

## THE WHITE AND CHESTNUT OAKS OF THE ATLANTIC FORESTS.

**N**ORTH AMERICA is the headquarters of the oak genus. No less than thirty-seven species occur within the limits of the United States, and about fourteen of these can be found in Pennsylvania and New Jersey. The lumber yielded by these varieties is by no means of equal quality. This fact is well known to all lumbermen and lumber dealers and workers, but not all of these classes are acquainted with the growing trees of various ages, so as to be able to tell them apart. By the characters of their leaves the oaks of the United States may be divided into (1) white oaks, which have leaves cut up into rounded lobes; (2) chestnut oaks with toothed but not lobed leaves; (3) live oaks, the leaves of which are evergreen; (4) willow oaks, with entire, narrow deciduous leaves; and (5) black and red oaks, in which the veins of the lobed leaves project beyond the end of the green lobes as so many bristles.

Six distinct species of white and chestnut oak, destitute of bristle points to their leaves, are found in Pennsylvania and New Jersey, but the live or evergreen oaks have their habitat further south.

Among the oak of the eastern states none exceed the white oak (*Quercus alba*) in an average of all the qualities which make a tree desirable. Pieces of the wood of this tree, four centimeters (1½ in.) square, and eight times that length, were found to have an ultimate resistance to longitudinal compression of 8183 kilograms, and to transverse strain of 386 kilograms.

In strength, hardness and durability, few oaks surpass this, and the economic value of the tree is enhanced by its wide distribution and large size. From Maine and Ontario to the St. John's river and Tampa bay, Florida; and from the ocean to Missouri, western Arkansas and the Brazos river, Texas, the white oak is abundant on all soils, and attains large dimensions. It is most abundant, and reaches its greatest development along the western slopes of the Alleghenies and in the valley of the Ohio, where it often forms more than half the forest growth, and reaches a height of from 80 to 140 feet, with a diameter of from 4 to 8 feet.

The acorn cup is hemispherical much shorter than the ovate acorn, which is edible, and about an inch long, and the leaves are cut into either from three to five board lobes, or into five to nine narrow ones.

It must not be forgotten that there are in the United States four other quite distinct kinds of oak which bear the name of white oak. Two of these are, however, confined to the coast region of the Pacific; a third, *Q. oblongifolia* extends in Arizona, New Mexico, and Mexico; while the fourth is peculiar to the latter regions.

The post oak or iron oak (*Q. obtusiloba*) belongs to the same section with the white oak, and its lumber exceeds that of that species in specific gravity and resistance to indentation, but is inferior in elasticity, and slightly so in resistance to transverse strain and longitudinal compression. But the tree is comparatively small, at its best rarely exceeding eighty feet in height and three to four in diameter, and usually much smaller. The wood checks badly in drying, but is very durable in contact with the soil, whence, probably, it has a name of post-oak. It is the most common and widely-distributed oak of the Gulf states west of the Mississippi, ranges north to Massachusetts, south to Florida, and west through southern Ontario and Michigan to eastern Nebraska, Kansas and to the hundredth meridian in Texas. The acorns are very much smaller than those of white oak, not exceeding two-thirds of an inch in length, and the acorn cups cover only about one-third of the fruit. The upper and larger lobes of the leaves are broad, and are often slightly notched.

The burr, mossy cup or over-cup oak is a tree equal in size to the white oak, to which its lumber, from the experiments made upon it in 1881, is superior in resistance to indentation and to transverse strain, but inferior in elasticity and resistance to compression. Its specific gravity is about equal to that of white oak, and it is said to be of all oaks the most durable in contact with the soil. The lobes of the leaves are often toothed, but the characters by which the tree may most readily be distinguished are the depth of the acorn cups and their covering of printed scales, the uppermost of which are prolonged into awns, forming a mossy fringed border.

Northward this oak ranges to Nova Scotia and New Brunswick, but it does not appear to extend further south than Lancaster county, Pennsylvania. Northwest it ranges along among the Atlantic oaks to the foothills of the Rocky mountains of Montana, and southwest to the valley of the Nueces river, Texas. It loves rich bottoms and prairies, and in the prairie region is the principal growth of the "oak openings."

