

## LUMBER IN AGRICULTURAL IMPLEMENTS.

The total annual consumption of lumber in the manufacture of agricultural implements in Chicago, amounts to about 20,000,000 feet. Of this about 7,000,000 feet are pine. Three-quarters of the remainder is ash, the great staple. Oak is the factor of next importance, but it is not used to the same extent that it is in the wagon making industry, where it commands a higher place. Hickory, maple, elm, white-oak and basswood, and Norway and white pine are the other kinds of lumber employed.

There are several reasons why ash is preferred, universally, in this line of work. It combines numerous features of general adaptability, hardly found together in any other wood. Its stiffness, durability, freedom from knots, ease in working, and some other facts worthy of consideration are urged in its favor. While white oak is a tough and strong wood, it is more expensive and not so readily obtained in large quantities, and at the same time it is considerably heavier than ash; and lightness, in connection with strength is a combination sought for. There seems to be hardly a purpose, where substantialness is a requisite, outside of building, for which ash is not peculiarly adapted, and preferred. It fills the bill perfectly in a great many particulars of manufacture, and the industrial world is watching a diminution of supply with much concern and regret. Ash is the chief element, in the lumber direction, of all agricultural implements, with a possible exception or two. It is generally admitted that the stumpage supplies of ash are getting sadly reduced, and that Ohio and Indiana are pretty well denuded in some sections. While a preference may be had for that growing in these states or in Michigan, there seems to be but a small choice in the matter, for good ash grows in several states. Illinois produces some, and a good article is obtainable from Arkansas, and elsewhere. While some woods vary materially in different states, to a large extent ash is ash, and requires no pedigree to recommend it. White ash is the only variety that suits the maker of agricultural implements. He will use neither black nor gray ash, if he knows or can avoid it. Black ash, while disliked, is at the same time, where a good article is obtained, a very serviceable wood, and would answer the purpose very well, though inferior to white ash. It is asserted that sometimes black ash is mixed in with other ash, and the manufacturer does not always discover the difference. Yet there is a common prejudice against it.

The office of hickory is sufficiently well known, and in the making of agricultural implements it is used where its peculiar characteristics make it especially desirable. Maple is employed chiefly where a smooth surface is required, and, though sometimes used for the frame work and strong parts, in place of ash, it is not nearly so good. Its durability is less, atmospheric contact affecting it more seriously. Its proper place is regarded to be under cover. On the other hand, ash, oak and hickory, are of noted excellence in withstanding exposure. Rock elm is used for neck yokes, whiffletrees, etc. It has an inclination to get out of shape, under the influence of the weather, which makes it less desirable than some other woods. Whitewood and some basswood is used for such purposes as rollers, and where inch lumber is required, and principally in the making of harvesters, reapers and mowers. In the latter machines, considerable Norway pine is used in the platforms and bottoms. An immense amount of white pine is also consumed in constructing boxes in which to pack the machines, which, because of their large size and the necessity for thorough protection during transportation, sometimes of long distances, must have an unstinted supply of lumber.

One reason why more oak is not used in the industry is that a good article is in such demand for wagon making, and so readily taken, that it commands a price that makes it decidedly less economical in the manufacture of implements than ash, which is nearly as durable and fully as good in other respects.

The force of circumstances all the time has tendency to reduce the amount of lumber required in the making of agricultural implements. The fact that the desired lumber is

continuing to become scarce, and that in implements great strength and durability are required, is leading to a policy and an effort toward using as little lumber as possible. That is, iron and steel are put in wherever it is possible, the great study being to secure the same amount of strength with the minimum weight. Iron plow-beams are now largely made instead of wood, an item in itself. A firm in this city is now trying to make a steel wheel adaptable, where formerly it was part wood. There are other details in which the same result is sought.

A large amount of thick lumber, and considerable inch stuff are used in the agricultural implement industry, and generally the best lumber is required. There are in Chicago three large concerns, two making harvesters, reapers, mowers and binders, and one making plows and cultivators, who consume all the lumber so employed in this city, with the exception of scattered thousands that go to small repairing establishments. Jobbing depots for the distribution of such goods are, however, numerous, and some of them do an immense business. Implements are handled from the manufacturing scattered over the country, east and west. The home manufacturers mentioned have large establishments, one of them consuming alone 10,000,000 feet of lumber annually.

