

THE DISSTON CRUCIBLE



FEBRUARY

1919

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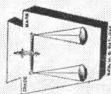
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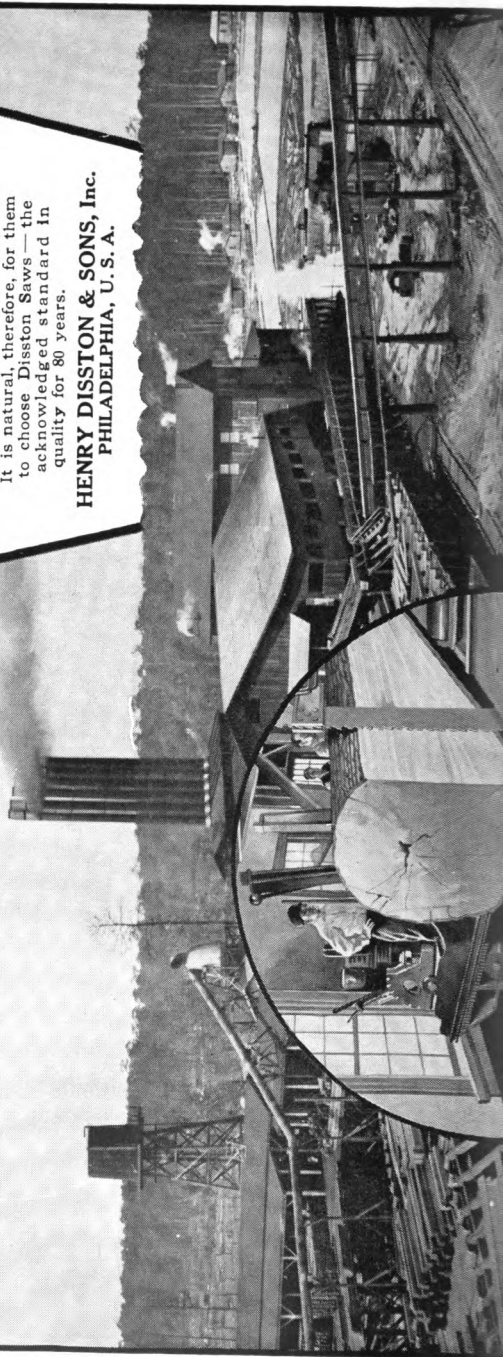
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THE BEST KNOWN SAW IN THE WORLD

Each year finds a greater number of leading mills using Disston Saws exclusively. Mill operators know that the success of their mill—the quality and quantity of lumber they turn out—depends on the saw they use. It is natural, therefore, for them to choose Disston Saws—the acknowledged standard in quality for 80 years.

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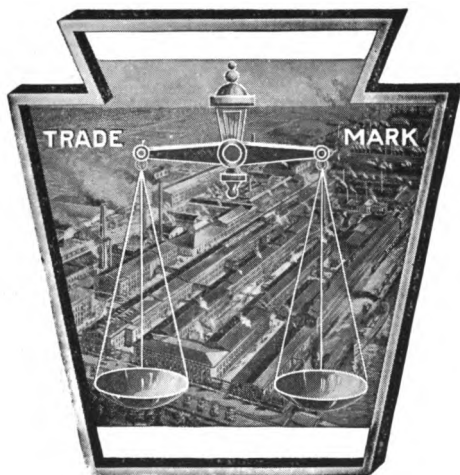
THE DISSTON CRUCIBLE

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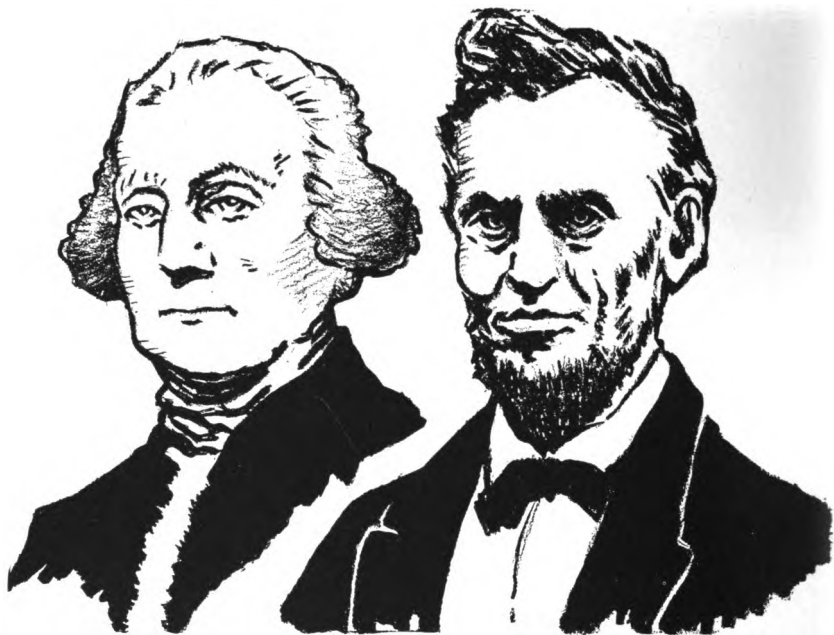
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FEBRUARY THE BIRTH MONTH OF TWO GREATEST AMERICANS



GEORGE WASHINGTON

Born February 22, 1732
Elected President of U. S., March 4, 1789
Re-elected President of U. S., March 4, 1793
Died December 14, 1799

ABRAHAM LINCOLN

Born February 12, 1809
Elected President of U. S., March 4, 1860
Re-elected President of U. S., March 4, 1864
Died April 15, 1865

WASHINGTON AND LINCOLN

By WILLIAM McKINLEY

The greatest names in American history are Washington and Lincoln. One is forever associated with the independence of the States and the formation of the Federal Union; the other with universal freedom and the preservation of the Union.

Washington enforced the Declaration of Independence as against England. Lincoln proclaimed the fulfillment not only to a down-trodden race in America, but to all people for all time who may seek the protection of our flag. These illustrious men achieved grander results for mankind within a single century than any other

men ever accomplished in all the years since the first flight of time began.

Washington drew his sword not for a change of rulers upon an established throne, but to establish a new Government which should acknowledge no throne but the tribute of the people.

Lincoln accepted war to save the Union, the safeguard of our liberties, and re-established it on indestructible foundations as forever "one and indivisible." To quote his own words: "Now we are contending that this nation under God, shall have a new birth of freedom, and that government of the people, by the people, for the people shall not perish from the earth."

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

FEBRUARY, 1920

No. 1

EDITORIAL CHATS

HANDICAPS

We have ceased to consider mere poverty or low birth a handicap. Many examples have taught us that these can be overcome. We know that rail-splitters can become presidents, and coal-heavers, millionaires.

But there are some people who still look upon certain handicaps as unconquerable. These are the physical and mental ones; the handicaps of an unsound body and mind.

A writer in "Okeh" gives us some interesting facts on this. He says:

"Julius Cæsar was an epileptic. Napoleon had a frail constitution and poor health. Beethoven, the greatest of composers, was deaf. Pitt, the English statesman, was a semi-invalid all his life. Homer, Milton, and Prescott, the historian, were blind; Robert Louis Stevenson was a consumptive, and wrote most of his books in bed. Lord Byron, the poet and athlete, had a club-foot. Pope was a hunch-back. Blake, Lamb and Cowper suffered from periodic insanity. Thomas Carlisle had chronic indigestion and melancholia. Daniel Webster was so self-conscious that he was unable to recite in school. The list is infinitely longer."

Rage at Fate is a dangerous fire, but it sometimes gives a finer temper to the soul. Many a wavering will has become strong in rebelling. If you have a handicap, be thankful for it; you can make it a DAGGER—but you can also make it a SPUR with which to drive on to Success.

*Quality
Sells*

“ENGLISH AS SHE IS SPOKE”

By JIM

JIM came into the office with what might be called a deprecatory grin and a meditative expression on his face, sat down silently, extracted a stogie from the side pocket of his coat, a box of “safety” matches from his pants pocket, lighted up, took a few puffs with evident satisfaction, and then, so to speak, “threw in the clutch.”

“Tom,” said he, “‘English as she is spoke’ depends so much—almost entirely—on who speaks her and geographically where she is spoke. I assume, however, that neither geography nor personality would really affect the genuine unadulterated, ‘blown in the bottle,’ Boston, Mass. type of United States English; but what I want to talk about is the crudities, oddities, and peculiarities of the good old vernacular promiscuously disbursed and distributed as forms of discussion, means of social communication, and conversational circulating media throughout this broad land of the free and home of prohibition. What I want to admire is her beautiful adaptability, accommodating herself to every style of vocabulary, extended or abbreviated, enabling a speaker of limited verbal capacity to express himself comprehensively, in prayer or profanity, with equal fluency.

“I just met Billy Blake a while ago. You know Billy has been sick, *very* sick. I was surprised to find the old boy looking so well, and very naturally congratulated him on his appearance. ‘Yes,’ he said in reply, ‘I am feeling fine, just like a “twenty year old.”’ Seeing my doubtful look, he added “‘horse.”’ Billy was always like that in his speech, sort of unexpected; he made Sam Bender so mad at him one time he wouldn’t speak to him for a week. Billy had a bad case of hay-fever at the time, and Sam, fairly oozing sympathy, asked him how he caught it. Billy aroused Sam’s ire by informing him very confidentially he had ‘kissed a grass widow down in Aberdeen.’ Billy’s qualified reply to my remarks sort o’ started my muse to musing, and

I enjoy these little talks of ours, Tom, you’re such a *good* listener. I had a friend once who ~~was~~ afflicted with a very noticeable defect in his speech, in fact, he had such a pronounced and decided ‘stutter’ that his conversation was conducted almost exclusively on the installment plan. He had a nimble wit, but was sadly handicapped by his reluctant mode of articulation. Having an interview one day on a matter of importance with a gentleman who had the reputation of being somewhat ‘difficult’ to approach, he introduced himself in his halting way, and asked if he might have a half hour of the gentleman’s time, explaining further, ‘I w-want -a-ab-ab-ab-bout fi-fi-fi-five m-m-m-min-minutes t-t-t-talk wi-w-with y-you.’ I guess I don’t need to tell you he got the time, also made his point.”

I have known people—not always men—with a habit of repetition. I think to the listener this is more aggravating than the affliction of the stammering talker, without the counteracting sympathetic note. Then there is the fellow who starts in to tell you of his friend, Jake Jones, and what happened to him. He relates Jake’s personal and characteristic peculiarities, his family history, his domestic affairs, number, ages, and sex of Jake’s children, etc.; after half an hour or more of this stuff, we learn to our joy that Jake has a boil on his neck.

Opposite this fellow, as a sort of compensating swing of the verbal pendulum, are the ones who are inclined to use as little of this “English as she is spoke” as they can “get by with,” and apparently are convinced that nature intended the mouth to be used for utility purposes only, such as eating, drinking and, possibly, chewing plug tobacco, confining their verbal outbursts, where possible, to such classics as “Uh, Uh,” or “Yes” and “No,” which seems to satisfy any cravings for loquacity or verbal sociability with their gregarious fellow humans. I must admit this type is seldom found on the membership roll of our Chamber

of Commerce, Rotary Clubs, or uplift movements; his habitat is usually in thinly populated rural districts where he is accustomed to long periods of silent conversation with Old Mother Nature, and the fact that the Old Lady herself is not wildly enthusiastic over "English as she is spoke" serves to encourage him in his taciturnity. Right here a little anecdote will illustrate, better than I can do it, the type of non-committal mortal I am trying to describe. Two of these "near to nature" verbal "tightwads" occupied adjoining farms. One morning the heads of said families met in a quiet lane with this conversational result:

"Mornin', Si'!"—"Mornin' Lem'!"

"Si', wat did ya giv yer hoss fer Bots?"

"Turpentine!"

"Mornin'!"—"Mornin'!"

Two days after this lengthy outburst they meet again under like conditions and in about the same location, with this result:

"Mornin'!"—"Mornin'!"

"Say, Si', wat'd ya say ya giv yer hoss fer Bots?"

"Turpentine!"—"Killed mine!"—"Killed mine too!"

"Mornin'!"—"Mornin'!"

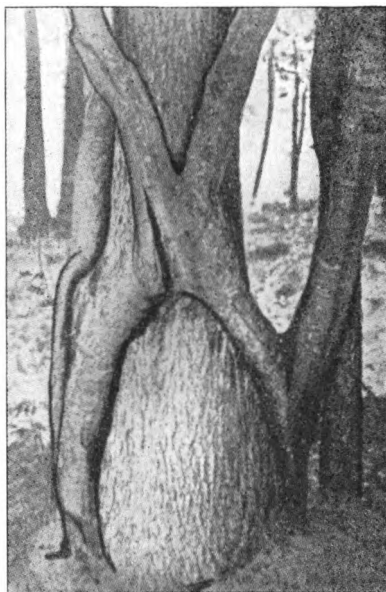
Each man went his separate way.

—T. H. C.

TIMBER AGE IS COMING— NOT GOING

It is a common error to suppose that timber is gradually being displaced by other materials and is constantly becoming less important economically. On the contrary, the new uses which are constantly being found for wood more than counterbalance the substitution of other materials. The per capita consumption of timber is increasing, not decreasing, and it is fair to state that, outside of food products, no material is so universally used and so indispensable in human economy as wood. Furthermore, it is a material which, beyond question, can be and is being made very much more valuable to the community at large as a result of the timber research which is always going on.—W. Kynoch, Acting Supt. Wood Products Laboratories of Canada, Montreal.

Tree Grows Through Another



In a West Virginia forest Nature has played an unusual prank upon two trees. One of them is a maple and the other an oak. Close inspection reveals the interesting fact that the oak tree has, beyond a doubt, grown up through the maple. The oak, being the more rugged of the two trees, is causing the maple to split where its bifurcated trunk joins a few feet above the ground.

There is more luck in a golden field of wheat than in four-leaved clovers.

Some men spend their money so fast that they know a dollar only by sight.

Blind is he as any Bat that Flitters,
Who can only see the Thing that Glitters.

It is characteristic of the lazy man that he can always plan a busy to-morrow.

Even when quoted by a hypocrite or a fool, a sound principle remains sound.



Mill of the McKinley Land & Lumber Co.

WHAT WE SAW IN NEW MEXICO

A Trip Through the Lumbering Operations of the McKinley Land & Lumber Co.

By JOHN C. McCauslan

THIS lumbering operation is in the Zuni Mountains, commencing about nine miles from Thoreau and extending some eighteen miles farther. The present scene of operations is in the Cottonwood Canyon, which has an elevation of 9,000 feet above sea level, the station at Thoreau being at an elevation of 7,000 feet.

First, we would ask you to look back at the Mountain range from the station at Thoreau, where Nature has seared the hills, and the wild, rocky mass rises abruptly from the plain—a smear of color in which bright reds and yellows predominate.

