

annual rings are very distinct. It is a tree of slow growth, and there is no sap-wood. Its colour is dark brown. The chestnut is very durable, more easily worked than oak, and does not shrink or swell so much. The young wood is hard and flexible and the old wood brittle.

Ash (*Fraxinus excelsior*) is grown in America, Asia and Great Britain. Its colour is brownish-white, with longitudinal yellow streaks. Each annual ring is separated from the next by a ring of pores, the wood is heavy and weathers well, and is free from sap and shakes. It is seldom used for beams that have to support weight, because when young the pores are often broken, which can not be discovered until the wood is converted or cut up.

Common Acacia or American Locust Tree (*Robinia pseudo-acacia*) is a native of the mountains of North America, the wood is very durable and is to be obtained of the average sizes 32 feet long and 23 inches diameter. Some of the houses built by the first settlers of this wood are still standing firm and sound. It is suitable to all purposes to which oak is put, and requires about the same amount of labor as ash. For pales and posts there is no better wood. Its colour is greenish, with a slight tinge of red.

Of cedar there are many kinds, and there are other trees somewhat similar that are called by the same name. The cedar tree or the white cedar of America (*Juniperus*), the Bermudian cedar (*Juniperus Bermudiana*) from Bermuda, and the Bahama Islands, and the Red cedar (*Juniperus Virginiana*). The cedar is a durable wood resinous and emits a strong smell. It is straight grained and easily worked. All these kinds are suitable to building purposes. The cedar of Lebanon or Great Cedar (*Pinus cedrus*) is a tree of great size, the trunk being often 30 inches in diameter. It is very durable and its general colour is a rich light yellowish brown. The annual rays are distinct, each ring consisting of two parts, the one part being darker and harder than the other.

Poplar (*Populus*). The poplar is a tree of which there are many species. The Black poplar and the Common White are the most esteemed. It is a native of England, where it grows to a great height, with straight trunk and branches more like twigs than boughs. It requires two years seasoning, but when dry is tolerably durable and not liable to shrink or swell. The annual rings are a little darker on one side than on the other. Its colour is yellowish or brownish-white. It is a useful wood, light, soft, and easily worked and carved. It is only indented, not splintered by a blow.

Mahogany (*Swietenia mahogany*) a well-known wood, principally used for interior fittings and furniture. The tree is often found with a solid trunk, 40 feet high and 6 feet diameter.

Spanish mahogany comes from Cuba and other islands in the West Indies. "Honduras" mahogany from Mexico, the Bay of Honduras and from Brazil. Mahogany is very durable when kept dry, but will not stand exposure to the weather. The wood is tough, shrinks and warps less than most other timbers. "Spanish" is the hardest, most beautiful in grain and of the darkest colours. "Honduras" is usually softer and lighter in colour. The wood is tough, strong and flexible, but brittle when dry. Mahogany is known in the market under various names suggestive of the appearance of the vein formations, such as "plain" "veiny" "watered" "velvet cowl" "birds eye" and "festooned." Logs are usually from 11 inches to 24 inches square, and from 18 feet to 35 feet long, except those from St. Domingo, which are seldom more than 10 feet long and 13 inches square. Occasionally logs of even greater sizes are to be had.

Beech (*Fagus sylvatica*) and Elm (*Ulmus campestris*) are not generally used in building except for piles. Both are very durable when dry, or if kept constantly wet, but when exposed to changes do not last long.

Walnut (*Juglans regia*) is a native of Persia and the north of China. The wood is very beautiful and its color superior to the red brown of mahogany. It is too flexible for use in the form of beams, besides being costly owing to its scarcity, but it is durable and admirably adapted to interior fittings. White Walnut or Hickory (*Juglans alba*) is a North American tree often growing to a diameter of three feet, and very tough and flexible. Black Virginian Walnut, (*Juglans niger*) found principally in Pennsylvania and Florida, is a large tree, and for interior fittings and furniture is the most valuable of walnuts. Its grain is fine and beautifully veined, and it takes an excellent polish. The heart wood is greyish brown,

with dark brown pores, often much veined, and the sap wood is greyish white. The texture is not so uniform as mahogany, the pores being more thickly set on the one side than on the other of the annual ring. It is not so easily worked, but it shrinks very little.