Retrenchment is an important thing in manufacture, and these consumers apply the theory rigidly to their lumber purchases. They aim to buy just what is wanted, as any sagacious business man might be expected to, as advantageously as possible. Their bulk supplies come mainly direct from where produced, and are generally cut to order. Yes, so large is the consumption, and the requirement in case of shortage so urgent, that the city yards secure considerable trade from that source, because they are apt to have very desirable dry lumber that cannot be drummed up in the country in a hurry. The buildings of the two harvester firms cover acres of ground, and either of them employs in busy seasons from 1,600 to 1,500 men.

Kiln drying is regarded as detrimental to the virtue of the lumber, which must necessarily be submitted to considerable grief after it is put into a machine, and large stocks are kept in pile at the yards of the manufacturers. About a year's supply of dry lumber is kept ahead, and from 4,000,000 to 7,000,000 feet are usually in stock. Both the concerns mentioned have large piling grounds, extensive docks, good railroad facilities, and own or lease saw mills, hence enjoying all the advantages securable by the shrewdest lumber dealer. They each consume from 30,000 to 50,000 feet of lumber daily during a season of brisk operations. One of these establishments made about 30,000 implements last year, and the other went ahead of that record. About 100 feet of lumber go into a mower, 350 feet into a reaper, and 500 feet into a harvester, including waste. The plow and cultivator works mentioned, though a large concern, uses only about 1,500,000 feet of lumber annually.

Felloes are generally secured already shaped from bending factories, but one concern in the line mentioned, in this city, has facilities for this work. An apparatus has been rigged up in a shed that answers every purpose, and yet, might be considered a somewhat awkward contrivance. It was originally an old sorghum mill, but it never caused the saccharine liquid to meander from the succulent sugar cane with any more expedition and facility than it wraps the ash around into the required form. Steaming the wood makes it thoroughly pliable, and all that is required is sufficient force expended in the right direction, to get a piece of timber in the proper form. The device in question has a strong wooden block affixed to a large iron wheel, the former having a notch at one point of the circumference so as to permit a piece of stuff to wind around it without lapping. A piece of ash 1½ inches and 10 feet long is placed between the block and a band of strong sheet iron, and as the machine is started both the timber and the band wind firmly around the circular block. The band holds the lumber in place, and keeps the outer surface from breaking. About a six horse-power engine is applied to the contrivance, and a single revolution is made for each felloe. To save time and

effort, the felloe is immediately placed inside an iron rim in shape to go on a machine. Very few felloes are spoiled, and only in the case of bad lumber. A piece of bent wood will dry in a few hours, in the open air, and it is then fast in position, barring a tendency to yield a little. A smaller felloe is bent by being screwed to a form. In the process of bonding the wood simply stretches outwardly, and is compressed inwardly, with reference to the surface, doing the former more readily than the latter. Most articles are bent on forms. Several kinds of wood can be bent, but maple is one of the woods little adaptable in that way. Where the timber is heavy, a very thorough steaming and adequate power must be secured. In heavy work where it was once the plan to saw the material into shape, mechanism has been devised by which the stuff can be forced into any required form, even to the heavy timbers used in ship-building.—*Northwestern Lumberman.*

## DYING SPRUCE.

BANGOR, Me., May 10.—I have seen nothing of the assumed rapid destruction of spruce by borers, about which so much has been said, but I have heard of the timber dying in large districts on the Miramichi, in New Brunswick, and on some branches of the St. John, the Arnostook, Fish River, and Allagash, in northern Maine. But, from all I have heard, the borer does not attack young or thrifty trees; so, whether the dying of the timber is the effect of borers, or the borers an effect of the dying timber, I cannot say. No doubt the death of an old tree in decrepitude may be hastened by borers, severe drought, or other causes. Generally, where the spruce is old and about all of an age, and about ready to die of old age, the borers are said to kill as much as three-fourths of it in spots, in some localities. We have seen nothing of this yet on the Penobscot, or any of the Maine rivers except the Upper St. John. On all these rivers the aged spruce has generally been culled out, and the forest now consists almost entirely of comparatively young and thrifty, growing trees. I have heard of no borers in these localities, and do not believe that it will pay any class of insects or their larva to attack any such thrifty forest. Our Maine forest will be forest a thousand years from now, because the land is worth more to raise wood on than for any other crop. The Pilgrim Fathers and their descendants cleared, plowed and cultivated a million of acres in New England that is now forest. So we have to take good care of our forests and manage them properly, and it is our policy to cut and market all the decaying, decrepit trees—pine, spruce, hemlock, etc.—to save them from death by worms, rot, heavy winds, droughts, and the natural death from old age. We do not generally have any trees cut smaller than 14 inches at the stump; nor do we generally cut in any one year more than one-tenth of the wood growing on an acre of land. These reports of the general dying of timber are no doubt much exaggerated. On townships that I am familiar with on the St. John where much of the timber is reported dead, the soil was poor, the growth thin, and the trees rather small and short-bodied; and generally what spruce trees there were scattered here and there in the forest of pine, cedar, birch, beech, maple, fir, juniper, etc., were past their prime, not growing at all now, and always had been of very slow growth. Much of the forest is worthless—small, though ancient, fir—like what we find on the foothills of our mountains, while there are very few young spruce under 12 inches at stump. From all I can learn, most of the reports of damage by the borers come from such lands as these.

