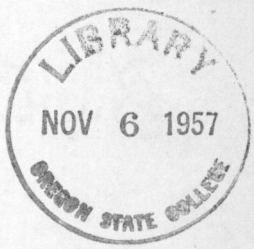
THESIS ON

OREGON'S HARDWOODS

by

Darrow Thompson



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OREGON'S HARDWOODS

Early settlers found Western Oregon covered with a dense blanket of trees, extending from the coast to the foot of the East slope of the Cascade mountains. Most of these were conifers, but scattered among these large stands were groups of hardwoods, usually growing along the river bottoms, low valley fillings and damp north slopes. It is still much the same--trees like Black Cottonwood, and Alder growing along the river bottoms, ash, and maples occupying hillsides as well.

Though lacking the quality and variety of the Eastern hardwoods, our local supply has been sufficient up to the last 15 years to supply the woodworking industry which was in operation up to that time. Since 1918 with the increase of importation from the East the cut in Oregon has fallen off. This has been due in part to the fact that our local supply is becoming exhausted.

The export of native hardwoods has never been on a large scale, with but 2000M or 3000M being exported during 1938. Some old black walnut burls and novelty pieces from juniper, madrone or Oregon myrtle, have been exported but scarcely in recordable amounts. Red alder now is the leading hardwood in the region from the standpoint of volume production and export, as well as having the largest range.

Portland has always been the heart of the states hardwood industry, having been in a good position in the early days in regard to location of stands, water power and transportation facilities. Even today Portland is second only to Seattle in the production of furniture and other hardwood items. The important question which is coming to the fore today is that

of supply for the plants now operating--Oregon's quota becoming smaller each year as the supply is exhausted. The larger concerns in Portland, Seattle and Tacoma are turning to the East for most of the quality material rather than improve on the poorer indigenous woods. Unless steps are taken to preserve our present supply and restock and protect those sites which are more suitable for the growth of hardwood stands, we may expect a once flourishing local industry to die out completely.

At its peak, which was in 1923, the industry in both Oregon and Washington was putting out a $10,000,000 annual bill of goods, employing 2900 persons and maintaining an investment of about $8,000,000 in land and buildings. Thirty plants were in continuous operation in Oregon and 24 in Washington. Besides these, there were innumerable unrecorded plants in operation--back yard box factories, private boat builders, novelty turners and the like, adding materially to the number of persons dependent upon our dwindling hardwood stands for a means of livelihood.

The depression was of course an important factor causing the present slump in this business but with the return to normalcy it is expected to respond along with business generally.

In searching for material for this thesis I was astonished at the small degree of interest which this subject has merited in the past. Very few writings have been published regarding it, and those are usually found sandwiched inbetween long treatises on the subject of coniferous stand management and softwood production methods. As our readily available softwood stands become exhausted it is to be expected that more attention shall be focused on the growth of hardwood timber along the river bottoms and lowlands of the state. Such has been the cycle in the East where short

rotations are demanded and virgin stands of conifers are gone.

According to the 1936 estimate which is the best approximation on record, the following relationships exist between the annual growth and consumption, and the present volume by productive areas.

Tree Species	Present Volume (Mbf Scribner.)
Red alder	1,496,340M
Bigleaf maple	488,320M
Tan oak	439,460M
Madrone	247,130M
Cottonwood	96,570M
Oregon white oak	88,320M
California black oak	63,640M
Chinquapin	66,850M
Oregon ash	30,850M

Lumber production in Mbf.

