The Closer Utilization of Ohia Lumber

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Although a dozen or more different species of trees are more or less locally for various purposes on the Hawaiian Islands yet the ohia lehua and the koa are the only two timber trees in this Territory which, because of their size and abundance, have any commercial importance. Of these two species koa is primarily a cabinet wood leaving ohia lehua as far only all around lumber tree of any importance.

Ohia lehua occurs in one form or another on all the islands of the group, between elevations of 250 and 6000 feet. It reaches its principal development in the Puna, Hilo and Kona districts on the island of Hawaii, where it occasionally attains to a height of 100 feet and a breast high diameter of 40-50 inches. In the districts named it forms extensive, practically pure, forests.

The ohia wood is strong, heavy, tough, hard and closer grained, of a dark reddish or brown color, and takes an excellent polish. Unless carefully seasoned it is liable to check, twist and warp to an extent which renders it useless for lumber. The thoroughly dry wood has a specific gravity of .64, weighing 40 pounds to the cubic foot. It is thus slightly lighter in weight than shagbark hickory of the middle States, which weighs 40 1-2 pounds per cubic foot, and is somewhat heavier than red or white oak which weighs 38 pounds per cubic foot. Green ohia wood, however, is very heavy, weighing 70 pounds or more to the cubic foot.

Ohia is only about one half as tough as good hickory, but in strength it may be classed with the best oak wood. Thoroughly dried heartwood will last for a long time in contact with the soil, ties fifteen or sixteen years old showing hardly any sign of decay. The green wood, however, is not very durable. The wood has excellent spike-holding qualities which render it of great value as a tie timber.

In the past the wood was used for slabs, the construction of log houses, and for fuel, but for few other purposes. In recent years its use as a valuable tie timber has been recognized, and two logging operations in the Puna district cut practically all their timber into ties, most of which are shipped to the Coast.

In spite of the low stumpage price paid for the standing trees and the liberal price received for ohia ties on the Coast, the cost of manufacture leaves little or no profit. This is due to various causes, but mainly to the per cent of cull timber, the difficulties in logging, and the high cost of transporting the heavy logs and ties. An operation to prove a financial success, must, therefore, depend almost entirely on the utilization of the by products for its profits, and unless the proposition will pay according as the slabs, siding, and crooked and defective logs are utilized for commercial purposes, it is not worth while.

The wood of ohia lehua, if properly seasoned, may be used for almost any purpose for which hardwood is ordinarily used, and with the growing scarcity of such wood on the continent there should be no difficulty in almost finding a ready market for it. However, in introducing a new wood in the lumber market numerous obstacles are encountered, the greatest of which is to overcome the ill-feeling or the suspicion of the businessmen. It must be proved to the prospective buyer that the product is not quite as good as, but is superior to, the wood which it is to substitute. The product should be worked up in the most careful manner for any shortcoming or defect in the manufacture will be attributed as a defect to the qualities of the wood itself.

The above statements are almost axiomatic but seem to be necessary in view of the circumstances surrounding the only two attempts to introduce this wood on the market. An attempt was made to utilize ohia lumber for insulator pins on telephone and telegraph poles. The green wood (probably sap wood), was used for this purpose, and after the pins were turned and delivered on the Coast they warped and twisted so badly that they were entirely unfit for the use for which they were intended. Again, an attempt was made to use ohia for paving blocks. The main qualities necessary in a good paving block are durability, close grain, and the power of resisting abrasion. These qualities are found to a high degree in the ohia. However, no care was used in laying the blocks and in covering them, with the result that the ohia blocks were declared to be unsuited for paving because such pavements were found to be slippery. There is no doubt that a proper surface covering would have easily obviated this drawback.

The principal difficulty found in introducing ohia lumber on the market is the indisputable fact that it is very liable to warp and twist. Means of overcoming this difficulty, however, can be readily found. Great attention should be paid to piling and drying the lumber. An important requirement is that the boards should be piled in such a manner as to allow a free circulation of air. The lower tier of boards should be at least six inches from the ground. In the lower dozen tiers the boards should be laid about eight inches apart while the boards in the upper layers may be only three inches apart. The piles should not be more than six feet wide. The layers of boards should be separated from each other by means of strips or stock about an inch square and from two to four feet apart. To prevent staining the stickers should be thoroughly dry. The top of the pile should be weighted down with ties or heavy blocks of lumber. For still the lumber should be piled in a roofed shed and the pile should be pressed down by means of jackscrews working between the upper layer of the boards and the roof of the shed. To prevent too sudden drying and consequent checking the lumber should not be piled in full sunshine or in very windy places.