The plain itself, at the foot of the mountain, is a vast Prairie Dog City. These little dogs infest the prairie, and damage the

grass and growing crops. Uncle Sam has said, "The Prairie Dog must go," and so a band of trained soldiers is out after his pelt, and 60,000 were killed in this immediate neighborhood during our visit.

But let us get off to the woods, for not a vestige of a tree can be seen at Thoreau, and one wonders how a forest can be found as close as nine miles.

We climb aboard Charlie's speeder, and with many instructions to keep the speed well within ten miles an hour, for we have little desire to scrape up the landscape with our faces, we are off for a climb of two thousand feet in the nine miles.

The road bed is not in the best of shape, for it has not been used much since the American



Mr. J. O. Snively, Woods Superintendent

Lumber Company quit operations, and recent heavy storms have not tended to improve it. But before long, we enter the Canyon, and now the great pines and spruces are in evidence, while hosts of little Cottonwood trees, with their white, ghostly trunks and quivering leaves, stand along the bank of the brook which tumbles down the bed of this beautiful Canyon.

Soon we see the Indian Camps perched on the hillside. These are

the Navajos who, as a whole, are fairly good workers. Among them one finds silversmiths of a high order making the turquoise jewelry worn by the women of the tribe. The women weave wonderful blankets, which are in great demand.

The Indian dwelling consists of a few poles made into a lean-to with boughs on one side for shelter. The nights at this elevation are extremely cold; we are fairly comfortable under three heavy quilts, but we wonder how Mr.



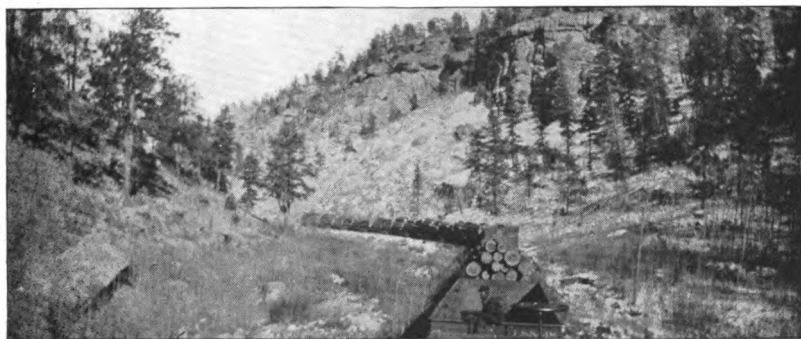
Disston Cross-Cuts in Action

and Mrs. Navajo keep body and soul together in the trying hours between darkness and dawn. The only explanation we can find is in the answer of the naked Indian to whom the eastern tenderfoot put the question as to whether he was not cold, the Indian's reply being to ask if the white man's face was cold. When answered in the negative, the Indian said, "Indian all face."

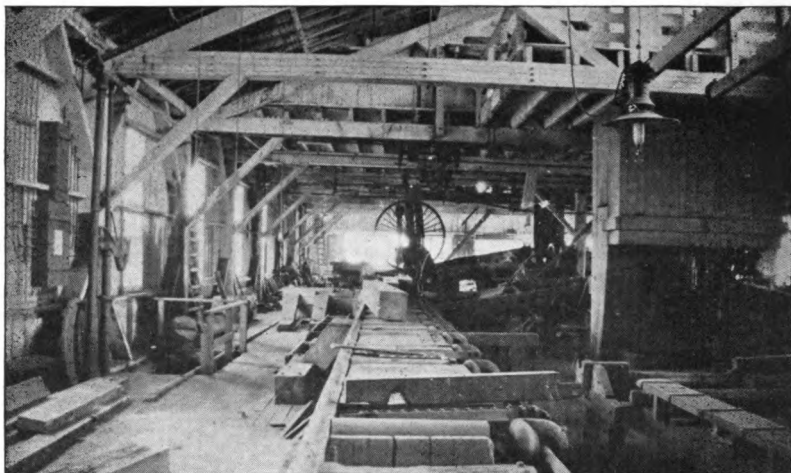
In due time we reach the temporary camp, which is

nothing more or less than a train of box cars switched on a siding. In the picture we see the genial woods superintendent, Mr. J. O. Snively, who came here from the Company's operations at Monroe, La., standing in front of his office and home. These cars do not look like home, but with clean beds, a good camp cook, and an occasional cigar to smoke, one can be very comfortable and feel quite contented.

The company employs in its woods, in addition to white men, a number of



Train Load of Logs Leaving Canyon on way to Mill



Interior View of McKinley Land & Lumber Co. Mill

Mexicans and Navajo Indians. The Indians steal around silent as death in their moccasins, rarely ever speaking or making a sound, but following our every movement with their eyes.

Our hand-car is on the tracks waiting, and we ride rapidly down the sharp

grade and stop where the crews are felling the trees. We are now watching the most interesting part of the work. But what man or woman in the world would not stop long enough to see a tree cut down? This, however, is our particular errand, for Disston High-Grade Cross-Cut Saws are being used and we are to watch them in action.

The first operation is to make a shallow cut with the saw and then with axes to make

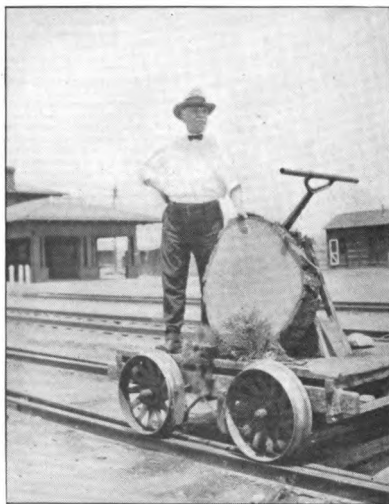
the undercut as shown, this governing the direction in which the tree is to fall.

Most of the timber growing at this place is White Pine and this happens to be a fairly large pine tree—about twenty-six inches in diameter.

As soon as the undercut is completed,

the Disston Suwanee Cross-Cut Saw is started at work on the opposite side, and is soon carving its way swiftly through the tree as may be seen in our illustration. In a remarkably short time the cut has been made, and now we see the forest monarch, which has withstood the blast of a century, falling from its high estate.

Most of the trees when cut fall fully fifty feet from the stump, and roll rapidly toward the bottom until checked either by



Mr. J. C. McCauslan, Author

other trees or the rocky formation. Indeed, the cutters seem to cling like flies to the sides, and the work is unusually difficult.

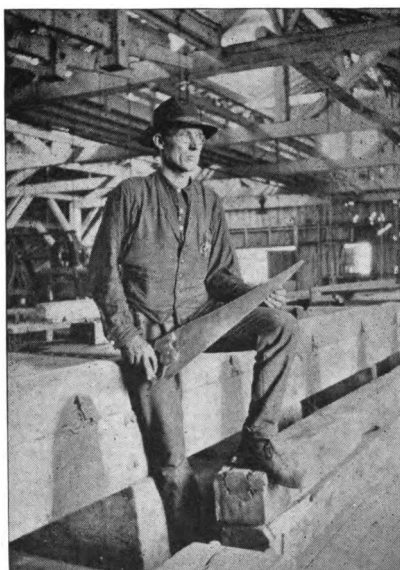
Before leaving, we pick up a handful of the dust made by the Suwanee and Buzz Saws and find some of the chips measure five inches long.

The local hotel is of the type often seen in the movies of border plays, and our luncheon is served by two young, buxom Indian maids, who have been to school and are, therefore, quite up-to-date.

One of them, who suspects our fondness for music, naively says, "I play for you," and accordingly keeps the Victrola busy during the meal.

Train time has arrived, and we must be off to the mill. We step aboard the Fast Mail, regretting to leave this section which holds so many interesting subjects and scenes.

The mill, located in the town of Albuquerque, is, at the time of our visit, being rebuilt under the able direction of Mr. Noah Moore, the Manager, and Mr. James, the Mill Superintendent. Our picture above shows the front end of the mill, the log haul-up and the burner. These burners are almost indispensable, for the vast amount of waste wood and unusable dust in a mill of this size would soon build mountains around it, but under this system it is all neatly carried by conveyors into the burner and is soon reduced to ashes. These burners are made of steel or iron and often cost as much as ten or twenty thousand dollars apiece. They generally have a water jacket to keep them from burning out, and the water heated



Mr. James, Mill Superintendent, holding saw he has used for twenty-two years

in them is sometimes used to feed the boilers.

Views of the mill interior show the equipment, consisting of right and left hand band mills carrying 12 inch saws and in the center of the mill a Resaw carrying a 10 inch band. The mill has a capacity of 300,000 feet in twenty-two hours, and we learn it is the intention to run it to its full capacity.

Last, but by no means least, we show the picture of Mr. James, the Mill Superintendent, who has had many years of experience in building and operating fast saw mills. Mr. James made us welcome and we soon felt at home. The hand saw which he is holding is one made by Henry Disston & Sons, Inc., and is of the popular D8 type. He has used this very saw from Florida to New Mexico for the past twenty-four years. That it has proved good is shown by the fact that he refused our offer to exchange it for a new one. Like an old and tried friend, he hates to part with it.

Mr. Moore, the General Manager, was very busy and we failed to catch him in time to add his picture to this article, but we hope to show it later. Mr. Moore has been connected with the various operations of this company for many years, mostly in their West Virginia holdings, and we can safely predict success for the new enterprise.

The bee fills her hive and the busy man makes money, but it is well to leave both of them alone on their busy days.

FOREST RESOURCES

COMPARATIVELY few people, in spite of the distribution of extensive propaganda, have any conception of the immense, national importance of the forests in the United States. Though there is now a general appreciation of the importance of scientific conservation, it is not possible to impress too strongly upon the general public the commercial and economic catastrophes which would befall the country in the future were this important governmental activity to be allowed to fall into decay. It is only for a period of less than thirty years that the Government has had a Forestry Division, but splendid work has been done within that time. Before the work was undertaken, principally on account of the patriotic efforts of a small group of far-sighted people, the forests of the United States had been wantonly cut, as the supply appeared to be practically inexhaustible. The result of this ruthless cutting has been to decrease the available amount of merchantable timber nearly one-half.

At present, one-fifth of the United States forest land is under Government control, divided into over 160 National Forests, of which the acreage is larger than the total forest area of France, but the remainder is still owned by private interests or corporations, and economic conditions are such that it would not be reasonable to expect that it would be financially possible for these owners to practice forestry and conservation when the quantity of timber required is so large, the competition for markets so sharp, and the need for cutting so urgent.

But as the future welfare of the country is largely dependent upon the scientific exploitation—conservation through use—of the forests, it will readily be seen that the National forest policy of acquisition and proper use of forest land should receive the support of all. Were the forests to continue under control of private concerns who extracted the utmost from the land at the expense of the future, the ensuing floods, erosions and timber famines would cripple the country for decades

to come, as actually did occur in France. Nor would the private interests probably be able so well to safeguard the timber against its most feared enemy, fire. Before the installation of forest conversation in the forests of the United States, millions of dollars' damage was accomplished yearly through this terrible menace. The devastation has now been enormously reduced. In addition to future benefits, a large revenue is annually derived from the National forests.

Since the securing of a solid groundwork of public sentiment in favor of conservation, which sentiment was accomplished through propaganda and education, many schools and departments of forestry have been organized or courses in forestry added to the curriculum of colleges. The first of these was at Cornell and the second established at Yale. The schools teaching forestry are of two classes, the professional and the vocational—the former for the training of forestry officers and the latter for the less comprehensive training of the rangers.

In the course adopted by the Forestry Service, to which entry is obtained through classified Civil Service Examinations, every step is taken with a regard to the eventual complete development. If work to be done must necessarily be of a temporary nature, the location and mode of construction is such that it will be possible to utilize it later in the greater and more permanent scheme.

To most of us who have not come in personal touch with the administration of forest conservation, it means principally cutting the large trees and leaving the small, and employing rangers to supervise this work and to report and fight forest fires. Few of us have any idea of the training and technical knowledge imperative for the proper administration.

Each District Forester has under his supervision a Forest Supervisor for each forest under his control, and the Supervisor keeps in touch by telephone with the Forest Assistants or Examiners, or the Forest Rangers under his direction.

The men engaged in this work must have knowledge of map-making and engineering of many kinds. To the supervisors, assistants and examiners falls the duty of attending to the more technical of these matters, but the rangers are by no means men without special knowledge. They take charge of timber sales, grazing, free use of the land, permits, contracts, etc.

Mr. R. H. D. Boerker, in his book, "Our National Forests," published in 1918, says of a ranger:

"He must be able to take care of himself and his horses in regions remote from settlements and supplies." And that as well he must be able to build trails, roads and cabins; ride, pack and deal tactfully with many classes of people; must be able to survey land, estimate and scale timber, and possess a knowledge of logging, mining laws, and livestock.

In addition to the work actually taking place in the headquarters and in the forests, the Service runs large nurseries for the restocking of the land when advisable. About 10,000,000 seedlings and transplants are required annually for this purpose.

Mr. Boerker's computations give amazing figures as to the use of wood in the United States, and we quote them here to give some idea of the magnitude of the industry which Mr. Boerker declares to be the biggest manufacturing industry, from the point of view of number of employees, in this country. He also states that there are taken yearly from forests, including waste, twenty-two billion cubic feet, valued at \$1,375,000,000. "Enough lumber to construct seven boardwalks 25 feet wide from the earth to the moon, a distance of about 240,000 miles."

The significant figures are as follows:
 90,000,000 cords of firewood;
 Nearly 40,000,000,000 feet of lumber;
 150,000,000 railroad ties;
 Nearly 1,700,000,000 barrel staves;
 445,000,000 board feet of veneer;
 Over 135,000,000 sets of barrel head-ings;
 Over 350,000,000 barrel hoops;
 Over 3,300,000 cords of native pulp-wood;

And a large quantity of wood for

mine timbers, distillation, telephone and telegraph poles, and excelsior.

Chemical Bulletin.

Five Sundays in February

Those of us who have leafed over our calendars have been surprised to find that there will be five Sundays in February this year. This will be the first time in 40 years that five Sabbath days occurred in the shortest month of the year.

Ordinarily the sequence of five Sundays in February recurs once in each 28 years, but owing to the fact that 1900 was not a leap year, the calendar "slipped a cog," and Sunday, being shunted out of place in numerical order, did not get back into position to become the first and last day of the month from 1880 until this year.

The year 1900 was not a leap year. Those who invented our present system of computing time discovered that adding one day in every four years was a fraction too much, so the plan was hit upon to make century years divisible by 400 only leap years. This, it was found, evened things up nicely and prevented January from eventually becoming a mid-summer month, as might have been the case some time in the next 50,000 years had this not been done.

The time in the last century that February had five Sundays was in 1824. It happened again in 1852 and again in 1880, each period 28 years apart. After this year the sequence will recur in 1948, 1976, 2006, 2034, 2062, 2090, and then, since 2100 will not be a leap year, it will skip to 2130.