	Species	1928	1929	1930	1931	1932	1933	1934
1	Alder					5,734	12,724	7,050
2	Ash	237	400	128	127	16	81	
3	Maple	3,650	2,866	5,830	3,094	1,805	2,955	3,955
4	Oak		77		4	51	4	7
5	Cottonwood	1,503	2,011	4,296	950	1,543	5,120	7,919
6	All other	4,630	6,461	8,363	6,397		175	
	Total	10,020	11,815	18,637	10,572	9,098	21,106	18,928

1935	1936	1937
1-	6,793	8,416
2-	106	
3- 3,190	2,865	1,651
4- 1	7	12
5- 5,752	3,190	6,332
6- 10,734	7,484	3,100
19,677	18,445	19,511

Growth by Area Unit--Estimated

Unit	Acres	Growth
Willimatte River	121,207	5,142
Rogue River	151,501	273
Umpqua River	77,118	64
South Oregon Coast	119,484	2,891
North Oregon Coast	226,363	40,553
Columbia River	65,716	2,586
		51,509

Of the ten or twelve species which are cut today in Oregon there are only 5 which are of commercial importance. Alder, maple, black cottonwood, oak and ash, named in order of importance. All these reach their maximum growth within the state, although extending beyond its boundaries. Some of the other species are madrone, myrtle, cascara, vine maple, aspen, and tan oak; none of which are extremely valuable. Some of these are more nearly shrubs as they are found in Oregon but are merchantable timber elsewhere in their range.

Red Alder (Alnus rubra)

The only important species of the genus Alnus of any commercial value and the most important hardwood now growing in the Pacific Northwest. Its commercial range is in Western Washington and Oregon between the summit of the Cascade range and the coast. Even on the best sites it seldom attains any great size--trees usually 12"--18" in diameter when logged. It usually occurs in well-watered and well drained areas along streams, and river bottoms and on moist slopes, such as may occur in the neighborhood of a spring. It occurs on burned over or cutover land which is slow to reseed to conifers, as its seed requires a mineral earth seed bed and the seedlings are intolerant while young. This habit accounts for much of the

extension of the range of the species, since this type of land is being increased year by year with the destructiveness of man and fire losses.

The larger portion of the existing stand is in the North Coastal area--within 40 miles of the coast. The 1936 estimate places the volume at about 1,496,343Mbf of commercial timber (trees of over 12"DBH).

Properties

The wood of red alder is moderately light, soft and even grained and is as easily worked as many softwood species. Compared to other hardwood lumber it is not very strong, but it does not worp or shrink badly, so can be used for exterior trim. The grain is straight, fine and uniform with no distinguishing figure, but may have streaks running in a vertical direction that are known as pith ray flecks. The wood turns well, takes a fair polish, and is a good paint base. In some cheaper furniture the stained wood is used as an imitation of walnut or mahogany.

The largest limiting factor to its use is the lack of durability. The wood is subject to rapid decay when exposed under damp conditions and may show signs of weakening within 2 or 3 months. Its durability is lowest of the woods studied for this thesis.

Uses

Red alder is an important furniture wood in the Portland plants. It is used for turned parts such as legs of chairs and tables and occasionally lamp standards. It takes a polish well and will hold nails, screws and pegs satisfactorily. The chair industry makes the most important use of the wood, considering it as standard for all low and medium grade products. Kitchen chairs are commonly of red alder and over-stuffed chairs may contain some red alder in the interior framework.

One good quality the wood has, is its affinity for all glues and for this reason is exceptionally good for use as core stock in furniture veneers. Glued joints may be stronger than the wood itself, making the wood useful for fixtures where small piece stock is combined.

The lack of disagreeable odor is causing an increased use in foodstuffs containers. Dairies use it in large quantities for butter boxes, churns and vats. It is also taking the place of basswood for honey boxes in this region.

One minor use is in kitchenware and novelty goods, as well as molding,, shade and map rollers, spools, toys, and handles.

Consumption

At the present time the Acme Coat Hangar Company of Portland consumes about 4800bf daily. Dornbecker Furniture Company uses over 15 million feet of hardwood each year, the larger part of which is alder. The Portland Furniture Manufacturing Company makes use of about 500,000 b.j. per year.