Butternut (*Juglans cinerea*) is one of the walnuts, growing to a height of from 30 feet to 35 feet. Its characteristics are similar to those of the black walnut, but its colour is a pale yellow, and it is beautifully marked. Its principal use is for internal fittings.

White fir or spruce of Canada (*Abies alba*) is a variety of fir which grows in the same regions of Europe as the red pine. New Brunswick fir is somewhat inferior to the fir of the rest of Canada. The Canadian fir is less resinous than the European, nor is it so durable. It is more liable to twist in seasoning, but it is tougher and lighter in weight than the other.

It is obtained in deals 2 inches thick, 7 inches to 11 inches wide, and from 8 feet to 21 feet long.

Pitch pine (*Pinus rigida*). The best pitch pine comes from the Southern States of North America, chiefly from the ports of Savannah, Darien and Pensacola. The wood has a reddish white or brown colour; annual rings are wide, strongly marked, and form beautiful figures when the wood is dressed and varnished. It is very resinous which makes it extremely durable. It is hard, heavy, very strong, free from knots, and contains a large proportion of sapwood. It is subject to heart and cup shake, and soon rots in a moist atmosphere. The wood is brittle when dry, and its elasticity, strength and durability, are often reduced by the practice of "bleeding," or tapping the tree for the sake of the turpentine it contains. It is too full of resin to take paint well, but varnishing suits it. Pitch pine is used for the heaviest timber structures in engineering works where great strength and durability are required. Ship builders use it for deep planks, and for carpenters' and joiners' work it is admirably suited. For floors and steps it is very durable.

The following table represents the strength, stiffness and toughness of various woods, taking oak as the standard at 100.

Wood.	Strength	Stiffness	Toughness
Oak	100	100	100
Chestnut	68	54	85
Elm	82	78	86
Acacia	95	98	92
Spanish Mahogany	67	73	61
Honduras Mahogany	96	93	99
Common Walnut	74	49	111
Teak	109	128	94
Poplar (great white)	86	66	102
Lombardy Poplar	50	44	57
Cedar of Lebanon	62	28	137
Christiana Deal	104	104	104
American White Spruce	86	72	102
British grown Norway Spruce	70	81	60
Tamarack or Larch	103	79	134

PERSONALS.

Mr. Geo. W. Gounlock, of the firm of King & Gounlock, architects, Toronto, was married on Oct. 10th to Miss Georgie Watson, of Paris, Ont.

We are informed that it is the intention of Messrs. James & James, architects of the new Toronto Board of Trade Building, to open an office in that city at the beginning of the New Year.

To make a good water stain to imitate walnut, that will not cost too much, take of burnt umber 2 parts, rose pink 1 part, glue 1 part, water sufficient; beat all together and dissolve completely. Apply to the work first with a sponge, then go over it with a brush, and varnish over with shellac.

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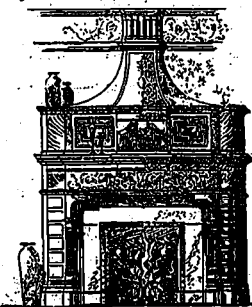
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Terra cotta ware that is broken upon a slant, either outward or inward, can be mended by roughing the broken surfaces with a chisel or hammer, then placing the pieces together and pointing them with a mixture made of 20 parts clean river sand, 2 parts litharge and 1 of lime; made into a thin putty with liced oil. If the terra cotta is very red, the putty can be colored with Venetian red. If other colors are desired, yellow ochre or Spanish brown will give the desired shade. Two pieces of stone, brick or similar material can be united with this cement. Sometimes it is used for covering the outside of brick buildings to make them look like stone of different kinds. Used for this purpose the cement is called mastic.