Another oak which attains dimensions equal to those of the white oak is the swamp white oak (*Q. bicolor*) a tree which loves deep alluvial soil upon the borders of streams and swamps. By the older botanists, it was confounded with the chestnut oak. From southern Maine and the most southern part of Ontario this tree ranges south to Delaware and west to southwestern Iowa and western Missouri, while along the Alleghenies it extends even to Georgia. The wood is slightly heavier than that of the white oak, which it very nearly equals in elasticity, hardness, and transverse and longitudinal

strength. The leaves of this tree are broader, and are unequally and more deeply toothed than those of the chestnut oak, and the scales upon the acorn cups are more pointed.

*Quercus prinus*, the chestnut or rock chestnut oak, is one of the most valuable timber trees in Pennsylvania. Its range is from the Blue Hills of eastern Massachusetts to Delaware, and along the Alleghenies to Northern Alabama. In size it is inferior on the whole to the white oak, yet occasionally reaches nearly 100 feet in height, with a diameter of three to four feet. In the southern Alleghany region it forms a large portion of the forest growth. Slightly inferior to that of the white oak in transverse strength and hardness the lumber is superior to the latter in transverse strength and hardness. The wood is durable in contact with the soil; and the brick is rich in tannin. The leaves of this oak are uniformly dentate, with rounded teeth, a character by which they may be known from those of the chestnut which have pointed teeth. The acorns are large and thick, with thick hemispherical cups.

Very nearly allied to the chestnut oak is the yellow chestnut oak or chinquapin. This tree has been described under two names, as two distinct species, owing to the fact that, east of the Alleghenies, it is seldom found except in the form of a low shrub, the slender branches of which are often stretched flat upon the ground by the weight of the clustering acorns. West of the Alleghenies this oak attains a height of 80 to 100 feet, or occasionally even more, and a diameter of from two to three feet. It is found upon low, rich bottoms, and also upon dry hillsides. The presence of the dwarf form, which often grows in company with the Bear oak, a dwarf oak with bristle-pointed leaves, is proof of the barrenness of the soil. The leaves of the yellow oak are narrower than those of the rock chestnut oak, and the teeth are pointed instead of rounded, thus rendering the resemblance to those of the chestnut still closer.

This species ranges from the shores of Lake Champlain to the Delaware, and along the Alleghenies to Alabama and Mississippi, while westward it extends to eastern Kansas and Nebraska, and southwest to the Guadalupe mountains, Texas. It reaches its greatest development in southern Arkansas, and is very common in the Mississippi basin.

Although this tree is comparatively little known, its wood, according to the experiments made for the purposes of the census, is, in fuel value, hardness and both transverse and longitudinal strength, greatly superior to that of any of the oaks mentioned, while in elasticity it is inferior only to the rock chestnut oak. It is a very heavy and exceedingly durable in contact with the soil, but checks badly in drying.—W. N. Lockington, in *Journal of Progress*.

## ESTIMATED LOG CROP.

Careful estimates of the log crop of the streams tributary to the booms, which furnish logs to Bay City and the Saginaws, the present winter place the amount at nearly 600,000,000 feet. Of course it is not presumed that the figures are absolutely correct; but it is thought they will approximate very nearly to the actual amount when the figures are all reported officially:

	Feet.
Tittabawassee and tributaries.....	400,000,000
Cass, Bad and Flint.....	8,000,000
Kawkaulin.....	20,000,000
Saginaw and shore pine.....	10,000,000
Rifle river.....	90,000,000
Au Gres.....	55,000,000
Total.....	583,000,000

## THE LUMBER TRADE.

**A**G. VAN SCHAICK, the well known Chicago lumber merchant, has been unburdening himself to a reporter of the *Chicago News*, and we make some very interesting extracts from his remarks which follow. They embrace almost every phase of the lumber trade:

"Why, the local consumption of pine and hardwood lumber alone in Chicago is 700,000,000 feet annually, and so long as this is a railroad center there will be an outside trade."

"Some of the largest lumber manufacturers are removing their business from Chicago to their mills. That is, the manufacturers live and sell their product here, but have it forwarded direct from the mills by rail to the purchaser. Thus they save the expense of maintaining yards and handling the stuff in the city."

"The lumber question does not cut any figure in the change that is going on. I have not met a dealer who is grumbling about strikes. Those that occurred last summer of course delayed business at the yards, but they lasted only a few days, and after they were over every merchant went to work and soon caught up with his orders. In a large city, where there are always men out of employment, a strike cannot last many days. And, as matters are shaping themselves now, pressing orders can be filled direct from the mills when labor troubles interfere with the work here."