There will not be five Saturdays in February until 1936.—*Ex.*

"A man never does anything worth talking about until he quits talking about what he is going to do."—*Ex.*

"All of us know more than any of us; few of us realize how little most of us really know about the daily business of each of us until we begin to meet the rest of us and talk things over among the lot of us."—*Ex.*

WISCONSIN LUMBER INDUSTRY IN DAYS OF YORE

By C. N. JOHNSON

To the Editor:

It was suggested to the writer the other day that Lincoln County should have an "Old Settlers' Club" to afford the boys and girls of yesteryear an opportunity to come together and live over again the stirring pioneer days of the past. While Lincoln County is not very old, as time is measured with States and communities, it is, nevertheless, old enough to have within its border a goodly number of boys and girls that first looked upon this region as a comparatively undeveloped wilderness.

The fact is that we are living in an age of swift changing events. It seems only yesterday when the only means of marketing the lumber product of the "pinery" was by the river route. That is, the lumber was floated down the Wisconsin River and down the "Father of Waters," the Mississippi River, to the lumber market of St. Louis. Though it seems only yesterday when, if one happened to drop in where the lumbermen of those days congregated, the conversation was of rafting lumber, "oar-stems," and "grubs."

To the younger generation a "raft of lumber," "oar-stems" and "grubs" are Greek terms, or at least as unfamiliar as Greek is to the average man.

Those of the citizens of Lincoln County who yet remain here, but were born forty years ago, have never seen a raft of lumber.

My first knowledge of some of the well-known Merrill citizens was gotten when as a boy I used to stand on the bridge spanning the Wisconsin River at Wausau, and saw Henry Sales, Gid Young and George Vanderpool "run lumber" over "Big Bull" Falls.

Running lumber over the rapids of the Wisconsin River, notably those at Wausau, Moisinee and Grand Rapids, was both hard work and dangerous. It is to be doubted if the present generation of young men could stand that kind of grind.

Take, for instance, running lumber over the falls at Wausau. The distance is about two miles or two and one-half miles. There were generally eight men on a "rapids piece," four at the bow and four at the stern. The oars were about forty feet long, at the end of which the oarblade, which was ten or twelve inches in diameter, was fastened. As soon as the rapids piece broke over the dam and struck what was called "white water" it would jump back and forth and push that great big oar as fast as four husky raftsmen could jump back and fourth until the rapids was passed. As soon as the "rapids piece" struck smooth water it was landed—"tied up." The crew jumped ashore and started back for another trip. They did not walk, but took a pretty fast dog-trot. Naturally they were wet from head to foot. In going over the worst of the rapids, in high water particularly, the "rapids piece" dove to the bottom and the men were hanging to the so-called suckers-line—a two-inch rope tied one end to the bow and the other to the stern—their feet sticking above the water.

This kind of running and jumping and dog-trotting was kept up from daylight in the morning until darkness stopped the work. And the food! The menu consisted generally of sour bread, "sowbelly," beans and black-strap. The sleeping quarters were small dog-house-like things, about six feet long and three feet wide. The mattress was the soft side of a plank. Two men occupied the sleeping quarter. Each man had one blanket.

In "running the rapids" frequently the raft or "rapids piece" broke in two, and one or both ends would drift on the rocks, where the men would have to remain, wet, cold and hungry, until taken off in boats.

Ask a young man today to do that kind of work, and endure the hardships that the river men of yore used to endure, and he most certainly would ask, "What is in it?"

The river men were paid by the trip. The bowsman, or the man that ran the raft, got from \$150 to \$175 for the trip; the tailsman, from \$100 to \$125. That is, in good times. In hard times the price was cut about 50%.

Sometimes the trip from Wausau or Merrill to St. Louis could be made in from five to six weeks, but more generally it took two months or longer.

A "rapids piece" consisted of six or seven "cribs"; a crib was 16 feet square and twenty inches deep, that is, twenty one-inch boards piled one on the other generally constituted the depth of the "crib" of lumber. Six or seven of these "cribs" were fastened together and made a "rapids piece." Three rapids pieces, fastened together broadside, constituted a raft. On smooth water two men guided this down the river. At the rapids or over dams and through the dells at Kilbourn City the "rapids pieces" were separated and run over singly, as explained above. Over some of the dams on the river and through the dells two men would guide a single rapids piece through. But over the rapids at Wausau, Mosinee, the dam at Stevens Point and the rapids at Grand Rapids it took a crew of seven or eight men to guide a "rapids piece."

The rapids at Mosinee—"Little Bull"—was the most dangerous rapids on the Wisconsin River, and took the greatest toll in human lives lost. Hardly a season passed but some one or more raftsmen lost their life there. In the spring of 1872 four were drowned and among these was M. H. Stafford, a prominent lumberman of Wausau. Many a thrilling story could be told of the hairbreath escapes from drowning of many a lumberman of the early days, as well as of the great hardships in lumber camp as well as in floating the lumber to market.

One custom prevailed in these early days that would not be popular with working people today. Greenbacks, gold and silver money was almost unknown on the Wisconsin River forty and fifty years ago. The lumberman, in order to get any of Uncle Sam's real coin, would have to go down the river to get his pay for his winter's work. There were no regular "pay days" in those days. Those who worked in the

woods and were not strong enough or did not want to go out the river with the lumber in the spring accepted store pay for their work. Married men were given store orders, single men gave their boarding housekeepers orders on their employers and they in turn were given store orders. Saloon bills were paid the same way. I asked my employer one Saturday if he could not give me a dollar so I could pay my washerwoman. He slammed the door in my face and replied that he had no dollar. He owed me several hundred dollars at the time. Imagine an employer conducting business in that way today.

But few of the lumbermen of early days made any fortunes as fortunes are counted today. But while fortune did not smile on these early pioneers, they were in their day men highly respected as honorable men. They struggled—they knew what hardship and privation meant, and no unfortunate man, woman or child went hungry and cold if they knew.

As an illustration of the times of these early days I can relate a little incident personal to myself. I was taken very sick the first spring I was in this country, a stranger among strangers. After I got so that I could walk around I met my physician one day on the street. After inquiring how I was getting along he told me to come down to the drug store, where he had his office, in the evening and he would give me some medicine. I hesitated to go as I had no money to get any medicine with, but, boy-like, I went. The medicine was put up, and cost \$2.00. In broken English I told the druggist that I would get the medicine in the morning. A prominent, at that time, Wausau business man was in the store. He told the druggist to charge the two dollars to his account. He turned to me and said, "Boy, you can pay me when you get the money." He was, at that time, a stranger to me and I to him. However, this illustrates the generous character of the men of yesteryear—the men that blazed the trails through the wild forest for those who came afterwards to reap the golden harvest. Most all of those hardy pio-

Continued on page 15

A Voice from the Pines

By JOHN C. SMALL, Little Rock, Ark.

- I am of the forest and from a race of giants.
 I am one of the great instruments of architecture and I form the framework of the builder's dream. Without me the habitation of man would topple and fall.
 I am omnipresent and indispensable.
 Myriads of mills and millions of men are in my service.
 For me railroads are laid into the wilderness.
 I head the list of products of the third greatest industry in the land.
 At the country's call I rush from woodland retreat to wharf and ship, camp and trench, and stand shoulder to shoulder with fighting men in the Nation's defense.
 I am beloved above all my kind by the craftsman bending over his bench. I am his most useful ally.
 I proudly pose upon the cornice overlooking the busy street or modestly retire to the dark recesses of the subterranean passage, serving wherever needed.
 Tear away the stucco of the rich man's mansion and you will find me supporting the tons of plank and plaster that shelter the household.
 Lift the latch of the poor man's weather-boarded cottage and I will greet you from the wall and loft, for here I am a guest unconcealed.
 In God's house I reverently abide, vibrant to the swell of the organ and to the exhortations of the preacher.
 I am the lever that lifts the distressed wheel out of the muddy rut.
 I am the handrail on the bridge that spans the brook of romance.
 I am the standards of the ladder up which the hosts of labor mount to their tasks.
 I am the mainstay of the garden gate on which lovers lean in the moonlight.
 I am the beam that bolts the door of the pioneer's home against the dangers of the night.
 I uphold the trellis upon which the fragrant honeysuckle twines and about which children play and laugh.
 At last I go down into the grave and shield the face of the dead while

clouds of earth patter my unoffending back.

Who am I?

I am a stick of pine, yellow and rosin-scented. I am a 2x4.

February Cover

The snow scene on the front cover of this issue will appeal to all of our readers, for everyone admires the beautiful in Nature. Surely Old Mother Earth presents an exquisite scene tucked under a blanket of snow. And with what deftness and rare taste the master artist—nature—has bedecked the trees and shrubbery, while the stream, in bold relief, flows placidly on.

To many of the millmen and loggers, especially of the West and Northwest, the scene will appear quite familiar, for no doubt at the present time the snow is covering a vast area of woodland; and besides admiring the beauty of such scenes they can also appreciate the inconvenience and hardships a heavy snowfall entails.

Lumbermen look on with some misgivings as snowflakes begin to fall, especially when they are driven hither and thither by gusts of wind, for they know the flakes will search out every crack and crevice, sift through the boards and shingles on the roof, dart under the cabin door, and send veritable frost flames through the woods, driving, drifting, piling higher and higher, until travel is impeded and work is at a standstill.

The front cover will, no doubt, recall to many "The Snow Storm," by Emerson, which he describes as follows:

"Announced by all the trumpets of the sky,
 Arrives the snow, and, driving o'er the fields,
 Seems nowhere to alight; the whited air
 Hides hills and woods, the river and the heaven,
 And veils the farm-house at the garden's end.
 The sled and traveller stopped, the courier's feet
 Delayed, all friends shut out, the house-mates sit
 Around the radiant fireplace, enclosed
 In a tumultuous privacy of storm."

FIR

By MERRITT MILLER

SINCE the Pine has long been acknowledged the King of Trees, the best we can do for the Fir and Spruce is to give them a place in the royal family of treeland; and justly so, for more stately or beautiful trees would be hard to find.

When the fir is young it is extremely beautiful, a slender symmetrical cone of shining dark foliage. The leaves are flat, shining green above, a beautiful silvery color beneath and very fragrant. The cones are produced in great numbers and being bluish purple when young, they are often so abundant on the upper branches that they give a soft purple haze to the top of the tree.

As for usefulness, the firs gave us the tall masts and spars of our merchant ships, and the rib framework of our aeroplanes, which were deciding factors in the great World War.

The Fir being closely connected and of the same family as Spruce, is often called by that name. Spruce is divided into groups as follows: the white or Eastern Spruce, used for wood pulp, interior finishings of buildings, and fittings of ships; the Red Spruce, a small tree, 70 to 100 feet high, used principally for pulp; The Englemann Spruce, found only in the Rocky Mountains, and used as an ornamental tree in the eastern United States; the Tideland Spruce, found in swampy lowlands and marshes, from Canada to California; the Norway Spruce, used in America for ornamental purposes. In addition to these regular spruces, there are the false hemlocks, classed as the Red, Douglas, and California Hemlocks.

For years the forests of West Virginia, the Carolinas, and Northern New England have been called on for the Spruce and Fir supply, but now the lumbermen look to the Pacific Coast region for their biggest and best logs. From California to Alaska grows what is distinctly a Pacific Coast species, the Sitka Spruce or Fir; some of these trees are veritable monsters. Some of the best specimens will yield as high as

8500 feet of lumber of the kind that can be used for aircraft and shipbuilding purposes.

The Balsam Fir is essentially a tree of the great northern forests, ranging as far south as Pennsylvania, Michigan, and Minnesota and along the higher slopes of the mountains to Virginia. At least eight species of fir are found in North America. Most of these are native to the far west.

Douglas Spruce or Douglas Fir is one of the important trees from the Rocky Mountain region to the Pacific and north to British Columbia. Upon the Pacific Coast it attains a height of more than 300 feet and a diameter of 10 to 12 feet. The timber is fine, straight grained, heavy, and very strong, and is useful for all kinds of building, masts, etc. It has been very successfully planted in Minnesota, where it is believed it will supersede the other species.

The greatest helper the United States Army had in its gigantic undertaking was Mother Nature herself who had been protecting and sustaining the trees and making them grow tall and stately. However, their looks are somewhat deceiving at times. For instance, recently in Clallan County, Washington, a mammoth spruce was felled because it looked so promising. A reputable forest engineer measured up the tree which was 90 inches in diameter on the stump and scaled 35,000 feet of merchantable logs.

The northernmost limit of the fir extends to the southern shores of Hudson Bay, while it ranges, in the Appalachian Mountains, to southwestern Virginia.

Wisconsin Lumber Industry

Continued from page 13

neers have passed the Rubicon and sleep the eternal sleep. But when the history of northern Wisconsin is written, posterity will render just meed of tribute to as noble a race of men as ever trod God's footstool.

Merrill (Wis.) Daily Herald.



SAWDUST

ONE ON THE "DOC."

A worker had both his thumbs injured the other day, and he applied at the medical department for treatment. As he was having his injured lunch-hooks dressed, he turned pleadingly to the doctor who was bandaging the hands and said:

"Doctor, do you think I will be able to play the piano when I get well?"

"Certainly you will be able to play the piano," said the doctor emphatically.

"That's funny," remarked the worker, "I never could play one before."—*Ex.*

ILLUMINATING COMPARISON

She entered the department store and complained about a lamp she had purchased, demanding that it be taken back.

"What's the matter with it, madam?"

"It has all the faults of my husband, with none of his virtues."

"Please explain yourself."

"Well, it has a good deal of brass about it, it is not remarkably brilliant, requires a great deal of attention, is unsteady on its legs, flares up occasionally, is always out at bedtime, and is bound to smoke."—*Ex.*

CONCLUSIVE PROOF

A quack doctor was advertising some medicine on a street corner.

Doctor: "I have sold these pills for twenty-five years and never heard a complaint. What does that prove?"

Voice from the crowd:

"That dead men tell no tales."—*Ex.*

THE WRONG STREET

Edith—"Dick, dear, your office is in State Street, isn't it?"

Dickey—"Yes; why?"

Edith—"That's what I told papa. He made such a funny mistake about you yesterday. He said he'd been looking you up in Bradstreet."

FORESTRY FOR LADIES

"I hear that she is interested in forestry."

"Well, she is to the extent that she always pines to look spruce."

—*Florida Times-Union.*

THE HIGH COST OF SHOES

There was an old woman who lived in a shoe,

In the days when a shoe cost a dollar or two;

But shoes took a jump, and now—man alive!

The old woman lives cheaper on Riverside Drive.—*New York World.*

BACKWOODS CURRENCY

Into the general store of a village in Virginia there came one day not long ago a diminutive ducky, who laid upon the counter a single egg and said:

"Boss, my mudder says please give her a needle for dis aig."

The storekeeper smiled. "Why," he said, "you can get two needles for an egg."

"No, boss," continued the ducky, "my mudder don't want no two needles, she says please give me de change in cheese."

SUBSTITUTE WANTED

"What's good for a black eye, Bill?"

"Oh, a small piece of raw beefsteak."