The following is a summary of red alder use in the Pacific Northwest:

	M. board feet	
Item	1923	1936
Furniture	9,653	8,132
Chairs	2,410	1,960
Woodenware	560	425
Veneer	290	865
Paper plugs	105	95
Fixtures	100	118
Miscellaneous	40	165
Brushes and brooms	20	18
Dairy supplies	15	256
Handles	10	9
Motor vehicles	3	-

	1932	1934	1936
Lumber Production	5,734,00bf	7,050,000	9,214,000

Costs

The price for red alder has remained nearly constant, with a slight dip in price during the depression but selling now at about the same price as in 1923. In 1923, good merchantable stumpage sold for $2.50--$3.50/M when near transportation. Log prices were from $30/M for green lumber to $40/M for sizable peeler logs. During 1936 alder lumber green aols doe $30/M and kiln dried material will bring as high as $45/M. Peeler log prices are now higher than in 1923 due to the increasing scarcity of large sized material.

Bigleaf Maple (Acer Macrophylum)

Range:

This maple is found growing in the moist river and stream bottomland and north slopes that are wet and cool. The range is confined primarily to the Willamette river watershed, Coast range and low foothills of the Cascades where it is usually found in mixture with Douglas fir, western hemlock, western red cedar, lowland white fir, or Oregon ash. It may occasionally be found in pure stands where good site is extensive, and where it does, trees may develop fair sized trunks of log length, though usually distorted, crooked or forked. This feature limits its value from the standpoint of clear lumber production. Open grown trees are practically valueless for commercial purposes, since they have a short crooked bole and large-limbed crown.

In the merchantable stands the trees average 18-20" in diameter and 50' in height on poorer sites to 100' or more on the best sites. In the 1936 statistics, bigleaf maple timber within the state was listed at 488,325,000 board feet (Scribner scale).

Physical properties:

As in most maples the wood of bigleaf is moderately hard, heavy, and strong. Slow grown stock is preferable where strength is valued since it is a diffuse porous wood. Durability is fairly low and if exposed in the damp it may result in severe rot. Except in the burls the wood lacks the distinctive figuring that is common to the Eastern maples and is straight grained and fine textured. The burls do show beautiful figures when sliced as veneer stock.

The wood is not subject to swelling and shrinkage and consequently forms excellent core stock for more expensive veneers where valuable species are used as thin face pieces. In this respect, maple excells the standard core woods, chesnut and yellow poplar. It competes with imported red gum for uses in the furniture trade though excelling it in strength qualities. Altogether maple is a desirable wood and should be grown where ever site conditions will permit.

Uses:

Because of its physical properties this wood has found a multitude of uses. Especially valuable in the manufacture of furniture, it is used in practically all the best grades of furniture manufactured locally. It works easily, takes glues well, holds screws satisfactorily and is well adapted to walnut, mahogany, or enamel finish. When enameled it is used for small tables, teawagons, chiffoniers, bureaus, dressers, and dressing tables. Mahogany and walnut finishes are utilized in dining room sets for legs, stringers, and rails of tables. Flat tops etc. are, however, usually formed from veneers of more expensive woods. In some cases, medium grade sets may be entirely of bigleaf maple, and many small side tables are

finished completely in this wood.

Because of its strength it is well adapted to the interior sections of over-stuffed chairs and davenports.

A small percent of bigleaf maple goes into veneer. Two general classes are accepted in the trade--termed plain and figured. In the production of the figured veneers, burls are sliced so as to bring out the birds eye and curley effect. These veneers are used in small highly ornamental pieces and are more expensive. The majority of maple veneers are plain, built up from 3--5 ply panels faced with more expensive woods, cross-banded for strength. Occasionally in low grade panels the plain maple may be used as a face.

One use of bigleaf maple is passing out of the picture. Formerly used for broom, brush, mop and other long handles, because of its moderate weight and fine strength qualities, it is now being replaced almost entirely by Douglas fir. New methods of finishing, varnishing, and painting the Douglas fir, plus more modern sales practice in the softwoods industry, have caused this and many other similar changes toward the use of the soft woods.

Bigleaf maple has in the past been used quite extensively for repairs in wooden pieces of truck, panel delivery and passenger car bodies, but this use is being out-moded by the use of all-metal bodies for all motor vehicles.

