THE TIMBER TREES OF NORTH AMERICA.

AMERICAN WHITE OAK

THIS tree derives its name from the pale-ash colour of its bark, and very noble logs of timber are produced from it. The wood is of a pale, reddish-brown colour, straight-grained, moderately hard and compact, tough, strong, and of fair durability. Being remarkable for its elasticity, planks cut from it may, when steamed, be bent into almost any form or curve, no matter how difficult, without danger of breaking or splintering them. It is considered by far the best foreign oak timber, of straight growth and large dimensions, for constructive purposes that has ever been imported. The American white oak timber, introduced in 1861, was used in the royal dockyards as a substitute for British oak, chiefly for beams, keelsons, and other works requiring large scantlings. At the moment of its introduction, however, the great change took place by which iron was substituted for wood in shipbuilding; consequently the demand for it fell, and very little of this wood has been placed upon the London market for employment in the private trade.

THE AMERICAN LIVE OAK

is an evergreen, and is found principally in the Southern States, near to the sea-coast. The wood is dark brown in colour, hard, tough, strong, heavy, and very difficult to work, on account of the grain being waved, or twisted. It makes good mallets for carpenters, and would be useful for cogs in machinery, and many other services where great weight is not an objection.

BALTIMORE OAK.

is so called from the shipments being made chiefly from Baltimore. The wood is of a reddish brown colour, somewhat darker than the white oak, and less hard and horny in texture. It is moderately strong, and the quality fair. It might be used with advantage for many minor fitments in ships, and for general purposes in carpentry, as it is easy to work and stands well after seasoning. It is not, however, recommended for use where great strength is required.

CANADIAN RED OAK.

This wood is brown in colour, has a fine, straight, clean grain, is somewhat porous, shrinks moderately without splitting, is easy to work, and stands well after seasoning. Large quantities are usually imported annually into London, and a far greater quantity into the Liverpool market for the use of cabinet makers and general dealers, who employ it for the manufacture of furniture and in the domestic arts, but as a building wood it is considered unfavorable, and unfit for works requiring strength and durability.

CANADIAN ASH.

The timber of this tree is often confounded with the American white ash also found in Canada. It attains good dimensions, and yields the timber of commerce in logs varying from 20 ft. to 40 ft. in length, by from 10 in. to 16 in. square. Our rafters are also produced from it. The wood is reddish-brown in colour, and considerably darker than the English ash. It is plain and straight in the grain, moderately hard and heavy, tough, elastic, and easy to work. It is very suitable for employment for oars to boats, and is consequently in great request for that service, while its economical uses are as wide and general as that of our native growth.

AMERICAN ASH, OR WHITE ASH.

The wood is light brown or whitish in colour, of very moderate hardness and weight, is tough, elastic, clean, and straight in the grain, and quite easy to work; it stands well after seasoning, and hence we get from this tree the best material for oars for boats that can be produced. The best quality wood has a clean, bright, uniform whitish colour.

CANADA ROCK ELM.

This wood is whitish-brown in colour, hard, tough and flexible, with a fine, smooth, close, silky grain; and, as it has only a small quantity of sapwood, it can be worked up closely and economically.

Rock elm is used for ladder steps, gratings, etc.; on account of its clean whitish appearance, and owing to its flexible character it is frequently used in boat building. It cannot, however, be used with advantage in bulk, or even in plank, if exposed to a dry current of air, as under such circumstances it is very liable to split with fine deep shakes from the surface. Large quantities of this wood are imported annually into London and Liverpool for coachmaking, turnery, boat building, etc.

AMERICAN WALNUT.

The wood of the American black walnut is whitish brown in colour, moderately hard, straight and plain in the grain, splits freely, and is easy to work; the heart is much darker, however, whence the name, and is very durable and handsome. The uses of walnut wood are chiefly for furniture and pianoforte making; it is also much used for gun stocks.

CANADIAN AND AMERICAN BIRCH.

There are several species of birch tree in North America. The wood is of a yellowish colour, moderately hard, straight and even in the grain, close in texture, and easy to work. It is imported into this country in logs varying from 6 ft. to 20 ft. in length by 12 in. to 30 in. The heart-shake is small, and the wood near the pith is, for the most part, solid. Very little loss can therefore arise from its conversion. It is used extensively for furniture, turnery, and in a variety of ways in the domestic arts. The canoe birch obtains its name from the use of the bark by the Indians.

PRESERVATIVES OF WOOD.

CONSUMERS of wood have always been troubled by the proneness of the material to decay, says a writer in the Lumber World. In most quarters of the world, timber is certain to rot rapidly, because of the cliamatic conditions. In a few regions the climate favors wood, so that it will last centuries, but on the whole wood is perishable material, and in all ages builders have wished to find means to render it more lasting.