"Yes, but supposin' yer ain't no bloomin' millionaire?"

San Francisco Chronicle.

CLAIRVOYANT STUMPED

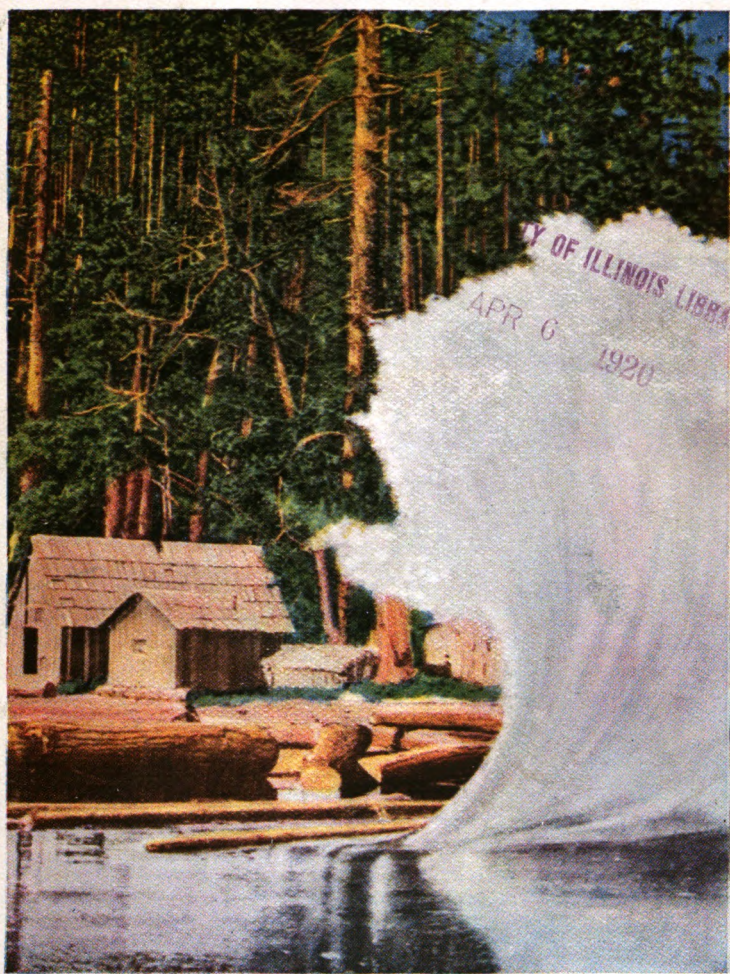
Manager (introducing music hall turn): "Ladies and Gentleman, Khagoola will now proceed to give his astounding clairvoyant, memory, and second-sight act, and will answer any question that any member of the audience may put to him."

Voice from Gallery: "Tell us where there's a house to let." —*Punch.*

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THE DISSTON CRUCIBLE



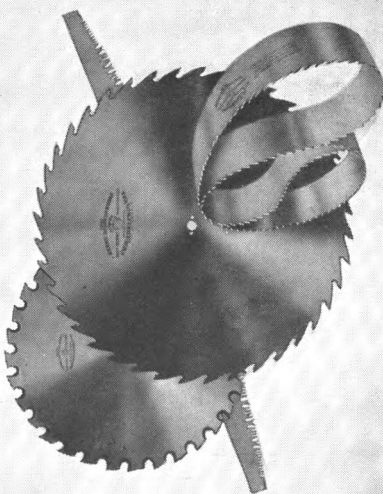
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DISSTON SAWS



BUILDING SERVICE IN SAWS

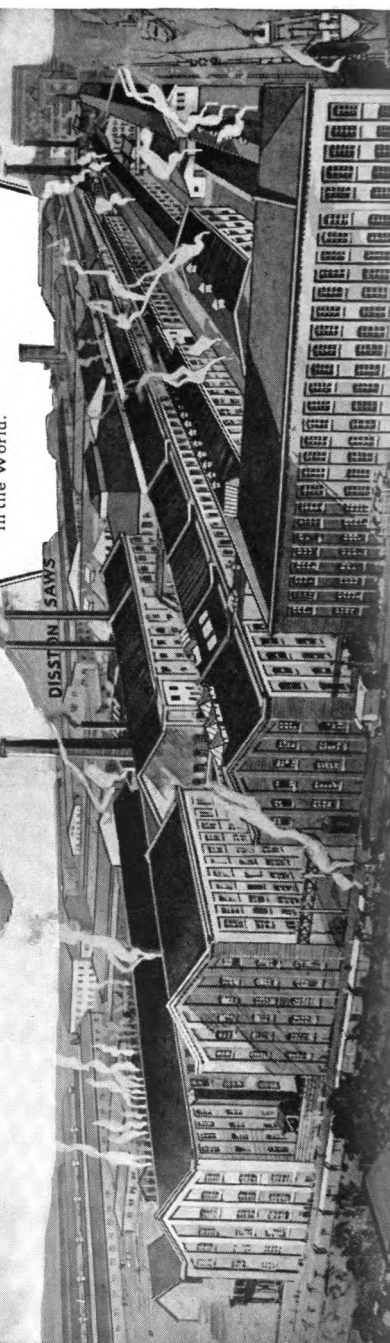
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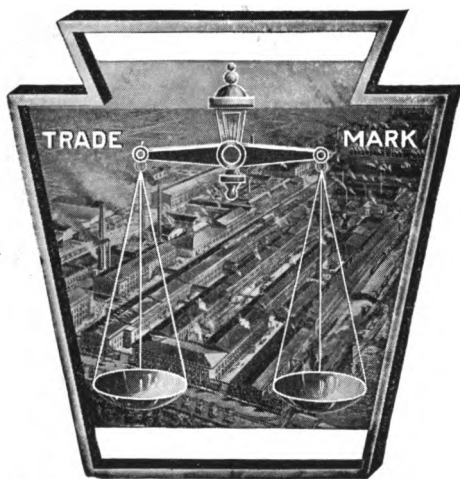
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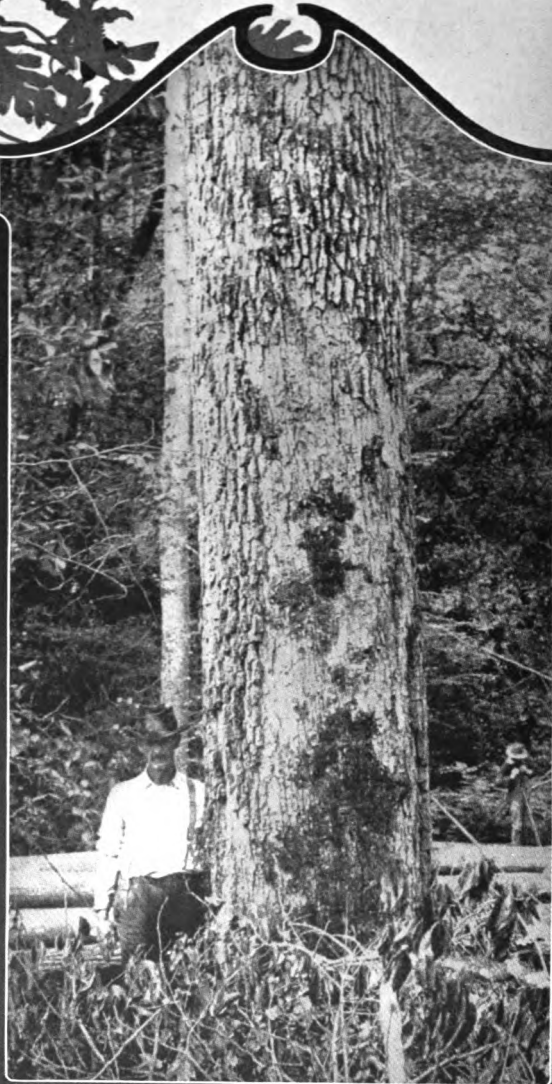
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A FINE SPECIMEN OF WHITE OAK
From "American Forest Trees" Copyright Hardwood Record

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

MARCH, 1920

No. 2

EDITORIAL CHAT

CONSERVATION OF OUR FORESTS

We know the vital necessity of a constant supply of wood. But we realize it only in a general way—we have never been made to really feel how important wood is in our daily life.

Tomorrow, try an experiment.

For one day, notice how many of the things necessary for your comfort and existence are made from wood. Begin when you roll out of your comfortable wooden bed in the morning and make note of every wooden thing you use during the day. What sort of a time would you have if no wood—or things made from wood—could be had? What do you know about the source and supply of this material which is so necessary to you?

Go out on the street, stop the first five men you meet, and ask them what is meant by conservation of forests. We'll wager that not one out of the five can tell you—and yet one person in every 100 of our 100,000,000 population is a wage earner whose earnings are dependent on raw material from our forests; 52,000 of our 276,000 manufacturing plants are dependent on the product of our forests for their raw material!

Men who study our forest resources say that the great annual consumption of timber is depleting our forests at twice or possibly three times their

rate of growth; these men estimate, also, that at the present rate of depletion and growth, our supply of commercial timber will be exhausted in 25 years.

The remedy for this possible disaster, we are told, is evident and simple—so evident that it is surprising that definite action has not already been taken.

This is explained, we believe, by the fact that whatever worth-while action is taken must be taken by the country as a whole; and, as has often been proved, to arouse a great mass of people to action is a slow, difficult task.

We all dislike calamity-howlers. Every true-blooded American is an optimist to his finger-tips; no one finds disfavor with him as quickly as the man who predicts disaster. For these reasons, men who have made a life study of forestry find difficulty in driving home a realization of true conditions.

Whether or not action is advisable or necessary, the question is too vital—too "close home" for any of us to pass it by without consideration.

CRUCIBLE considers itself fortunate to be in position to present to its readers discussions on this subject by men who know. The first of these, by Mr. A. B. Greeley, Assistant U. S. Forester, appears in this issue.

*Quality
Sells*

TIMBER USE AND TIMBER PRODUCTION

Interesting Comparison of French and American Methods

By A. B. GREELEY

Assistant Forester, U. S. Forest Service

(Written Specially for CRUCIBLE)

THE American lumberman who served with our Expeditionary Forces in France obtained a first-hand look at European conditions, where timber is scarce and is grown under very intensive methods. We saw forest after forest where every part of the tree is used down to the small twigs, which are bound up in fagots. In their logging operations, our Forestry Troops had to observe many rules and restrictions which were enforced by French foresters in order to preserve young trees from injury or to make sure that a new crop of timber would be started. In some cases, they had to cut out brush and brambles to clear the ground for reseeding. In a few cases they even had to climb large trees and limb them before felling, in order that they might not mash down young growth. On his introduction to French forestry methods the average American lumberjack was quite scornful of these apparently petty and often burdensome restrictions. But when he left France, the same lumberjack had usually acquired a real understanding of the importance to France of extreme care in conserving her

forests, of which these logging requirements form a necessary part.

France is in a situation where the limited supply and high cost of timber have placed wood practically in the class of imported luxuries. Notwithstanding the intensive care of her forests, she is still compelled to import from 30 to 40 per cent. of the timber which she requires. The effect of the high cost of timber upon French industries and upon the conveniences and comfort of her farming population is very apparent. The use of lumber on French farms is almost negligible. In fact, most French farmers are still getting on with the identical buildings

and farm structures which their great-grandfathers used before them. The per capita consumption of lumber in France is not over 100 board feet yearly, or less than one-third of what the average American uses. The shortage of lumber and its high cost is one of the great industrial handicaps of the country.

This is a striking contrast to the conditions at home, where timber has been one of our most abundant natural resources and where lumber has been used with the utmost freedom in



French Soldiers at Work in Oak Coppice

our homes, on our farms, in many forms of industry, and is an important factor in our foreign trade. The United States has never had to give the thought and intensive care to the preservation of her forests which have been an absolute necessity to France. And yet we have reached the point where we can no longer afford to go on merrily cutting down our forests with no thought for the future production of timber. It is probable that we are using up our supplies of timber two or three times as fast as timber is being grown in our forests. Many of

ever require for ourselves or in our trade if we only kept it at work growing trees.

In this we are far more fortunate than France; and our failure to utilize the wonderful timber-growing resources which nature has given us will be nothing less than national folly. We have probably 500 million acres of forest land in the United States. About 350 million acres have been cut off; and out of that at least 100 million acres have been devastated by cuttings or by forest fires as to be wholly unproductive.



Gathering Fuelwood in a French Forest

our old forest regions have been cut out and are now experiencing a shortage of timber and high lumber prices which are not so very far behind the conditions existing in France. It is an actual fact that lumber is being shipped from Portland, Ore., to Portland, Me., and every year the portion of the price of lumber paid by the retailer or by the wood-using factory which represents the cost of its transportation from the sawmill to the point of use is increasing.

The great forestry problem of the United States is that of idle forest land. We have enough forest land to produce all the timber which we would

Even yet we do not need to resort to the intensive methods of the French foresters, which for them are an absolute necessity. Our task is a simple one. We must stop the devastation of timberland. We must put the land which has been denuded and the land which is now being cut over at work growing more trees. In many cases this requires nothing more than keeping fires out of the woods. In some cases we must leave enough trees to reseed the cutover land. In some cases it will be necessary, particularly for the State and Federal governments, to plant trees on land that has been so denuded that it cannot restock with

timber of itself. But by and by the problem can be met by the simplest kind of forestry practised in cutting our remaining timber and in protecting all forest lands from fire.

The United States should not have to restrict the use of timber, to prohibit its export, or to make it a commodity so high in cost that we must drop to the level of France as a wood-using nation. We must meet the situation rather in the American spirit of development, of increased production and of an organized and far-sighted handling of our resources so that they will meet all future requirements. We want to continue to be a large wood-using nation. We want to continue to have an abundant supply of timber for our homes and farms, for our factories, and for our foreign trade. Any other solution of the problem is unthinkable. An abundant supply of timber has been one of the principal sources of our commercial supremacy and that commercial supremacy we are not going to surrender. The remedy lies in our own hands if we will but use it. It is not to restrict the use of timber, but to grow more timber. It is to keep our hundreds of millions of acres of forest land at work, producing, rather than permit them to become devastated wastes of about as much value to the world as the desert of Sahara.

We are being told from every side today that we must increase production. Increased production is held out as the solution of our high cost of living and of many economic difficulties. Increased production from land is just as important as increased production by human labor. We can no more afford to have millions of acres of good forest land lying idle than we can afford to have thousands of artisans or mechanics in idleness. Let us obtain the steady production of timber which our land will readily furnish and we need have no worry over the future.

A. B. Greeley,

Assistant Forester,

U. S. Forest Service.

Illustrations in this article used by courtesy of *American Forestry*.

The March Cover Design

Our readers will be interested in learning what causes the "white wave" prominent in the front-cover scene.

In some of the logging camps in British Columbia after the logs are cut they are shot down a slide to a stream of water where they are assembled into rafts and floated to lumber mills.