Such novelty items as nut bowls, cooking spoons, smoking stands and lamp bases are extensively produced from maple because of its ability to take a high polish and its general wearing qualities.

One use of bigleaf maple which has been developed only through extensive advertising, is in flooring. Many fine homes have been finished

in maple flooring, and basketball, handball, and volleyball courts are being built of this Oregon product.

Miscellaneous uses may be summed up in the following: Maple is well adapted to the construction of small boats, and it is used in interior trim of all kinds--doors, cabinets, picture frames, toys, etc.

Consumption:

The supply of this wood is second only to Alder and the cut has been proportionally heavy. There was an increase in the annual cut up to 1929 but with the depression it fell off considerably. However, it is again on the increase and shows promise of being the most stable of the Oregon hardwoods since there is a good supply available if cut with discretion.

At the present time the furniture industry consumes 50% of the total cut, the chair industry 30% and the veneer industry about 18%. The other 2 or 3 percent goes into miscellaneous. In 1928 about 65% of the total cut was handled by the large plants and the remainder by small private woodworking plants which place their product on the open market. With the increase in Unionism and depletion of the readily available stands the balance is favoring the larger operator.

Bigleaf maple is one of the export woods, many burls being shipped East as well as abroad. In 1936 the amount of this material was 400 tons.

Figures on consumption of any of the Oregon hardwoods are sketchy and only approximate. Neither are up to date figures available but the following tables will indicate trends and a general idea of amounts being used.

Consumption of Oregon Maple: M. board feet

Product	1910	1923	1928
Furniture	2,916	1,579	4,824
Chairs		2,661	2,823
Handles	40	70	67
Fixtures	19	60	54
Vehicle		17	22
Boats	5		10
Woodenware		250	10
Saddles	6	57	
Miscellaneous	35		4
General mill	370	137	
Pulleys	22		
Baskets	5	5	
Veneer		50	221

Lumber Production M. board feet

Year	Volume
1925	2,091
1926	2,643
1927	2,596
1928	3,569
1929	2,866
1930	5,830
1931	3,044
1932	1,804
1933	2,955
1934	3,955
1935	3,190
1936	4,356
1937	4,042

Values and Cost Data:

Data concerning values of this wood are available only up to 1932. At this time, stumpage in small, poorly located units with scattered timber was selling for $.75/M. This has been increased to about $1.25/M if it has followed general trends as indicated by other woods. When stumpage contains logs which may produce a good percentage of veneer stock it may sell for $5.00 or more. $2--$4 is the price for average stumpage within

one mile of existing roads or railroads.

Log prices run from $25/M for plain veneer stock to $60 or $70 for logs yielding highly figured facings.

Green maple lumber is now on the market for $35--$45 per thousand and kiln dried or seasoned lumber is $50--$70/M for good material with a lot of clears.

Northern Black Cottonwood
(Populus trichocarpa)

Range:

This tree is found most extensively along the river banks in the Willamette valley of Western Oregon, and also along the Columbia River basin from the Cascade Mountains to the coast. The present stand in the state is estimated at 106,600Mbf (Scribner Rule).

Volume by Counties-M board feet
(Over 12 inches)

County	Volume
Benton	1,500
Clackamas	12,951
Columbia	19,660
Coos	510
Curry	400
Douglas	270
Hoodriver	8,311
Jackson	3,780
Lane	17,019
Linn	11,921
Marion	12,681
Multnomah	11,720
Josephine	275

Properties:

The wood is light soft, not strong, close grained, containing thin, hardly distinguishable medullary rays. The sapwood is nearly white and

weighs 23.77 pounds per cubic foot. The wood when green is heavy, and in drying out, shrinks somewhat more than chestnut which is a standard core wood for veneers. Cottonwood is of very low durability. It readily takes preservation treatments of creosote and under these conditions ranks high as most other species under similar treatment.