By using these methods of piling the lumber and then allowing it to stand in the yard for from three to six months the tendency to warp and twist would be eliminated to a large extent.

Properly seasoned ohia wood can be used for a great many purposes, some of which will be enumerated.

Felling ohia trees (note woodchopper in lower left of picture), Puna, Hawaii.

Clearing a right-of-way for a logging railroad in the ohia forest.

Ties.

As mentioned, most of the ohia cut at present goes into ties. It is particularly valuable for this purpose on sharp curves, because of its resistance to spikepulling. If properly dried before being laid it has great durability in contact with the ground.

Timbers.

Ohia timbers, although very heavy are excellent for the construction of bridges, tunnels, and for other purposes where strong durable wood is required.

Car Construction.

Ohia has been used with apparent success for railroad car construction. Its strength, toughness, and hardness make it a valuable wood in the car shops. It is especially useful for the construction of various portions of the lower parts of the cars.

Flooring.

The close, attractive grain, the pleasing dark color, and the hardness of the wood render ohia very suitable for flooring purposes. It properly seasoned there is no reason why ohia flooring should not be able to compete with any hardwood flooring at present on the market. The wood has already been used for this purpose to a limited extent and proved to give highly satisfactory results.

Wainscoting and Paneling.

The attractive grain and color of the ohia should render it suitable for wainscoting and paneling. Its successful use for this purpose, however, will depend on the care with which the wood is seasoned.

Interior Finishing.

The qualities of the wood which make it suitable for flooring and paneling make it also a good wood for other interior finishings. Houses finished in ohia are said to be very attractive and pleasing to the eye.

Stair Railings and Columns.

The ease with which the wood takes a polish and its hardness make it a suitable wood for stair railings and columns.

Molding.

Attractive molding and picture frames can be made from ohia wood, and narrow boards and strips unsuitable for any other purpose may thus be utilized with a profit.

Shingles.

Ohia shingles have been used to a certain extent in the construction of houses at Pahoa in the Puna districts. Shingles a year old have not as yet warped to any extent. Heartwood should be utilized for this purpose, since the sap wood even if dried is liable to take up water and warp.

Turning and Novelties.

Small pieces of ohia unfit for other purposes may be utilized to a certain extent for various turning purposes such as dowels, pail handles, bobbins, toys, calabashes, etc.

Shuttles.

Dogwood, in the States, is the principal wood used for shuttles for cotton and textile mills. The exhaustion of this wood at present in sight has caused more or less concern, and any substitute for this wood will find a ready market. Ohia should furnish an excellent wood for shuttles.

Furniture.

Because of the great weight of ohia wood and its glassy finish it is not suitable for ordinary furniture. However, small articles of furniture such as card tables, are sometimes made of this wood and find favor in various localities.

Paving Blocks.

The qualities which make ohia suitable for street paving blocks have already been mentioned. Ohia should be able to compete for this purpose with almost any other woods at present in use.

Tool Handles.

The toughness and strength of ohia make it a fit wood for handles of small tools such as screwdrivers, chisels, planes, etc. Its great weight, however, renders it unsuitable for the handles of axes, spades, shovels and other large implements. By experience it has been found to give satisfaction as handles for peaveys or cantdhooks, used in logging operations.

Pulley Blocks.

Its use for pulley blocks should be thoroughly tested. Apparently it has all the requirements necessary for such a purpose.

