running stream and so tied or chained down as to be entirely submerged. The water enters the pores of the wood (which should be placed with the butt end pointing up stream) and dissolves and forces out the sap. After about two weeks in this position it is taken out and stacked in open sheds to be dried in the natural way, or treated by warm air in special chambers. Steaming and boiling are sometimes resorted to as artificial means of seasoning, but not to any great extent, as the timber deteriorates under such treatment, and the cost of the process is in many cases prohibitive. When wood is required to be bent, however, this is often the method that is adopted to soften the material, so as to allow it to be bent easily. The time allowed in the English government dockyards for the natural process of seasoning for hard woods such as oak is, for pieces 24 in. sq. and upwards, 26 months; from 16 in. to 20 in. sq., 18 months; from 8 in. to 12 in. sq., 10 months; from 4 in. to 8 in. sq., 6 months. Soft woods are allowed half these periods. When the wood is required in a “ dry ” state for joiners’ work, twice the length of time is given. Planks are allowed from a half to two-thirds of the above time, according to their thickness.

Deals with coarse annual rings *(i.e.* coarse grain) should be re­jected for good work, as also should those with waney or naturally bevelled edges. The wide annual rings show that the tree was grown too quickly, probably in marshy ground. Timber with waney edges has a large proportion of sap-wood, and is cut either from a small tree or from the outer por­tion of a large one, the waney edge being obviously due to irregu­larities in the surface of the tree. “ Cup shake ” is a natural splitting in the interior of the tree between two of the annular rings. It is supposed to be caused in severe weather by the freezing of the ascending sap. “ Heart shake ” is often found in old trees and extends from the pith or heart of the tree towards the circum­ference. When there arc fissures radiating in several directions it is called “ star shake.” "Upsets ” are the result of some crush­ing force or violent shock to the balk or log. “ Foxey ” timber is tinged with dull red or yellow stains, indicating incipient decay. “ Doatiness,” similarly, is a speckled or spotted stain denoting decay in certain varieties of timber, such as beech and some kinds of oak.

The primary causes of decay in timber are the presence of sap, exposure to conditions alternately wet and dry, and want of efficient ventilation, especially if accompanied by a warm and moist atmosphere. Timber is . most durable when it is kept quite dry and well ventilated, but some varieties last an indefinite period when kept continually under water. When, on the other hand, the wood becomes alter­nately wet and dry, “ wet rot ” results. The wood affected shrivels up and becomes reduced after a time to a fine brown powder. It is only by actual contact that wet rot affects the surrounding good wood, and if the decayed timber is cut out the remainder of the wood will be found to be unaffected.

” Dry rot,” which usually attacks the sap-wood, generally starts in a warm damp unventilated place, and is caused by the growth of fungi, some of which are visible to the naked eye, some microscopic. The spores from the fungi on the decayed wood float in the air and alight on any adjacent timber, infecting this also if the conditions be favourable. In this way the disease is spread rapidly, continually eating into the timber, which is first rendered brittle, and then reduced to powder. A strong growth of the fungus gives the appearance of mildew on the wood, and produces an unpleasant musty smell. The spores of the fungus will find a way through brickwork, concrete and similar material, in order to reach woodwork that may be on the other side. Damp­ness and a close atmosphere are essential to the growth of dry rot, and it is under these conditions that it spreads most quickly, the fungus soon dying when exposed to the fresh air.

There will be little danger of the decay of timber used in the con­struction of ordinary buildings if care has been taken, in the first place, to have it well seasoned, and, in the second, to ensure its being well ventilated when fixed in position. There are, however, several preservative processes to which timber may be subjected when it is to be fixed in positions which favour its decay (see also Dry Rot). In creosoting, which was invented by J. Bethell and patented by him in 1838, the timber is impregnated with oil of tar. This may be done by soaking the wood in the hot oil for several hours, but the better way is to place the seasoned timber in an iron chamber in which a partial vacuum is created by exhausting the air. The creosote is then forced in at a pressure of from 100 lb to 160 lb to the sq. in., according to ∙the size of the timber. In warm weather the pressure need not be so great as in winter. The whole process only occupies from two to three hours. Soft woods take up from 10 to 12 lb to the cub. ft.; hard woods are not usually treated by this process. Kyan’s process, patented in 1832, consists in impregnating the timber with corrosive sublimate which, acting on the albumen in the wood, converts it into an indecomposable sub­stance. Boucherie, a Frenchman, originated a system in which the sap is expelled from the timber under pressure, and a strong solution of copper sulphate is then injected at the end of the wood. In Blythe’s process the timber is dried, and. crude carbolic acid injected. In Burnett’s process a solution of zinc chloride is forced into the pores of the wood. A new process of preserving timber by means of steam heat has been tried and seems to be effectual. The wood is placed in closed chambers and steam admitted at high pressure (200 lb to the sq. in.). The heat and pressure together exert a chemical action upon the sap, which becomes insoluble and itself preserves the wood from decay.

Posts that are to be fixed in the ground should have their buried ends either charred or else well tarred. External woodwork may be protected by painting or oiling.

The timber used in building is obtained from trees which may be classed under two heads: (1) Coniferous or needle-leaved trees; (2) the non-coniferous or broad-leaved trees.

*Coniferous Trees.—*This class includes most of the soft woods which furnish timber for the framing and constructional portions of nearly all building work. They are also used for the finishing joinery of the ordinary class of building. The numerous varieties of pine which are used more extensively than any other kind of wood are included in this class.

The northern pine (*Pinus* *sylvestris)* has a number of other names and may be referred to under any of the following: Scotch fir, red deal, red fir, yellow deal, yellow fir, Baltic pine, Baltic fir. It grows in Sweden, Norway, Russia, Germany and Great Britain, and often gets a name from the port of shipment, such as Memel fir, Danzig fir, Riga fir, and so on. The colour of the wood of the different growths of northern pine varies considerably, the general characteristics being a light reddish yellow colour. The annual rings are well defined, each ring consisting of a hard and a soft portion, respectively dark and light in colour. No medullary rays are visible; the wood is straight in the grain, durable, strong and elastic, easy to work, and is used by the carpenter for internal and external constructional work, and by the joiner for his fittings. Tar, pitch and turpentine are obtained from the wood of this tree, which weighs from 30 to 38 lb per cub. ft.

The white fir, or Norway spruce *(Abies excelsa),* is exported from Russia, Sweden and Norway, where it grows in enormous quantity. It is the tallest and straightest of European firs, growing with a slender trunk to a height of from 80 to 100 ft. Like the northern pine, it is called by several names, such as ” spruce,” ” white deal,” ” white wood,” "Norway fir.” The colour of the cut wood is a very light yellowish or brownish white, the hard parts of the