Consumption:

Black cottonwood stands third among the state's hardwoods in quantity and value. Since 1910 the cut has decreased 50% because of depletion of supply. At the present time the supply is insufficient to meet the demand of pulp industries which are forced to import the wood from Idaho and Canada. From 1923 until 1933 an average of 15,000 M bf per year was exported to the orient to be used for matches. This export trade has almost disappeared since 1934.

Consumption 1930 Oregon & Washington

Product	M. bd. ft. Volume
Pulp and Paper	12,660
Excelsior	2,700
Furniture	1,425
Baskets	1,530
Boxes	976
Chairs	460
Veneers	1,870

Lumber Production in Oregon

Year	M board feet
1925	1,102
1930	4,494
1931	4,516
1933	6,022
1937	3,450

At the present time 50% of the local demand is by the pulp and paper industry of the state. In 1910 the total pulp consumption in Oregon was 140,000 cords of which 21,000 were black cottonwood. So it is seen that the proportional cut has fallen off enormously.

Six excelsior plants were operating in Oregon in 1910 and used 10,740M bf of cottonwood. In 1930, four plants were in operation with a

consumption of 2,700 bf. Most of the plants today can only operate part time because of the substitutes which flood the market.

In 1923 the cigar box industry used 10,000 bf of the wood, and the cooperage industry used 1,133,000 bf in 1910 and 45,000 in 1923. Now neither of these industries is using cottonwood to any extent in this state.

Uses:

This wood because of its softness, ease of workability, lack of odor and taste, and color is adapted to many uses. It is especially adapted for use as food containers and due to its softness and light color it is well suited for pulp by the soda process. However, the fibers are short for a high grade of pulp.

Black cottonwood is an excellent wood for basket material and turned products. It is also well adapted to core material for veneer as it is light in weight and has little shrinkage. Cottonwood has all the requirements of a good excelsior wood, as it is light, tough, straight grained, lacks resin and has a good clean appearance when in the form of excelsior.

Value:

The price of this wood is low compared to its actual value because the owners of the scattered remaining stands are usually glad to dispose of the timber at any price. The continued use of the wood has been caused by availability at a very low price; lower than the price of other native woods, which could be substituted for it.

Oregon White Oak (Quercus garryana)

Range:

This tree is found throughout western Oregon and reaches its optimum

development in sections of the Willamette Valley. At present there are 80,321,000 bf within the state. The favorite sites are in valleys and on dry gravelly slopes and table lands, while best development of these trees is found on agricultural soils and submarginal lands. For instance, Yamhill County has 16,500 acres of the oak type and less than 600 acres are outside the zone of agricultural lands.

Properties:

In importance, the wood rates fourth in the state. The wood is strong, very hard, and tough. It contains numerous conspicuous medullary rays: color is light brown or yellow and weight per cubic foot is 46 pounds. Wood from the second growth and young trees is very tough and possesses a good deal of springiness and bending qualities, while that from old growth is brittle and very hard.

The wood of this oak is harder and heavier than the wood of Quercus alba and shrinks less. The appearance of the two woods are quite similar, with the exception that Oregon oak is somewhat of lighter color and the quartered sections have a greater display of flecks.

Oregon white oak equals eastern white oak in resistance to decay and is rated about one-half the durability of black locust, which has the greatest durability of any of the eastern hardwoods. Oregon oak has one-half the durability of western yew and three-fourths the durability of western red cedar. Second growth oak posts are known to last for 20 years under average conditions.

Consumption:

Although Oregon oak is one of the four most important hardwoods in Oregon, its use has decreased nearly 90% between 1910 and 1928. In 1928 only one-fourth of a million feet was cut, the reason being that all the

better sites have been cutover so many times that there is very little quality material left. This is characteristic of all the Oregon hardwoods except alder. Add to that the fact that the second growth oak is of a coarser texture and not so well suited to fine work, and the reason for its decreasing use is apparent.

It is also proving true that manufacturers of furniture in this state can afford to import a high grade of Eastern oak, rather than use Oregon oak, which because of its numerous defects, proves rather expensive to work up to a quality equaling the Eastern species.