The logs attain great velocity in their passage down the slide and oft-times strike the water a tremendous broadside, causing a great splash, the foaming water leaping many feet into the air. Hence the white wave on the cover.

Too Much Sawmill Waste Burned Up

Hundreds of tons of sawmill waste which could be used for newsprint and other coarse paper are being burned every day, and there are millions of feet of stumps and small timber in Southern cut-over lands which could be used for the same purpose. J. F. Kidd, of Lake, Miss., told the annual convention of the Southern Logging Association at New Orleans.

"I understand," said Mr. Kidd, "that many small town weekly and semi-weekly newspapers have been forced to suspend publication because of the high cost of newsprint, and even some of the city dailies are having a rocky road to travel, but it seems that there is inefficiency and neglect of opportunity somewhere when raw material is being wasted in quantities with a market crying for the products which could be manufactured from this waste."

He advocated establishment through the Southern timber belt of either pulp or paper mills to convert into paper what "now goes up in smoke."—*Canada Lumberman*.

We should need no social panacea if everyone realized that a right is merely the other face of a responsibility.

RESTORATION OF BLACK WALNUT FORESTS

The restoration of black walnut trees is being considered in several states for 1920. In Ohio, the Agricultural Experiment Station at Wooster has just published a pamphlet by Edmund Secrest, of the Forestry Section, on the cultivation of walnut trees, attention being called to the great value of the lumber in many industries and its use in the war for air-planes and gun stocks, for which no other substitute could be found in sufficient quantities. Mr. Secrest says that with proper care trees may be grown from seed or transplanting of small trees to a state of maturity where the wood will be of as great value as that of the original forest.

In Pennsylvania the State Forestry Department has undertaken extensive seed planting in an effort to restore the black walnut; 150 bushels of seed have been planted in specially prepared ground at Mount Alto and should produce 100,000 seedlings for next spring. Many requests have been received from owners of

woodlands who desire to start groves of the trees.

A campaign of tree planting will begin in 1920 in Kentucky for the rejuvenation of the forests, in which walnut will be one of the special species planted.

The illustration herewith gives a partial view of a Virgin Forest of black walnut, white ash and white oak that never knew the meaning of the word "trespass," nor the woodman's axe until about five years ago, when a firm in Goshen, Indiana, were the successful bidders for the timber.

The forest was located about 6 miles from Danville, Illinois. Eleven hundred walnut trees were on the tract, estimated to contain 700,000 feet of lumber.

Most of the timber was between 400 and 500 years

old. When Columbus kissed the earth of Watling Island and took possession of the New World in the name of Isabella and Ferdinand of Spain, it was beginning to flourish. The American Indian may have found shelter and seclusion in its depths, but civilization never had.



**Black Walnut Tree more than 600 years old,
near Danville, Ill.**



MEXICO

THE great wealth contained in the Mexican forests is not yet appreciated by the lumber world. There are immense quantities of building timber and cabinet woods in Mexico, many species of which are as yet unknown in foreign markets, although they are classed among the most valuable and expensive. The yearly production of mahogany amounts, on an average, to about \$1,200,000 Mexican money, the states of Chiapas, Tobasco, Vera Cruz, and Campeche supplying the greater quantity. In normal times about one-half the mahogany used in the United States comes from Mexico. Cedar is found in all parts of the country, but the States of Chihuahua, Tobasco, and Vera Cruz contain the largest forests of this wood, cutting annually cedar logs to the value of more than \$1,000,000. Ebony is produced in Tamanlipas, Guerrero, Hidalgo, and Yucatan. Pueblo produces the largest quantity of aloe wood, Coahuila the most oak, Neuva Leon the most walnut, Lower California leads in iron wood, while the State of Jalisco is celebrated for its orange wood.

It is conservatively estimated that the area of first-class timber in Mexico comprises from 20,000,000 to 25,000,000 acres (U. S. total area estimated at 500,000,000 acres). In one section of the State of Durango recent investigation showed some 5,368,500,000 feet of commercial pine and another tract in the northern part of the same state contained 4,800,000 acres, estimated to have 10,000,000 feet of commercial pine ready for cutting. Besides the states mentioned, pine

is also found in Chihuahua, Jalisco, Michoacan, and Guerrero, the standing forests in these States comparing favorably with similar timber in the United States and Canada as regards quality, diameter, and extreme length of clear body.

Valuable Hardwoods

There are twenty-five varieties of hard woods not generally known to the American lumberman. Among the chief of these should be mentioned the zapote mamey, which resembles the walnut in appearance, is of a dark brown cinnamon color, has about the same grain as mahogany, and is capable of a very high polish. The zapote chico, of the same family, is practically one of the most valuable woods growing in the tropics. The trees are of great size, the length of their clear body being often 50 feet, and in tropical Mexico they are very plentiful. The sap, which is the chicle of commerce, is gathered in very much the same manner as the rubber sap. The wood is of a clear, deep, reddish-brown color, very hard, but easily worked until thoroughly seasoned, when only the finest edged tools have any effect on its surface. The wood takes a beautiful finish, and is valuable for furniture. Used as piling for both railway and port construction, it has been found that the chico zapote bears the test of a much longer period of endurance than oak; sea worms will not attack it, and for withstanding the effects of either salt or fresh water, mud, wet or arid soil, it appears comparatively indestructible.

Zapotillo colorado is another tree of the same family as the zapotes. It is often three feet in diameter, and usually yields fifty feet of trunk without knots. The grain is very close, light in color, and takes a fine polish. Zapotillo blanco is a beautiful white wood with a yellowish tinge of even color, and is very desirable for inside house finishing.

The palo maria, with a trunk from 50 to 100 feet long and clear of knots, closely resembles mahogany in color, grain, and weight. The Mexican red cedar is of an even grain and color, and is extensively used for lead pencils and cigar boxes. One of the most promising of the undeveloped woods is the granadilla, a kind of rosewood, in appearance equal to mahogany, of a rich, reddish-brown color and with dark wave line markings.

Another beautiful and curiously marked wood is the galeado. The color is yellow, with distinct, irregular markings of seal brown, close grain, and very heavy. The maccaya wood, much like hickory, is used by the Indians for wagon work. Other less known woods are the coralillo, the guapage, huisch, jicoco, cork wood—of which there is a large amount in Mexico—and the lignum vitæ.

The extensive forests of the hot country in the States along the coast contain not only mahogany and a great variety of other cabinet woods, but also woods yielding precious gums, wood for dyeing purposes, and other industrial uses.

Twelve Important Varieties

Following is a list of twelve woods which are available in sufficiently large quantities for commercial purposes, though the question of getting them to market is a serious one:

PALO PRIETO. Found over all the southwestern part of Mexico, is quite common in Sinaloa, but does not here reach the enormous size of the trees in the extreme southern part of the Republic. Both sap and heart wood are highly resistant to rot, and it is considered one of the best woods of Mexico.

EBANO (Ebony). Found all along the coast of Mexico, grows to a large size in Sinaloa, but the logs are not very straight. Logs of more than twelve inches in diameter with perfectly sound hearts are very rare. The excellent qualities of this wood, when cut from live, sound trees, are known all over the world.

AMAPA NEGRA or AMAPA VERDE. Found all over Mexico. In the State of Sinaloa the trees are rather small in size, although plentiful. It is a very much better wood than the Amapa Blanca, and is employed rather extensively in shipbuilding.

TEPEMMESQUITE or MEUTO. Found all over the southwestern part of Mexico and is especially plentiful in the States of Sinaloa and Nayarit (Tepic). Used extensively in shipbuilding, especially where heavy compressive stresses are encountered. Its worst characteristic is a tendency to check badly when exposed to the sun, the ends frequently opening up for a distance of two or three feet and curling back on the log.

TRUCHAS or THRUCHA. Found all over the Pacific coast of Mexico. Grows well in Sinaloa, especially in the southern part. This wood is used in shipbuilding wherever heavy tensile stresses are encountered.

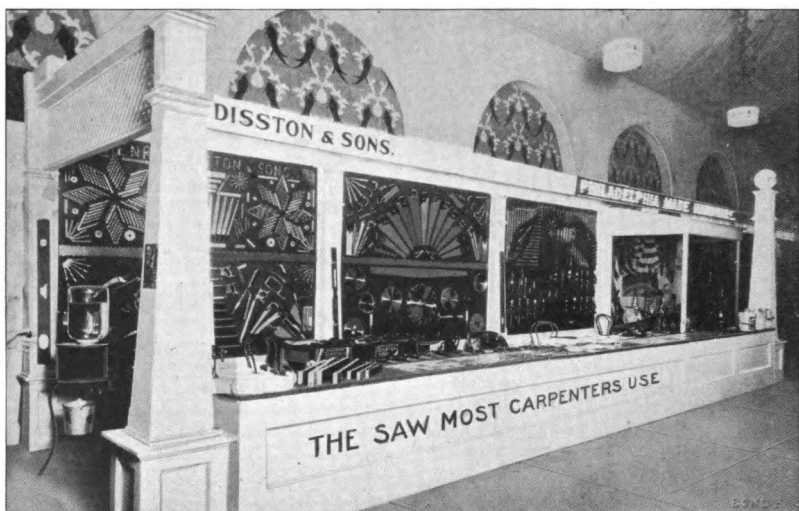
Woods Favored for Shipbuilding

PALO AMARGO or CEDRO BLANCO (Mexican White Cedar). Found all over the northwestern part of Mexico. Grows to a fair size only and is not very straight. The Mexicans consider this wood to be superior to the best Douglas fir or yellow pine. It is used very successfully in naval construction where a light wood of the approximate strength and resisting qualities of Douglas fir are required.

PALO MAGARITA or BARILLO. Often confused with the Palo Fierro (iron wood). Found all over the southwestern part of Mexico and quite common in Sinaloa. One of the

Continued on page 29

DISSTON SAW, TOOL, AND FILE EXHIBIT AT THE PHILADELPHIA CONVENTION



THE illustration will give some idea of the saw, tool, and file exhibits being conducted by Henry Disston & Sons, Inc., at Hardware and Lumber Conventions in various parts of the country.

Disston products have been exhibited so far this year at Kansas City, Mo., Grand Rapids, Mich., Syracuse, N. Y., Chicago, Ill., Cincinnati, Ohio, Cleveland, Ohio, and New Orleans, La.

This particular illustration is made from a photograph of the Disston Booth at the 19th Annual Convention of the Pennsylvania and Atlantic Seaboard Hardware at the Philadelphia Commercial Museum, February 10, 11, 12, 13.

The exhibition hall at this Convention was remarkable for the number and attractiveness of the displays. Weather and traffic conditions were very bad just at this time and it is remarkable that so many out-of-town exhibitors succeeded in getting their

displays to Philadelphia in time for the Convention.

The Disston display was arranged as a part of the large exhibit of the "Big Five" of Philadelphia—this "Big Five" being five manufacturers of hardware in Philadelphia. The entire exhibit consisted of six display boards with a model hardware store window in the center. Only one-half of the complete display is shown in the illustration.

As can be seen, two of the six boards were used to display Disston products. On one board was arranged the various sizes and styles of Disston Files. The other was devoted to a display of Disston Saws and Tools—Circular Saws, Band Saws, Cross-cut Saws, Hand Saws, Squares, Levels, Trowels, etc. Disston demonstrators and salesmen were at the booth and explained all phases of saw and tool manufacture and use.

While the Disston exhibits in the different cities varied somewhat from

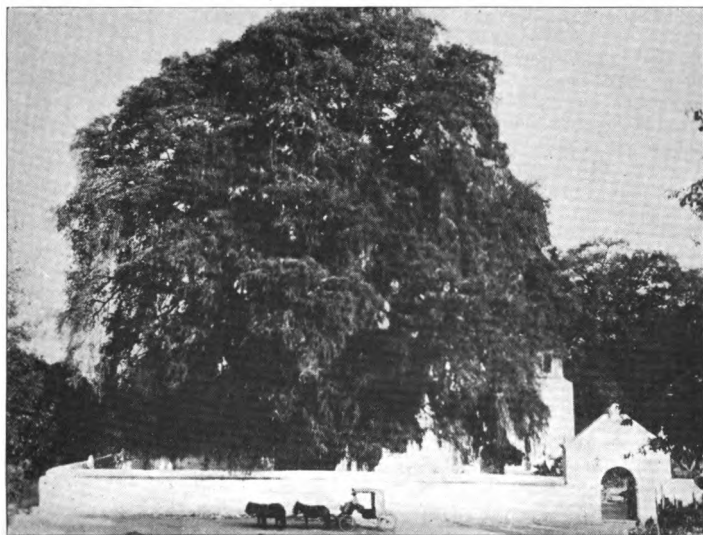
the one in Philadelphia because of the differences in floor space and arrangement, the same general plan is carried out in each case. Henry Disston & Sons have had a great deal of experience in demonstrating and displaying their product; their position as the largest and strongest established makers of saws and tools in the country have brought to them many requests from industrial and educational institutions to demonstrate and explain how saws and tools are made and used.

It is interesting to note that the permanent exhibit of saws at the Commercial Museum was arranged and contributed by Disston.

Oldest Living Thing in the World

In the churchyard of the village of Santa Maria del Tule, a few miles from Caxaca, Mexico, stands a famous

cypress tree that men of science say is the oldest living thing in the world. Judging by the gigantic bole of this tree and the slow growth of the species, they have calculated that its age is between five thousand and six thousand years. The seed from which the tree sprang may have fallen upon the earth when Menes, the first Egyptian king of whom we have historic knowledge, was seated on his throne—three thousand years or more before the birth of Christ. Professor Asa Gray at one time calculated that the tree was 5,124 years old, and named it the "Nestor of the whole vegetable kingdom." Humboldt discovered this tree on his famous tour of equatorial America 100 years ago. He nailed to it a wooden tablet, which is now half-covered by the subsequent growth of the tree. The name of the famous German naturalist is still legible, however. At four feet from the ground the tree has a girth of 126 feet or a diameter of 42 feet.



The Oldest Living Thing in the World—Mexico

"FEEDING THE BRUTE"

By JIM

WE were at lunch on the last lap when Jim started, "Do you know, Tom, if I wanted an opportunity to index the character, disposition, and general trend of the natural propensities, without exciting any suspicion in the mind of the person under inspection, I would contrive a way to make him miss a couple of his regular meals, then take him to dinner, provide a generous feed, and keep a careless but watchful eye on him during the eating. Of course there are possibly more economical methods of attaining your object in this year of our Lord nineteen hundred and twenty, if we consider food costs, but for quick analysis none more thorough in arriving at results.

"A really hungry man in the presence of a good feed is apt to hark back to first causes and show to some extent his kinship—however distant—to the primitive man. I presume that in a way the same instinct prompts a pig to squeal when he gets his feet in the trough. A keen appetite will usually modify, if not subdue, even a keen sense of humor; a dulling of the edge of appetite will perceptibly sharpen the sense of humor. A knowledge of this may account for the custom of postponing humorous speeches, epigrams, witty sayings, and general bunk until after dinner. Lots of good things that make after-dinner hits if said before the feed would more than likely fall with a noise like a lead dollar on a metal plate.