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## THE MATERIAL AND MANUFACTURE OF CANES.

The manufacture of walking stick and umbrella handles is an industry in which a great deal of capital is invested. The material is as various as can well be conceived of. The Chicago Times recently had an article on the subject, from which we extract:

Many are of imported woods, some from the tropics, China, and the East Indies. The celebrated Whongee canes are from China, where

they are well known and celebrated for the regularity of their joints, which are the points from which the leaves are given off, and the stems of a species of *phyllosincha*, a gigantic grass, closely allied to the bamboo. The orange and lemon are highly prized, and are imported chiefly from the West Indies, and perfect specimens command enormous prices. The orange stick is known by its beautiful green bark, with fine white longitudinal markings, and the lemon by the symmetry of its proportions and both prominence and regularity of its knots.

Myrtle sticks possess also a value, since their appearance is so peculiar that their owner would seldom fail to recognize them. They are imported from Algeria. The rajah stick is an importation. It is the stem of a palm, and a species of *calamus*. It is grown in Borneo, and takes its name from the fact that the rajah will not allow any one to go out of the country unless a heavy duty is paid. These canes, known as palm canes, are distinguished by an angular and more or less flat appearance. Their color is brownish, spotted, and they are quite straight with neither knob nor curl. They are the petioles of leaf stalks of the date palm. Perhaps the most celebrated of the foreign canes are the Malacca, being the stems of the *Calamus sceptum*, a slender climbing palm, and not growing about Malacca, as the name would seem to indicate, but imported from Stak, on the opposite coast of Sumatra. Other foreign canes are of ebony, rosewood, partridge or hairwood, and cactus, which, when the pitch is cut out, presents a most novel appearance, hollow and full of holes.

The manufacture of canes is by no means the simple process of cutting the sticks in the woods, peeling of the bark, whittling down the knots, sandpapering the rough surface, and adding a touch of varnish, a curiously carved handle or head, and tipping the end with a ferrule. In the sandflats of New Jersey whole families support themselves by gathering nanberry sticks, which they gather in the swamps, straighten with an old vice, steam over an old kettle, and perhaps scrape down or whittle into size. These are packed in large bundles to New York city and sold to the cane factories. Many imported sticks, however, have to go through a process of straightening by mechanical means, which are a mystery to the uninitiated. They are buried in hot sand until they become pliable. In front of the heap of hot sand in which the sticks are plunged is a stout board from five to six feet long, fixed at an angle inclined to the workman, and having two or more notches cut in the edge. When the stick has become perfectly pliable, the workman places it on one of the notches, and, bending it in the opposite direction to which it is naturally bent, straightens it.

Thus sticks apparently crooked, bent, warped and worthless are by this simple process straightened; but the most curious part of the work is observed in the formation of the crook or curl for the handles which are not naturally supplied with a hook or a knob. The workman places one end of the cane firmly in a vise, and pours a continuous stream of fire from a gas pipe on the part which is to be bent. When sufficient heat has been applied, the cane is pulled slowly and gradually around until the hook is completely formed, and then secured with a string. An additional application of heat serves to bake and permanently fix the curl. The under part of the handle is frequently charred by the action of the gas, and this is rubbed down with sandpaper until the requisite degree of smoothness is attained.—*Scientific American.*

## A TREE MADE FAMOUS.

A correspondent of a New York paper says: "An incident of early days on the Delaware is always recounted with pleasure by the old inhabitants, and as they vouch for its authenticity it must be true. In 1786 Simon and Franklin Westfall, of New Jersey, took the contract to furnish the government with a white pine tree, which was to be of extraordinary size, as it was wanted for the main mast of a war frigate about to be built. They were to receive \$100 for the stick. They hunted the Delaware valley from the Navesink to its head waters, but were unable to find the tree which