Consumption--Oregon Oak--M board feet

Product	1910	1928
Handles	1,320	105
Chairs	487	90
Cooperage	200	-
Saddles	50	-
Boats	51	50
Fixtures	43	-
Baskets	12	-
Vehicles	12	5
Interior	10	-

The market today is in the Western States, and for products such as handles, boats, fixtures, and stirrups. Locally it is an important fuel wood.

Uses:

Because of the properties of hardness plus little shrinkage in proportion, Oregon oak is well adapted for flooring. The wood is now chiefly used for handles, chairs, boats and stirrups; however, in the past considerable quantities entered into the manufacture of furniture, cooperage and fixtures. It has excellent bending qualities which make it an outstanding wood for stirrups, saddles, and bow backs and braces in chairs. In using

the wood for furniture a loss of 40 to 50 percent of the log is effected in removing the defective material. The wood makes good cooperage when sufficient clear stock is available, since it has the quality of being impervious to liquids, but this field has been taken over by the Eastern white oaks almost exclusively.

Local boat-builders find oak makes a good wood to use where strength is necessary, as in stem posts, strakes, fenders, towing bitts, davits, and hatch wedges. As a fuel the wood ranks second to Douglas fir in the state. It has 50 percent more fuel value per cubic foot than Douglas fir and has 97 percent the heat value of coal. The shock resistance of the second growth material makes it well adapted for handle stock. The best material for such use is in fast-grown trees having a large percent of sapwood. The old growth wood is brashy and hard to work.

Miscellaneous uses of the wood are made locally, such as in the repair of farming machinery and equipment, for insulator pins, tree pins, pole steps, scutcheons of flax mills, picker sticks for woolen mills and screen frames for flour mills. Up to 1935, a factory at Oakland, Oregon was turning out donkey engine friction blocks and rolls for sawmills from Oregon oak. The wood is used extensively by farmers for fence posts wherever it occurs adjacent to a farming community.

Values:

Lumber that is produced for chair factories must be of good quality and brings from $100.00 to $175.00 per thousand. Small dimension material is worth $50.00/M. At the factory, clear logs 8 and 9 feet long bring $40.00 to $50.00 per cord. Logs that are 12 feet and longer, suitable for planks and timbers are worth $60.00 to $70.00/M.

Fuel stumpage is valued from $.50 to $2.50 per cord; stumpage for handle stock is worth $7.00 to $8.00 per M; stumpage of sawlogs is worth $10 to $20/M.

Oregon Ash
(Fraxinus oregana)

Range:

The bulk of the small supply of Oregon ash left in the Northwest is found in Oregon. It grows up to an elevation of 2,500 feet in the mountainous regions, and ordinarily produces the best timber in valleys and along river bottoms. Most of this occurs in the Willamette River and tributaries. The supply is so small that it occupies the position of least important of the commercial hardwoods of the state. In 1936 there were 30,851,000 board feet (scribner rule) within our boundaries.

Properties:

The wood is hard, brittle, coarse-grained and contains many thin medullary rays. It is ring porus, light brown in color with thick lighter colored sap. The weight per cubic foot is 35.72 lbs. Ash has one-half the durability of Oregon oak.

Consumption:

Very little of the material is used by the wood plants of this state, although it gains some importance from its burls, which are of good quality and are exported to the East or to Europe when sufficient quantities have been collected.

Consumption of Ash--M board feet

Year	Volume
1926	1,253
1927	1,053
1930	128
1933	81
1937	89

Use:

This wood is similar to Oregon oak in physical properties and uses, but has not the quality of Oregon oak. It is too coarse to be used in high grade furniture, though it may be used as flooring and interior trim in buildings. It is well adapted to local "Woodlot use" for general utility as a strong wood. Much of it is used for fuel.