"Speaking of dinners, reminds me the word doesn't always convey the same meaning to the eager listener; as, for instance: The would-be guest at a small eating house spread his paper napkin, took a sip from a glass of water the waiter set before him, and eagerly awaited the waiter's announcement of the menu. 'Will you have pork and beans?' said the waiter. 'Naw, no pork and beans,' was the answer. 'Then dinnah is ovah, sah,' and the waiter turned to wait on another customer without any further talk. Now this brings to mind the one where the western train stopped 'twenty minutes

for dinner.' In addition to the printed sign prominently displayed, a husky attendant, with a strong arm, a dirty apron, a wide smile, and a baseball bat, deviled the ears of the patient and more or less hungry passengers by pounding at short intervals on a large gong with the aforesaid baseball bat. A hound, loose on the platform, at the sound of the gong, would sit on his haunches, throw back his head, open his mouth, and give a fair imitation of a lonesome dog baying at the moon. A passenger, evidently with past experience of this particular eating station and consequent reluctance to impair his digestive organs at the same place, eyed the dog's performance with indications of disgust, and walking within foot reach deliberately landed a swift kick in the dog's ribs and said rather viciously, 'Shut up, you hound, you don't have to eat here.'"

At this point in his talk Jim paused and looked at me rather dubiously, and continued: "Excuse me, Tom, I seem to have strayed from my subject. I meant to regale you with a few philosophical observations on one of the very essential functions of the human kind, the commonplace and universal practice of 'feeding the brute,' but as usual I run right out of philosophy and into eating-house anecdote. Oh well, anecdote is easier for me than the other and entails less brain fag, so I'll continue on the line of least resistance.

"My old friend, Sam Bender, was seated in a popular priced restaurant; he had ordered a beefsteak and a side frill or two with it that would create a gastronomic harmony to appeal and respond to the call of his appetite which, by the way, was rather urgent. As he was finishing his order another aspirant for culinary accomplishment seated himself at the same table. His manner and general appearance loudly proclaimed his unfamiliarity with his present surroundings and lack of knowledge of restaurants in general; also a subtle determination not to permit any evidence of such ignorance to be observable. He ordered rather loudly a

'Porterhouse steak with fried potatoes and a cup of coffee.' Both orders arrived together and the prospective owners proceeded to survey their holdings preparatory to going into action. Sam, turning to the waiter, quietly requested that he bring him some tabasco sauce. On its arrival he applied a dash or two of the hot stuff to his steak and began operations. His table companion, who had furtively watched his action asked: 'Is that tomato sauce, mister?' 'Well, not exactly,' said Sam. 'Is it good on steak?' was the next question. 'Why, I like it,' was Sam's reply. 'Pass it over, will ya?' Sam obligingly complied. The investigator after a couple of futile dashes at the meat before him concluded the vent for outlet was entirely too small for the intended purpose, deliberately removed the cork and proceeded to get a sufficient supply to dress his steak properly; he then cut off a chunk and with an anticipatory gurgle of delight, stowed it away in his capacious maw. Almost instantly his face underwent an amazing change of expression, his gurgle of delight became a choking, strangling, struggling, gasping for breath, as with desperate haste he pawed and clawed at his mouth until he retrieved the generous portion of perfectly good steak.

"When he had it in his fist he slammed it to the floor and burst out angrily, 'There, blaze! Damn you, blaze!' Partially recovering from his fit he turned to Sam with a sort of grin, and said almost gently: 'Mister, when you die and go to hell, as you sure will do, you'll think you fell into a snow bank.'

"As a finale," said Jim, "let's take a small black."

—T. H. C.

Timber Resources of the World

Continued from page 25

very hardest of the hardwoods and used very extensively in shipbuilding, especially where heavy, compressive stresses occur.

HABA. Very plentiful in the coast country of Sinaloa and Nayarit. Grows

to a large size, fairly straight, and is seldom hollow. Considered by Mexican shipbuilders to be the best native wood for naval construction. It is rather difficult to handle when green, as the sap burns the skin upon contact, which is very plentiful just under the bark of the trees.

GUAYACAN (*Lignum vitæ*). Very plentiful on the west coast of Mexico from the State of Sonora to Oaxaca. Grows to greater size and degree of hardness in southern Sinaloa and Nayarit. Regarded as one of the most reliable woods growing in Mexico and undoubtedly the best for certain parts of ships. When placed in very dry places, however, it is liable to become brittle and break under heavy shearing stresses.

AMAPA BLANCA. Found all over the Republic of Mexico; in the State of Sinaloa grows to a fairly large size and is quite straight. While the Amapa Blanca is not so durable and is more liable to decay than others of the Mexican hardwoods, it is considered well adapted to take its place among the most reliable materials in shipbuilding.

Two Decay-Resisting Species

MORA AMARILLO (*Logwood*). Found all over the west coast of Mexico in great quantities, the most durable kinds being from the States of Sinaloa and Nayarit. Considered and proved to be one of the native woods most highly resistant to the effects of salt water, damp atmosphere, and rot induced by vegetable fungi. Its qualities as a dyewood are too well known to require comment.

ARRELLANO or **PALO COLORADO** (*Rosewood*). One of the softest of the Mexican hardwoods. Undoubtedly has the greatest resistance to decomposition induced by vegetable fungi of any of the native woods. It is found in Sinaloa, Nayarit, Colima, Jalisco, and Guerrero, and it is considered by the natives to be well adapted to constructions of all kinds where strength, durability, and reliability are essential.

RAFTING LUMBER TO MARKET

Old Scenes on the Wisconsin and Mississippi Rivers

By C. N. JOHNSON

TO those who may have read my article about floating the lumber to market, it may be worth while to call attention to the importance of the Wisconsin river as a commerce carrier in the early days of the lumber industry of northern Wisconsin.

Upon the successful operation of running the lumber to market depended the prosperity and even the livelihood of all the people of the Wisconsin valley.

There were saw mills scattered along the river from Barnum, some twenty miles below Grand Rapids, to Merrill. There were mills on the Plover river at Grand Rapids, Stevens Point, on the Eau Plaine river at Mosinee, on the Eau Claire, Rib, Trappe and Pine rivers, as well as at Wausau and Merrill.

The lumber industry was the only industry that brought cash money into this section.

The only way to market this lumber was by floating it down the Wisconsin and Mississippi rivers. St. Louis was the great lumber market, though occasionally lumbermen were able to dispose of some of their product at various cities along the Mississippi river. However, as said before, St. Louis was the real market.

If for some reason the lumbermen were unable to get their lumber to market in any year, business stagnation followed. However, it was seldom but that the bulk of the lumber was not marketed.

The vast region from below Grand Rapids to Lake Superior was one great wilderness of timber, consequently the snow melted slowly and the spring freshet could always be counted on to furnish plenty of water to "run the river." Then a June freshet used to come pretty regularly and fleets of lumber that had to be tied up in the spring were usually gotten out then.

Imagine the stir on the lower Wisconsin river when the lumber fleets from Grand Rapids, Stevens Point, Mosinee, Wausau, Merrill and those from the side streams were moving down the river.

A "fleet of lumber" contained from eight to twelve "rafts"—from 800,000 to over a million feet of lumber for each fleet.

Each fleet was in charge of a "pilot"—the executive officer. River pilots in those days were the great men. A good river pilot was lord of all he surveyed. He could sit with his feet cocked up on the hotel stove until the lumberman with a million, or several million feet, of lumber to get to market came around to offer terms. However, when the contract was made and the price fixed for taking a fleet of lumber to St. Louis, the Wisconsin river pilot was on the job. When the "fleet" was ready, cook and cookery aboard, ropes and a boat, and the pilot ordered "tie loose," from that time until that fleet of lumber was tied up in St. Louis the river men—the underlings—never had a chance to oversleep. It was work from daylight to dark. Meals? The rivermen could eat whenever they "hit the cookery," but sometimes some luckless fellows might not see "the cookery" for a couple of days at a time. That would frequently happen down on the lower river. Some raftsmen would get behind or run into a "pocket" and they might not see the cookery for a day or two.

It may here be explained that the lower river is filled with sandbars and the channel of the river would shift from season to season and sometimes in a few weeks. It was the business of the pilot to pick out the channel, but sometimes the men coming behind might misjudge the water and drift into some bayou without any outlet. In that case the "raft" might have to be "cut

up" into "cribs" and each separate "crib" pushed back into deep water. Many a raftsman had to work all night to "handspike" his raft back to the channel. There was no sleep until that raft had rejoined the fleet.

At the mouth of the Wisconsin river all the rafts were coupled together in one big raft to be floated down the Mississippi river. These lumber rafts were a terror to the steamboats on the Mississippi river. Moving slowly with the current, usually in the steamboat channel, the steamers could not budge them.

When a fleet of lumber was under way on the Mississippi river, it was seldom tied up until St. Louis was reached. The pilot would select one of his best men to assist him in navigating the river. Either the pilot or his assistant would be on the lookout all the time. The men stayed with their oars. They snatched whatever sleep they could get between times; that is, while the raft was floating serenely down the channel. But every little while the raft would sag out of the channel and the crew was called to the oars. Much depended upon the acumen of the pilot as navigator. Some of the larger manufacturers that would have several fleets of lumber every spring would hire special pilots to run the Mississippi river, using their Wisconsin pilots to take their fleets out the Wisconsin river.

These Mississippi river pilots looked down upon the Wisconsin river pilots much as an old salt water sailor would look down upon an ordinary land-lubber. When a Mississippi river pilot—I have never seen him, but the old-timers will tell you I have got him down right—swaggered onto a fleet of lumber at Dubuque, the czar of all the Russias, in all his autocratic power, had nothing on him. He was the supreme overlord of all he surveyed. He was IT, spelled in capitals.

When the fleet was landed at St. Louis, the clothing dealers of that town would have their representatives on the fleet as soon as it was tied fast, and the boys were cajoled and argued with to come to their respective haberdasheries to be fitted out with new clothing. The pilot, who

could take his whole crew to some certain establishment was rigged out with the best the house had without cost to him. Much competition existed also among the railroads to transport the rivermen back north, and the shrewd raftsmen could always get "cut rates," by bunching together and negotiate with different railroads running north out of St. Louis.

Old rivermen will tell you that it was fun "running river," but it was hard work. Perhaps men could not be gotten to do that kind of work today. The "pinery" in those days had a superb class of men. They were athletes of great physical prowess—the finest specimens of strong men that could be imagined. Their one fault was their fondness for strong drink. They would work all day, carouse most of the night, but would turn up fresh as daisies the next morning, ready to repeat the same thing again.

Some were from the state of Maine, a goodly number of Irish extraction, some Canadian Frenchmen, some Norwegians; but all comrades. That is, if the individual measured up to the standard. No weakling or law-breaker could associate on terms of equality with the old-time woods and river men. The quitters and the dishonest rascals were run out. One could go to bed in the hotel with a pocket full of money and not lock the door; his coin would be safe. They respected decent womanhood. They would settle their own misunderstandings with a stand-up and knock-down fight, and when that was over they would shake hands and be good friends again. The man who quit his job before the work he was hired to do was completed was looked upon with disdain. His position among his fellows was made so uncomfortable that he did not remain in one place very long. He was the "bank beaver," and he was persona non grata to his fellow rivermen.

The good pilots could always have the pick of the rivermen. All wanted to go with the pilot that knew his business—it mattered not how hard a task master he was, if he knew how.

—Merrill (Wis.) *Daily Herald*.



SAWDUST

IT ALL DEPENDS

"I don't believe that men get impatient while waiting for a woman to get ready."

"Why?"

"The other day I couldn't find my gloves and had a long hunt for half a dozen other things, and yet when I went downstairs my husband was reading and smoking as calmly as if I wasn't late at all."

"Where were you going?"

"Shopping."—*Ex.*

SCENTED THE ENEMY

A Trone county farmer entered a seed merchant's shop in Omaha for turnip seed, asking if they could be guaranteed. "Yes," said the merchant. "I'll warrant them 98 per cent. germination."

"Then," said the patriot, "I'll no hev them; if there was one per cent. of the German nation aboot them I'd not sow them. No enemy trading for me."

DAD'S BIRTHSTONE

They tackled father just after he had figured up his bank balance on being stung for the usual contributions to the family's time-honored Christmas fund.

"Dad," they asked him, "what is your birthstone?"

"The grindstone, children; the grindstone," he instantly replied. "And my nose has been to it all my life."—*Tit-Bits.*

WE'VE HAD 'EM

"How do you like that cigar I gave you, old man? For two hundred bands off that brand they give you a gramophone."

"You don't say! If I smoked two hundred of those cigars I wouldn't want a gramophone, I'd want a harp."

—*Tit-Bits.*

MAYBE HE WAS LOADED

John—That porter of ours certainly reminded me of a gun.

James—How so?

John—He kicked so when he was fired.—*Awgwan.*

RATHER EMBARRASSING

A young Californian often visited a leading Santa Barbara hotel because of its excellent honey.

When the young man got married the wedding trip included this hotel, so that the bride might taste this ambrosial spread.

But the first morning there was no honey on the breakfast-table. The bridegroom frowned. He called the old familiar waiter.

"Where's my honey?" he demanded.