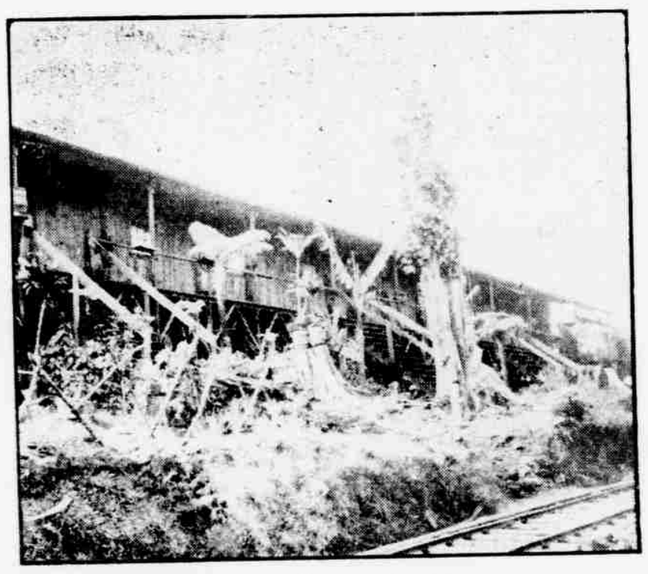
Tight Cooperage.

Old white oak, at present, is the principal and practically the only wood used for tight cooperage, especially for beer, whisky and oil barrels. The constantly decreasing supply of this lumber is becoming a serious problem in the cooperage market and any practicable substitute would be gladly received. General consideration seem to show that ohia lumber possesses qualities which make it suitable for purposes of tight cooperage, and the lumber should be given a thorough trial.

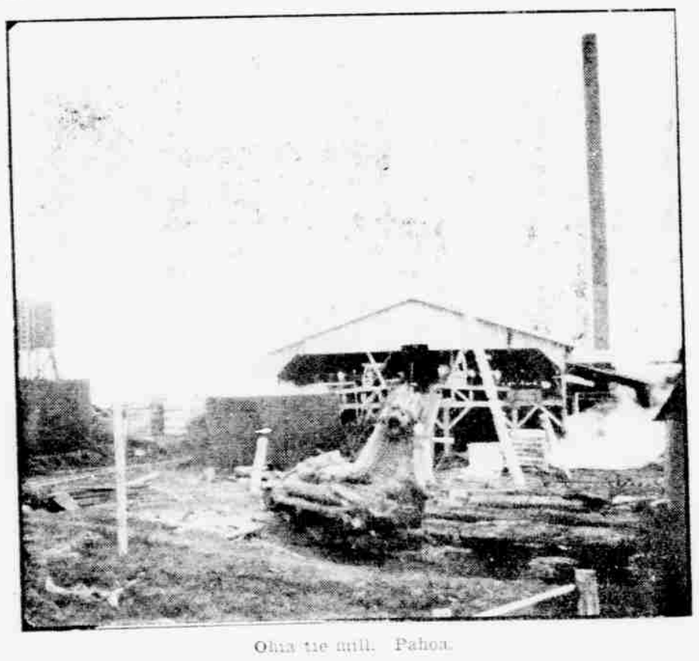
Tie Plates.

A new use for ohia has recently been introduced which, if proved a success, should find a market for large quantities of ohia lumber. This is its use for tie plates. Red wood, cedar, and other soft conifers make excellent ties so far as their resistance to decay and their durability in contact with the soil is concerned. But because of the softness of these woods the rails soon cut into them, the spikes pull out, and the ties must be shifted or replaced. To obviate this difficulty metal tie plates of various forms have been devised, which are fastened to the soft ties and receive the direct pressure of the rails. Such metal tie plates are expensive, besides being not entirely satisfactory in other respects. Tie plates made of ohia lumber have recently come into use in Hawaii. These consist of boards about an inch thick, a foot long, and as wide as the base of the rail, with grooves to receive the rail, and provided with two holes for spikes. The hardness, strength and durability of ohia are qualities which render it a suitable material for tie plates. Great care should be taken, however, that the wood used for this purpose is thoroughly seasoned, for otherwise the plates will warp or break.

Every effort should be made to introduce ohia lumber to the Coast. It is by far too good a wood to be sawed into ties. It should be able to compete with almost any hardwood at present on the market for purposes in which strength, hardness, durability and attractiveness are the leading requirements. This introduction can be accomplished by wider advertisement, and especially by introducing into the market the finished products. The importance of having these products properly manufactured and free from defects can not be emphasized too strongly.