"The capital invested by Chicago lumbermen exceeds \$60,000,000. This includes the money put into pine lands, mills and machinery, vessels, and the hundred and one ramifications of the trade. The Chicago yard trade alone represents about \$30,000,000 capital, and employs 14,000 workmen on an average for the year round and 17,000 in the busy season, including the

crowds of the teams that bring the lumber here. The local sales, however, only reach about \$32,000,000 a year a little more than the largest dry-goods merchant in the city sells in the same time.

"Notice the changes in the lumber industry at other points. In 1886 the shipments from Green Bay ports directly to the east were 80,000,000 feet. This season they will reach 100,000,000 feet or more. All this pine product is diverted from the Chicago market, where it would ordinarily be sold. A few years ago nearly all the stuff manufactured in the Green Bay district came here, and it was a rare thing to hear of a cargo going east. This movement from that quarter is increasing every year. The same is true of all lake ports from Manistow to Duluth. Why? Because the Saginaw river and Canada are no longer able to supply the eastern demand. Timber is getting scarce in the Saginaw river section. The great primeval forests of standing pine in eastern Michigan have been cut off, and there is to-day an excess of saw mill machinery at Lake Huron ports. Sales of standing pine in the Saginaw river region are quoted at \$5 to \$8 per thousand feet. This is a very high price. A resident of Detroit told me he paid \$12 for stumpage near the Saginaw river, but that is an exceptional case. In two instances last year log-run lumber sold for \$23.50 and over per thousand feet in Saginaw. That is very dear. Last season logs were towed from Marquette, Lake Superior, to the Saginaw river, to be manufactured into lumber."

"The Saginaw river is still the largest manufacturing market in the northwest. It produces and ships nearly 800,000 feet annually. The merchants there see, though, that this cannot last. They are already reaching out into other sections. More than \$1,000,000 of Bay City and Saginaw capital was invested in standing timber in the Monominee district, Green Bay, last year. One lumberman paid \$712,000 for a single tract and has built a saw mill at Green Bay City."

"On the east shore of Lake Michigan standing timber or stumpage is now selling at \$4 at Traverse City to \$8 per thousand feet at Manistow or Muskegon, the range being governed by the location and quality of the pine. On the west shore of the lake and along Lake Superior prices range from \$3 to \$6, the first in northern Wisconsin and the last in the Green Bay region. These are just about double the prices of three years ago."

"What is the prospect for the lumber trade this coming season?"

"The outlook altogether is very satisfactory. The winter has been a fine one for work in the pines. There is plenty of snow all through the timber country and the men in the camps are actively at work. The reports indicate that the log supply will be a little excessive. Against this large stock of logs is the fact that the supply of old lumber on hand is less than a year ago. It is 10 per cent. less in two of the largest distributing markets—Minneapolis and Chicago—and a little less on the Saginaw river. There were also few logs left over last autumn. The probable liberal demand for lumber and the smallest stocks led the trade to think that prices will not fall below the present range. The average sales of lumber the last year show an average of 10 per cent. above the prices of the previous year, and in this same time standing timber advanced 20 per cent., or \$1 per thousand feet, which about equals the rise in the manufactured product."

"The manufacturers of the western district which includes Michigan, Wisconsin and Minnesota, will probably reach 8,000,000,000 feet this season. This would wholly remove their timber from 1,000 square miles of territory."

## THE WASTE OF WOOD.

It has been estimated by competent persons that, comparing the dead weight of a tree as it stands in the forest with the dead weight of the lumber that is obtained therefrom, not more than 25 per cent. is actually delivered in the timber market. The remainder consists of limbs and slabs, roots and edgings, and buttings and waste in general, in the forest and at the saw-mill. However extravagant and wasteful the timber trade may have been in time past, it may now be noted with satisfaction that, owing to the increased demand in various directions for these so-called waste products, it is likely that the proportion utilized will be reversed, and the loss not exceed 25 per cent., even if it reaches that amount. This is especially due to the growing uses for wood pulp, which now enters not only into the manufacture of paper, in itself a vast industry, but also finds employment in many other directions of almost equal magnitude.

The lumber dealers of New York have formed a corporation under the name and style of "The New York Lumber Trade Association," the objects of which are: "To foster trade and commerce, to reform abuses in trade, to protect trade and commerce from unjust and unlawful exactions, to diffuse accurate and reliable information among its members as to the standing of merchants, to acquire, preserve and disseminate valuable information relating to the lumber interests of this and the surrounding cities, to produce uniformity and certainty in the customs and usages of trade, to settle differences between its members, to establish rules for inspection, and to promote a more large and friendly intercourse between merchants."