The waiter hesitated, looked awkwardly at the bride, then he stammered: "Er—Mamie don't work here no more, sir."—*Ex.*

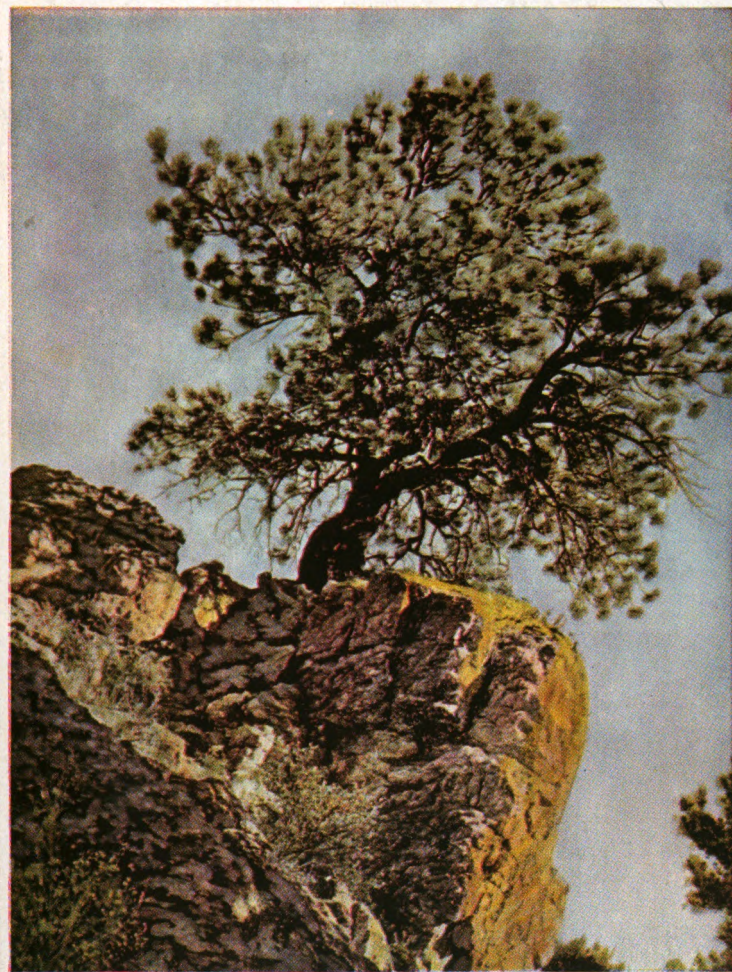
WHEN THE DOCTOR SLEPT

Dr. Wiley tells the following story: Sleepily, after a night off, a certain interne hastened to his hospital ward. The first patient was a stout old Irishman. "How goes it?" he inquired. "Faith, it's me breathin,' doctor. I can't get me breath at all, at all." "Why, your pulse is normal. Let me examine the lung action," replied the doctor, kneeling beside the cot, and laying his head on the ample chest. "Now, let's hear you talk," he continued, closing his eyes and listening. "What'll Oi be saying,' doctor?" "Oh, say anything. Count one, two, three and up," murmured the interne, drowsily. "Wan, two, three, four, five, six," began the patient. When the young doctor, with a start, opened his eyes, he was counting huskily, "Tin hundred and sixty-nine, tin hundred and sivinty, tin hundred an' sivirty-wan."—*Ex.*

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Young forest, longleaf yellow pine, situated in
Beauregard Parish, La. Trees are 16 to 18
years old and range from 3 to 6 inches
diameter at breast height

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

APRIL, 1920

No. 3

EDITORIAL CHAT

The following is a paragraph taken from a letter recently received from Dr. F. F. Moon, Acting Dean of the New York State College of Forestry, Syracuse, N. Y.:

"For a long time the forester occupied middle ground. At the outset he was considered a crack-brained fanatic by the lumbermen who practiced the maxim—"cut out and move on." On the other hand, the forester was considered little better than a vandal by the "forest preservationists" when he advocated cutting out the mature timber in order that the main crop might be produced. It is a source of great gratification to us to see the increasing support for a policy for the *right* use of our forests. The agitation that is going on at the present time is too radical in some respects I believe, but nevertheless, I am convinced that out of the welter of apparently conflicting opinions a sane policy for private management will result."

We are all agreed that Professor Moon in his letter "hits the mark."

In all this talk about conservation of forests there is one thing that stands out like a giant redwood in a willow grove.

When reports began to show that our "boundless forests", our "unlimited

timber resources" existed only in the minds of over-zealous writers, no definite means were available for those who saw the need to bring about adequate efforts towards conservation.

As a result, this man or another, when the idea came to him, took it upon himself to say how experienced lumbermen should or should not do their work. And what a mess of things some of them made!

The total result was, of course, discouraging. Plans were advocated and given publicity which all practical lumbermen—especially those interested in conservation—realized were absolutely worthless. Which all goes to show that this movement, like all big changes or reforms since the beginning of time, must have its baptism of mistakes and confusion before it gets down to a sound, constructive, workable basis—it takes time to clear away the frills and get to the straight facts of a proposition.

But get the facts we must. The question is too vital for anyone interested in the lumber industry to pass by. It is not a question that we can turn over to someone else for solution; what is needed is the sincere interest and study of all lumbermen. The man who is not familiar with the movement for conservation of our forests is negligent in his duty to his business and to his country.

*Quality
Sells*

THE BABES IN THE WOODS

Speaking of Child Welfare—How about the Babes in the Woods?

By MAT GRAY, of New Orleans Times-Picayune

(Written Specially for the CRUCIBLE)

THE Public Ledger of Philadelphia printed a piece last December when Williamsport's last sawmill cut up its last log. "Williamsport's history as a great lumber center," it went on to say, "was officially ended" when that 24-inch cylinder of maple was subdivided into two-inch plank. The story sent a little premonitory shiver into sundry Southern readers who happened to set eyes on it.

Away back in the misty pre-war past—before the butcher boy tramped around to the back door with the morning steak in \$15 shoes (the boy, not the steak) or the plumber's helper wore an \$18 silk shirt under the house to solder the leak in the kitchen drain—a lot of southern folk fancied their forests inexhaustible. When Gifford

Pinchot began to warn them to the contrary, they jes' luffed, like Joel Chandler's Brer Rabbit. The southern forests didn't fade away quite so fast as Gifford figured they would, but they sure are fading, as all of us nowadays can see.

The Emergency Fleet Corporation, making a war-time study of ship-timber supply, reported in 1918 that of 169 yellow pine mills covered by its survey in Louisiana, only 18 had more than 10 years' supply of standing timber. The remaining areas of virgin growth are pretty much all in operating hands and blocked off for the logging roads and skidder trails. The phrase "cut-out" is almost as familiar in southern lumber circles these days as in moving picture circles. Not so many years ago, it used to be said of



The "makin's" of a new forest on the Urania, La., forest reserve founded by Henry E. Hardtner, of the Urania Lumber Co. Southern pine seedlings are in good stand and making sturdy growth. The tall trees are the "seed trees."



Group of delegates to the Southern Forestry Congress who visited the Urania Forest Reserve, Urania, La., on February 1 and 2, 1920. Taken in the heart of a "new American Forest" of sturdy second-growth pine. Henry E. Hardtner, founder of the reserve, is at the extreme right. The group includes State Forester R. D. Forbes of Louisiana; State Forester W. T. Cox and Assistant State Forester D. P. Tierney of Minnesota; J. G. Peters of the Federal Forest Service and L. L. Bishop, Supervisor of the Florida National Forest.

the Gulf & Ship Island Railroad—a famous lumber carrier in Mississippi—that a sawmill was planted behind every other telegraph pole along the right of way. The ratio of telegraph poles to mills along that line has changed dismally. A once-thriving Gulf & Ship Island town is about to vote on a proposition to surrender its municipal charter. The cutting-out of its mills has cut out the foundations from under the town. Similar instances could be cited in Louisiana. The "inexhaustible" southern forests visibly approach exhaustion, and lumbermen and other good citizens are beginning to say right out in meeting that something ought to be done about it.

Opinions differ about what that something should be. There is frequent mention of the Forestation brothers, Re and Af. Lexicographical sharks define reforestation and afforestation as almost interchangeable, but there must be a difference or there wouldn't be two of them. The Re boy is the one that probably suits the

southern need, since here it is a question of maintaining or restoring forest growth on lands that have been in the tree growing business all their known lives. Af is probably the chap who planted windbreaks and groves on the treeless prairies of the middle and remote West when the sturdy pioneers began to plow them up and to kick about having to go so far for shade, stove wood and fence rails. Re Forestation is an ambi-dextrous cuss who can set out seedlings on cut-over lands or—if you give him and them a chance—speed up the growth of the baby trees and create you a new forest almost while you wait.

Thus we sidle back to our original proposition: The Babes in the Woods and the possible practical good of infant welfare work in their behalf.

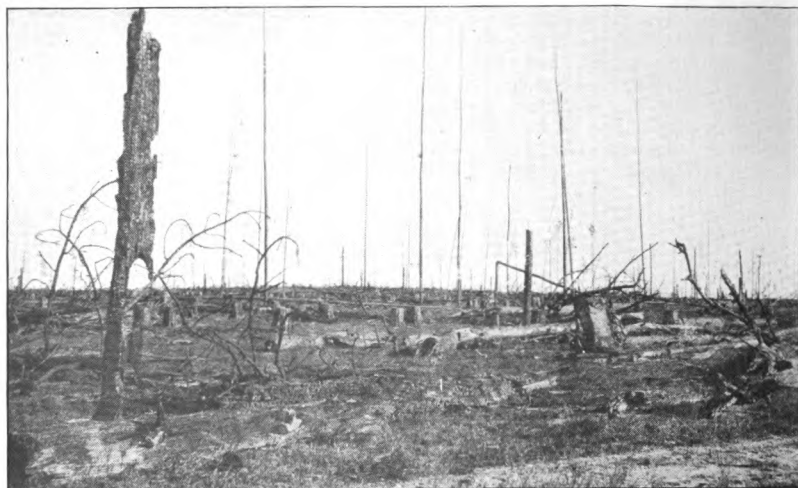
The child welfare movement already has reached the tall timber as well as the tall settlements. Scientific foresters preach it as part of the forestry gospel. Col. Henry Graves speaks right out against the "destructive prac-

tices that are turning vast areas into hideous wastes" and pleads for preservation and protection of the young trees, which "grow rapidly and yield a high profit" if protected. State Forester Forbes of Louisiana "Clocked some of the logging and mill operations last summer to ascertain whether it really paid to log and lug the babies to the mill. Keeping tab on the time consumed and payroll cost involved in cutting, toting to mill and putting them through the saws, Mr. Forbes compiled some very interesting but very technical tables which go to show "an immense increase in the cost of all steps in logging and milling when very small logs are in question." Just as a sample, his figures indicate that whereas logs of 20 to 24 inches diameter cost on the average \$1.94 per thousand feet to saw in the mill, and logs of 15 to 19 inch diameter cost \$2.50, the baby logs, 5 to 9 inches diameter, cost \$5.30, on the average, to saw. The same rule of increasing cost, he finds, applies roughly to skidding, hauling and other branches of logging operation.

Here is one practical argument for forest baby-saving. Mr. Forbes has another up his sleeve. Up at Urania, La., famous as the home of the forest

reserve established by Henry E. Hardtner, of the Urania Lumber Company, he found vigorous timber urchins that had survived logging operations as far back as 1902. Mr. Hardtner, a pioneer conservationist, kept books on these babies and striplings. Where some of the latter had a breast-high diameter of eight inches, back in 1920 when their estimated birthdays numbered 25, their average diameter fifteen years later was twelve inches. In other words, from another typewriter, "after the surrounding trees were cut, even these runts of the virgin stand grew half as much again in diameter in fifteen years as they had in the previous twenty-five years." Mr. Hardtner's records show that treelings which scaled only 10 feet board measure in 1902 contained 80 feet in 1917. Data collected by field agents of the Southern Pine Association last year indicates an annual growth—even under present highly unfavorable conditions—of four to six billion feet of yellow pine, taking the Southern Pine belt as a whole.

So far, then, as yellow pine is concerned, there is an impressive body of evidence that tree-growth under proper care is much more rapid than many practical lumbermen have supposed.



Picture of logged-off desolation from Beauregard Parish, La. No young growth left.

Given a fair chance, the babes in the woods may repay the caretaker with a substantial profit even in the caretaker's own lifetime. Forestry begins to be looked upon, in the words of another practical lumbering authority, as "an absolutely commercial proposition." Practical lumbermen are beginning to subscribe to the program of the forester-folk. A lot of them attended the Southern Forestry Congress, held at New Orleans in January, 1920, and four of the lumber-manufacturing associations were officially represented there.

But the yellow pine baby has three deadly enemies: The razor-back, fire,



Virgin forest, longleaf yellow pine, situated in Winn Parish, Louisiana. It is claimed that Louisiana has more yellow pine timber than all other states combined.

and old man John W. Taxation. Brer Razor-back loves the taproot of the longleaf pine as the society girl loves "peach Melba." It is his idea of the ideal dessert. But Mr. Hardtner has shown, in the course of his successful experiments at Urania, that the razor-back can be forced to choose other desserts from his available menu. The fire problem is a little more complicated.

Farmers "burn off the woods" now and then under the delusion that it improves the forage for their roving stock. Hunters leave their camp-fires to spread to under-brush or slash. Sparks from locomotives set dry growths ablaze. And in each case the resultant slaughter of baby trees is great.

Yet the most dangerous foe of all, some eye witnesses testify, is old man Taxation. In most States he takes a toll so heavy, that even the baby trees cannot by their growth repay the owner for their keep. Taxation, steadily increasing almost everywhere, is, they argue, speeding up the exhaustion of the southern forests and forcing the intensive which brings the little trees into the big mills. Fire can be fended off; razor-backs can be fenced off; but John W. Taxation, they insist, has got to be taught the error of his ways if the logged-off lands which are solely adapted or best suited to tree-growing are to be kept on the job. But most of the wise ones agree that with proper co-operation on the part of State and Federal authorities and private owners, permitting Nature to take her course, and protecting the progeny of the Tree family, we can have wood to burn, and to build with, too, from generation to generation. Nothing goes wrong with the tree birth-rate. Its infant mortality rate is the thing to do the worrying over.

This phase of child-welfare work deserves a lot of thinking about. The lumber industry not only is a good, clean industry, but an essential industry. Some of us may "knock wood" occasionally, but all of us need it in our business. It may cost us a little something to perpetuate the timber supply and keep the industry going—but it will cost those who come after us a prodigious sight more if we suffer both to fade out of our national landscape.

It would be a great gain to civilization if every child were taught to know the rights of others, to respect the rights of others, and to improve opportunities. They are not easy lessons, and they are sadly neglected in most college courses.—*Hardware World*.



FINLAND

FINLAND is a land containing a multitude of lakes and vast forests whose products form her greatest single resource.

"Fifty-four per cent. of the whole surface of Finland is forest land," says the Diplomatic Commissioner of that country in a recent Department of Commerce report. "No other European country has forests that can be compared to those of Finland in proportion to area, and only Russia has forests of greater extent. The Finnish government owns more than half of the total forest area and about one-third of the total surface of Finland. In Southern Finland, the value of the state forest land is more than \$200,000,000, this being valued at somewhat over \$50 an acre and including every kind of forest. Finland's chief asset is her forests." Of Finland, "the Forest Resources of the World," published by the U. S. Gov't in 1910 says, "The forest area may be given as 52,500,000 acres, or 54.4 per cent. of the total land area, and 18¾ acres per capita. The State in all owns or controls 32,117,500 acres, or about 61.2 per cent. of all the forest area. The rest, 38.8 per cent., belongs to private owners. The forests extend only to the sixty-ninth degree North latitude. Only a few species, like birch, extend farther north. The forests are composed almost exclusively of pine, spruce, birch, and to some extent alder. The most valuable species is, of course, the pine which is, however, of very slow growth. It takes the pine from eighty to two hundred years to reach a size suitable for construction, and from one hundred and forty to one hundred and eighty to

make saw logs. The farther north it is, the slower, of course, is its growth. As a rule, the spruce occupies more fertile soil than the pine and reaches its development in a much shorter time. The cut in the State forests for 1897 amounted to 25,737,000 cubic feet or 0.74 feet per acre. Of the total cut, 7,837,000 cubic feet formed cord wood.

"In the 20,382,500 acres of private forest, there was cut approximately 343,000,000 cubic feet each year, or about 17 cubic feet per acre.

"The annual growth per acre of all the forests in the country can be considered as about 19.8 cubic feet per acre. From these figures it can be seen that, while in the State forests the cut is considerably below the annual growth, in private forests the annual growth is only a trifle more than the cut.