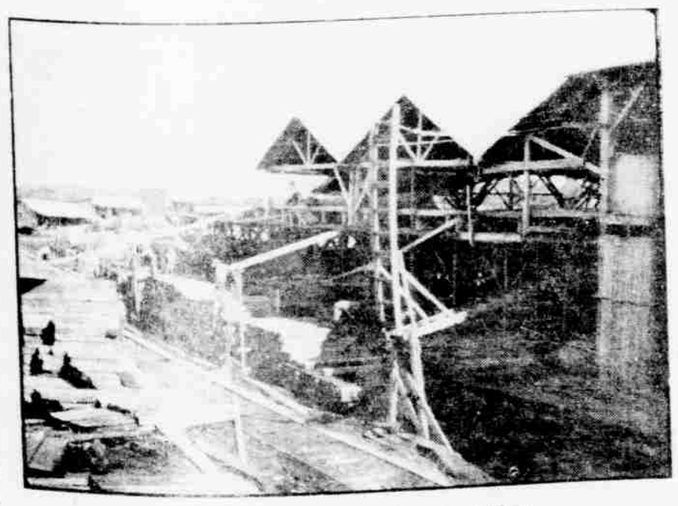


Camp of Japanese loggers.

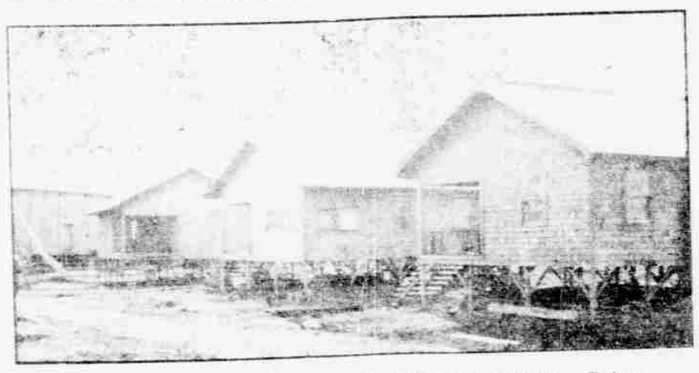


Ohia tie mill. Pahoa.

Loading ohia logs.



Loading ohia ties on railroad cars. Pahoa.



Attractive, serviceable houses built with ohia shingles. Pahoa.

A corner of the slab pile, where valuable ohia lumber is sold for firewood.

Aluminum in Textiles

Aluminum, as is well known, is extracted from clay, and it was Napoleon who styled it the "silver of clay." Formerly it was the practise to extract it from the clay with the aid of retorts. More recently the electrical current is employed for this purpose, with marked success, the cost of producing this valuable and by no means fully utilized metal having by its employment been very much reduced. In 1850 a pound of aluminum cost about $40; nowadays it costs only about 20 cents. Above all other metals aluminum has the greatest specific lightness with the greatest durability and toughness. It can be rolled, cut and drawn exceedingly fine. This has made aluminum valuable and useful in the textile industries. For many years woven sieves or screens have been made of aluminum which have proved indispensable in the sugar-refining industry. Its principal advantage consists in the fact that the surface of the aluminum, on the slightest exposure to the air, becomes covered with a coating of oxide, which is capable of offering almost perfect resistance to foreign influences, such as acids, etc. This is likewise of great importance where aluminum is used in the textile industries.

Speaking of actual weaving of aluminum into special fabrics, particularly such as are intended for use for decorative purposes and costumes, it may be stated that this is well and successfully practised in England. At the time of the Paris exhibition there were shown, as special attractions, fabrics and clothes made from glass fibers. They were made from finely-spun glass, with silk. The fabrics made from aluminum do not need combination with other textile yarns. Of late, the most beautiful effects have been obtained by employing aluminum in smooth as well as twisted threads for the warp, and as the weft, silk yarn of any desired color. They are used for evening cloaks and theatrical costumes. As the Textil-Woche says, it makes the body of a beautiful woman look as though dipped in silver. From aluminum they are now making neck cloths, pompadours, shoes, belts, neckties, shawls and hats, and it is hard to prescribe a limit for the possibilities of this metal. Very striking are net fabrics in combination with aluminum, which constitutes a select novelty for interior decoration.—Scientific American.