Value:

Ash logs produce only 10 to 15 percent of clear material and as the stands are scattered and thin, this wood is not in great demand for any commercial product. One fourth of the material is bought on the open market as logs, the remainder being purchased by utilization plants in the form of mill run, one to two inches thick and worth $35.00 to $50.00 per M.

Of the hardwoods which are of lesser commercial importance, cascara (Rhamnus purshiana) is the most outstanding. This tree inhabits the moist uplands, especially of the coast range. It is found growing on old burns and areas of logged off land and it usually grows in mixtures with the reproduction of Douglas fir, White fir, Hemlock or Spruce; seldom does it appear in pure stands.

Cascara has been practically exterminated in the more accessible places, as the harvesting of the bark has for a long time been profitable. At

present the demand is increasing for the bark, which has properties valued by the drug industry. In 1938 the price was $.08 per pound, on the dock and future indications point to a sustained market. No information is available to the supply within the state or the amount which is harvested each year.

Oregon Myrtle (Umbellularia californica) is valued highly, first, because it is not found in any other place in the world and secondly, because the wood displays a beautiful grain and takes a high polish. Cruise data of 1938 gave a volume of 56,543,00 bf within the state. It inhabits the coastal region of southern Oregon, extending down along the coast to the northern tip of California, reaching its optimum growth in Coos and Curry Counties. Although this tree is an angiosperm it does not drop its leaves in the winter.

The wood is heavy, hard, strong and will take a very high polish. The heartwood is light brown, with thick lighter colored sap-wood, composed of 30 to 40 layers of annual growth. The weight per cubic foot is 40.61 pounds, The leaves and twigs possess a volatile oil useful for some medicinal purposes.

Most of the wood is used by novelty workers. However, a factory in Portland cuts the wood into veneer by a special method, producing a ribbon strip effect in the wood. Lumber is also produced and is of good quality and possesses excellent working properties. Often the natural color is darkened by keeping the logs submerged in water for a long period of time.

In working up the material, the logs are bucked up into 4 foot lengths and then into slabs about 4 inches thick. They are then allowed to season four to six years. The wood is of very low durability and when logs are

left in the woods they are speedily attacked by a small worm which riddles the wood and ruins it.

Tan oak (Lithocarpus densiflora) grows in the valley of the Umpqua River of southern Oregon. Although it is the most important tree for tannin in North America it is not used for the production of tannin in this state. In 1936 cruise data showed a volume of 439, 465,000 bf in the state. The wood is hard, strong, close-grained, and brittle. The color is a bright reddish brown. This wood has no value for construction and probably finds its largest demand as fuel.

Aspen (Populus tremuloides), grows east of the Cascade Range and is little used. The wood is soft, not strong and has no durability. It is light in weight and not especially desirable as a fuel.

Miscellaneous

Madrone (Arbutus menziesii), vine maple (Acer circinatum), chinquapin (Castanopsis chrysophylla), Canyon live oak (Quercus chrysolepsis) and California black oak (Quercus kelloggii) are all found within the boundary of the state. Madrone is valued for its burls; volume of this timber from the 1936 cruise was 247,127,000 bf. None of these woods are sawed commercially to any extent. They are,however, most of them, used locally for novelties or even fuel.

Burls:

Madrone, bigleaf maple, ash, myrtle and walnut often form burls, which are highly desired by veneer manufacturers. Most of this material is shipped out of the state, some of it going to the Atlantic Coast and the majority to Europe. Burls are customarily sold by the pound, some bringing as much as 10 cents a pound.

Summary:

The hardwoods of Oregon, and the Pacific Coast, although not comparing in quantity and quality with the eastern species, still hold an important place within this area. Many of them, especially red alder, are well adapted to commercial uses, and in the past have been instrumental in development of the Pacific Coast furniture industry. Today one-third of our furniture needs are being met by importation from the East. This suggests expansion of the local industries, which can only be accomplished by incorporation of management plans for the remaining stands in order to realize their full value over a long period of time. Much of the land area of the state is well suited to production of hardwoods and future programs of wise land use will undoubtedly recognize this.

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