It is a little singular the ancient Egyptians, who appear to have mastered the art of preserving the bodies of men, cats and other animals, have left no record to show that they ever attempted the preservation of wood. History records no serious experiments in the line of wood preservation until modern chemistry was developed. In the latter part of the eighteenth and the early part of the nineteenth centuries the chemists experimented on perishable woods with preservatives, and up to 1816 the record shows that the following substance had been used to impart lasting qualities to wood and other substances: Selenite, alumine, copper sulphates, iron sulphates, resins, mineral coals, charcoal powders, vegetable oils, charring, essential oils, barytes, quicklime, common salt, corrosive sublimate, sulphate of zinc, coal-tar nitrate of silver, carbonate of silver, arsenic and caustic soda. Some of these substances gave good results, but the first great advances in preserving wood were made after the year 1830.

Among the first valuable process of preserving wood was "kyanizing," so named after the inventor, Kyan, who patented his process in 1832. This process employs corrosive sublimate. The next advance was made by Margray, who in 1837 patented a process employing sulphate of copper. In 1838 and again in 1848, Bethel patented the process known as "creosoting," in which cresote or coal-tar is used. Burnette in 1838 and 1840 patented the process called "burnettizing," using chloride of zinc.

Countless other processes have been brought out, using various other antiseptics, but the four named processes have led all others. At this time the chloride of zinc and the creosote process are extensively employed, while others have fallen into comparative disuse.

The timber is treated in several ways. The wood may be steeped for a given time in the antiseptic solution, or the solution may be fed to the tree while growing. Mechanical force, generally hydraulic pressure, may be employed to inject the solution into the fresh wood in the open air or in a closed vessel. Kyanizing is done by steeping the wood in the solution. The principal method now employed is the use of hydraulic pressure in a closed vessel.

Preservative treatment of wood has been reduced to something like an exact science. The process generally employed is as follows: The wood is placed in hermetically-sealed iron vessels, and for several hours subjected to steaming at a pressure of about twenty pounds to the square inch. The steaming liquefies the sap and raises the temperature of the enclosed air. The steam is let out, and air-pumps exhaust the air from the vessels. The sap is driven out of the wood, and next the preservative solution is introduced into the vessel. Hydraulic pressure is applied by pumps, and the chemicals are driven in to the sap-cells in the wood under a pressure of 50 to 160 pounds to the square inch. This process requires from three to twelve hours.

Creosoted timber for weather exposure receives from eight to ten pounds of creosote to the cubic foot, and for use in water where worms attack wood the quantity injected ranges from ten to twenty pounds to the cubic foot. Wood to be creosoted is cut to size before being treated. Creosoted railway ties last from ten to twenty years, and creosoted piles in the sea last from ten to twenty years.

Burnettizing is accomplished similarly to creosoting. In this process the chloride of zinc is introduced at the temperature of the atmosphere instead of being heated. Different woods vary in their capacity for absorbing solutions. Open-grained and porous woods are better for treatment than hard, close woods.

In the chloride of zinc process a too weak solution will wash out, while a too strong solution will destroy the wood. German burnettizers use a 1.9 per cent. solution of zinc, while Americans have used 3.75 to 5 per cent. solutions, which made the woods brittle.

Another process uses two solutions, the first one chloride of zinc mixed with a small amount of gelatin, and the second solution of tannin. These are injected successfully in the usual way. The tannin and gelatin form an insoluble compound, which blocks the pores and prevents the zinc from being washed out. Railroad ties treated in this double way have given satisfactory results. Germans mix chloride of zinc with about eight per cent. of creosote, making an emulsion that is preservative.

French experiments with saline solutions and electric currents enable the experimenters to do in one hour what would require from ten to forty hours to do with the solution alone. The electric currents are sent through the wood while immersed in the solution. The principal uses of wood preservatively treated are for piles in sea water were teredos abound, for railroad ties, and for conduits for electric wires underground.

AS EDITOR DEFEBAUGH SEES IT.

"ONE of the things that impressed me in my contact with Buffalo and Tonawanda lumbermen," says Editor Defebaugh, of the Timberman, "was the easily demonstrated demoralization of the trade in connection with lumber by reason of the recent change in the tariff laws as affecting the distribution of Canadian stock. It is well known that the high-class lumber product of Canada finds resting place on other shores, and the difficulty in the past has been to find a market for common grades. By a modification of the tariff laws, the Canadian manufacturers can come to Buffalo and the United States for their common stock in competition with similar lumber from this country, and have thereby greatly lessened the field of operations of wholesalers at the points mentioned. It does not take lumbermen whose business is located on the American side of the Falls long to allude to this subject in a discussion of lumber trade matters with newspaper men. Certainly the tariff question as a local issue is clearly defined, for in localities where Buffalo and Tonawanda have had little competition, and none from Canada, large inroads have been made by Canadian operators. And, mind you, our Canadian neighbors have other things to sell. They grow hay on the other side, and for purposes to which the dried grass is usually applied—that of furnishing lining for horses and cows—their hay is just as good and goes quite as far as the states-grown article, while the price is from $3 to $7 less per ton than the figures current before the freedom of the country was extended to our excellent neighbors."

NEW ENGLAND manufacturers lead the procession in the all-round, economical, general utilization of wood.

THE average logger may not dress like a dude, but he's always a "very chipper feller" for a' that and a' that.