"The total cut in both private and State forests may be estimated at between 369,000,000 and 379,000,000 cubic feet each year. The exports amounted to about 132,000,000 cubic feet."

These figures, of course, apply to normal years. Owing to abnormal conditions (to be entered into later) the export figures for 1919 were vastly smaller. Consul Parker W. Burhman reports, from Helsingfors, in Commerce Reports of February 12, 1920, "that Finland's total exports of timber to December 1, 1919, amounted to 423,000 standards (standard = 165 cubic feet) of which 8,000 were exported in February, 10,000 in March, 15,000 in April, 23,000 in May, 59,000 in June, 104,000 in July, 52,000 in August, 55,000 in September, 72,000 in October, and 26,000 in November."

In the "Supplement to Commerce Reports," dated December 20, 1919, devoted to present-day Finland, we find much of interest regarding the country and the abnormal conditions following the World War.

"The characteristic features of a Finnish landscape are forest, land, water, and rock. From these, in the order of importance, come Finland's greatest products and industries; timber, wood pulp, and paper; agricultural products; water-power, and fish; and granite and building materials.

"Finland's forests are its greatest wealth. They gave game for the nomadic inhabitants, and fire, building wood, utensils, and fertilizer when agriculture began. In the center of the country, between the great lakes and the plain bordering the Gulf of Bothnia and along the eastern frontier to the north of Lake Ladoga, the forests are largest and thickest, the principal trees being the pine, spruce and birch.

"During the Middle Ages, a few forest products, such as tar, wooden vessels and firewood, were exported; but exportation on a large scale began with the advent of the sawmill in the middle of the nineteenth century. Since that time forestry products have constituted the country's principal exports. Finland's pre-war exports consisted of great quantities of lumber, pit props, chemical pulp, and paper. It was only at the beginning of the nineteenth century that the forest value of the Crown lands began to be realized. Even at that time, however, they were still given over rather promiscuously to new colonists or to old estates. In fact, only within the last 20 years has there begun a policy of national economy, which has almost stopped the practice of giving over forest lands for individual ownership and exploitation.

"The income from the State forests in 1918 amounted to \$1,000,000, a figure which, according to many, shows that Finland's great and valuable forests were not utilized to the best advantage.

"It was only about 40 years ago that the annually increasing value of timber, wood pulp, and paper exports began to emphasize the destructiveness of forest fires, which sometimes in one year alone

destroyed more than 100,000 acres, until to-day scientific forestry is receiving considerable attention.

"To understand the congested conditions of 1918 and the circumstances leading up to the present enormous stocks of sawn timber, paper pulp, and chemical pulp overflowing all the wharves of southern Finland, it must be noted that, although the year 1917 began favorably for these products, increasing costs gradually surpassed the rise in price, until the fall of the value of the ruble in Russia, into which country by far the greater percentage of exports went, brought disaster. The revolution in March, 1917, with its introduction of the freedom of the press, increased the Russian demand, but the question of transport became practically insurmountable. Despite the combined efforts of buyers and manufacturers, only a limited number of freight cars were procured, and even after the ice-blocked harbors had become accessible in the late spring of 1917, there were not enough cars to convey the goods from the factories to ports of shipment. Because of labor shortage in Petrograd, the few boats that were procured for this traffic were delayed in discharging, and the number of sailings hoped for was greatly reduced. In the summer, while sea traffic was still open, there was a sudden stop in deliveries, owing to the resolution of Finnish paper manufacturers to stop delivery of goods to Russia until a satisfactory conclusion had been reached in the negotiations with the Provisional Government concerning the value of the ruble.

"In 1915 the number of sawmills in Finland was 600, over 100 of which turned out between 300,000 and 400,000 cubic feet annually. Most of the larger mills are situated at or near the mouths of the principal rivers. Thus towns so situated have become large timber exporting centers.

"Despite the wealth of water-power, nearly half of Finland's sawmills are steam-driven, the explanation being that other considerations than accessibility of water-power determined the location and the waste products of the

Continued on Page 46

THE CEDAR OF LEBANON

*The righteous shall flourish like the palm tree;
He shall grow like a cedar of Lebanon.*

Psal. xcii, 12.

C. H. Runtleman, of Flushing, New York, gives some interesting data on the growth in America of this famous native of the Syrian forest

IN Flushing, Long Island, on what was a nursery grounds in the early days, and planted by nursery men some 150 years ago, stands the largest of the

five adult Cedar of Lebanon trees in this country. The tree is now the property of Mrs. Hinman, a sister-in-law of Mr. Runtleman who gives us the information for this article. Mr. Runtleman has, perhaps, as much knowledge of this specie of tree as any grower in the country. The reason for his remarkable success in growing the seedling

is summed up in his statement:

"I believe that had as much sincerity been placed in an effort to grow Cedars of Lebanon as there was an effort to make people believe they would not grow, we would now have them as common as many of the varieties that come from our own country."

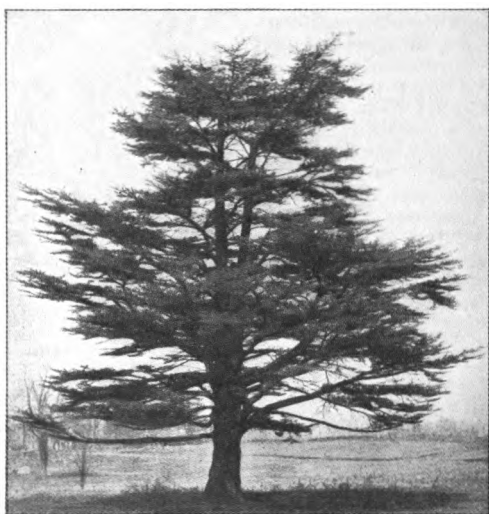
The Holy Land has undergone many changes from early biblical times down to its deliverance from the Turks in 1918. How great the changes that have taken place in Palestine we can only faintly imagine, but still on the sides of Lebanon grow the famous Cedars—although in much less abun-

dance than in the days when King David sent out 80,000 hewers of wood to cut the timber for the Temple.

The Cedar of Lebanon is a native of Syria on the coldest part of Mt. Lebanon.

The tree grows at an altitude of 7000 feet—where there is three or four feet of snow five and six months of the year.

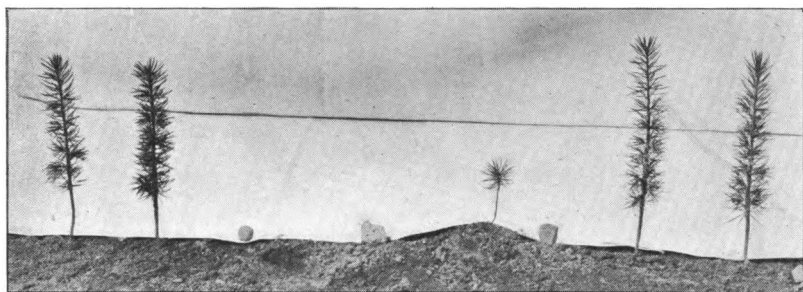
From its superior magnificence the Cedar of Lebanon became with Scripture writers a favorite emblem of greatness, splendor and majesty. The durability and fragrance of its wood caused it to be



Cedar of Lebanon at Flushing, N. Y.

sought for costly building, as the Palace of David and the Temple of Solomon. It formerly covered Lebanon with dense forests, yet the destruction of the trees was so rapid that, in 1740, Pollock counted only 15 trees. Graham measured 12 trees whose circumference was from 22 to 40 feet. Around these there was a grove of several hundred smaller trees, apparently of a different species of cedar.

The Cedar of Lebanon is a coniferous evergreen of the bigger sort, bearing large, roundish cones of smooth scales, standing erect needles one inch long and thick set. The wood is of



The first season's growth of seedlings

reddish hue and very aromatic, reputed almost immortal and incorruptible, of bitter taste which the worms cannot endure. It was for this reason that the ancients used tablets of cedar to write upon, especially for anything of importance. A juice was also drawn from cedar with which they smeared their books and writings to preserve them from rotting. Cortes is said to have erected a palace in Mexico in which were 7,000 beams of cedar, most of them 120 feet long and 4 feet in diameter. The cedar used in the main mast of the galley of King Demetrius measured 130 feet long and 18 feet in diameter.

Mr. Runtleman has had remarkable success in growing Cedar of Lebanon seedlings in this country. He says (and has proved by his own experiences) that they can be successfully grown, and are, in fact, quite sturdy. In the

following he gives a summary of his experiences with the seedlings:

"The four larger seedlings in the picture are 10 to 11 inches high. That is what the seedlings look like from the first season's growth. The little seedling in the center is a white five-needled pine; it represents a fair growth for the first season. It was grown to illustrate and show how much stronger grower the Cedar of Lebanon is than the other needled varieties. It is a universal belief that the Cedar of Lebanon is a slow-growing tree. Not satisfied in stating that it is a slow grower, many insist that the tree will not grow in the United States and that growing seedlings from seeds is impossible. Judge Fields, of Princeton, N. J. planted a seedling in 1842 on his estate called Woodlawn and in 1859 — seventeen years later — it had attained a height of 36 feet."



Mr. Runtleman in his garden with beautiful trees and shrubs as background



"A man who had made a reputation for his goods knows its value as well as its cost and will maintain it."

These words, spoken by Henry Disston many years ago, are even more pertinent today.

"Flimflam" and "con" have no place in the manual of the honest trader. Standard articles are bought on the basis of quality and efficiency and the knowledge that they will run true to their established reputation.

It is not the nice things that we say about ourselves that count; it is, rather, that which others say.

Recently The Barnett National Bank of Jacksonville in discussing reputation stated, "Standard articles such as Disston Saws, Waltham Watches, Yale Locks, and Stetson Hats, are trade makers for America the world over. Incidentally, they give impressive evidence of the enduring results of business based on honesty and reputation."

New and unknown brands spring up over night, soon to pass into the discard, having failed in the acid test, but a reputation for honest dealing, with honest goods made by honest workmen, all of which are required for the successful business, must necessarily be the development from the policies laid down by the founder of a business many years ago and continued by the present generation.

Such is the house of Disston.



"FOR THE GOOD OF THE ORDER"

By JIM

"**T**OM," said Jim, "I've been thinking of the 'Good of the Order.'"

"There is a phrase that, like Charity, is very much abused and also covers a multitude of sins. These remarks are apropos of my visit to lodge last night and my recollection of what transpired after it was announced by the Chair that we had arrived at that stage of the evening's proceedings. It appeared to be an invitation to the members present to unleash any ingrowing desire they had to air their views or grouches on matters and things, regardless of the connection with any possible benefit to be derived by the order involved, and covered a very wide range, including, for instance, High Cost of Living, Parlor Bolshevism, The League Covenant, Lansing's resignation, Doyle's brand of spiritism, car shortage, and the I. W. W. murder trial at Montesano. I think there were a few other subjects. I simply mention these to give you a glimpse of the varied and diversified field available under the head of 'Good of the Order' as I want you to realize when I have one of my verbal outbreaks you are not to conclude that I am mentally impaired, but that I am talking under the caption 'Good of the Order,' and have you understand this means 'Free Speech' in its most untrammelled, unconfined freedom, almost equal to 'Poetic License,' and I intend where it is possible in future to distribute or disburse my gems of thought by that system, and hereby serve notice to that effect so you may govern yourself accordingly, for this good of the order style rather intrigues me.

"That word is my first symptom of the 'new stuff.' 'New stuff,' Jim repeated thoughtfully. "Do you know, Tom, I sometimes doubt if there is any such stuff; most of the so-called matter if examined closely will prove to be just 'old stuff' masquerading in new clothes, with the underwear unchanged; but what's the difference? Analysis in

such matters has a very limited vogue and the average man or woman, I am inclined to think, rather resents the absolutely new, preferring as a rule the undefined, half-recognized quality of familiarity to fully appreciate the newness. I presume it is the same difference in thrill one gets when hearing an old melody and listening to a brand new up-to-date jazz; but to follow this line of talk will naturally lead into the field of psychology, and I don't believe even 'Good of the Order' would be sufficient excuse for any attempt on my part to explore or invade this obscure territory without a guide, one in whom I had implicit confidence, so we will just jog along on more familiar trails, blazed in such a manner as to keep us from getting too far astray in our wanderings.

"Many times efforts to be new in conversational matters are wrongfully construed, and perhaps contemptuously dismissed as attempts to 'get fresh.' Newness and freshness are at times synonymous terms—at other times they don't mean the same thing a-tall. Now the word new should not be confused with the word original, to my notion. Original is absolute, while new is more or less comparative, a matter of degree, so to speak, and depends largely on the quality and class of your listeners. For instance, I heard recently a speaker addressing a public gathering introduce a sort of parenthetical interlude in his speech that I am pretty sure was not original, yet it had a flavor of newness that had the same favorable effect on his audience that a new, made-to-order bit of humorous originality could have produced. He had begun his talk in a fairly audible voice and had proceeded only a very short distance on his oratorical way when a voice from the back of the room dictatorially commanded, 'Louder, speak louder.' The speaker complied by pitching his voice a tone higher a short interval, and again the voice interrupted, 'Louder, louder.' Once more the orator endeavored to obey the com-

mand, but this time the sentence was scarcely completed when the voice rang out still more peremptorily, 'Louder, louder.' The speaker stopped and gazed rather hopelessly in the direction from which came the interruption, then with a strain of anger and indignation perceptible in his tone he said dramatically, 'Friends, there will come a time when all the vast machinery of the universe will stop, all its wheels be motionless. The stars will be blotted from the skies, the moon will reflect no light, the sun will be obscured, black darkness will enshroud the earth; the winds will roar, the lightning flash, the thunders roll, and in that dread hour Gabriel in shining armor will descend from the battlements of Heaven and with one foot on the land and one foot on the sea will pour a mighty blast through his trumpet that will reverberate to the remotest places of the earth, and while its echoes still quiver some dern fool, I've no doubt, will yell 'Louder.' He finished his speech without further interruption from the 'amen corner' or elsewhere to a well pleased audience, the majority of whom thought they had heard something new."—*T. H. C.*

Timber Resources of the World

Continued from page 41

mill furnished sufficient fuel for economical steam-power.

"If the timber be valued at \$0.75 per log and the land at only \$5 per acre, the national forests are worth \$246,769,500 (converted from 1,974,156,000 marks at 8 marks to the dollar), but it must also be noted that in the present circumstances, all raw material is very high in value.

"Another careful calculation of the value of the forests may be noted. In southern Finland, the State owns about 4,200,700 acres of forest land. At the private valuation of \$50.50 per acre, and including every kind of forest, the value of this comes to \$212,135,350. If in northern Finland, only the good forest land is valued, of which there is 11,195,500 acres, and this is estimated to be worth \$15 per acre, the total value

of the northern forests comes to \$166,792,500 and the value of all the State forest land is \$378,927,850 (converted from 3,031,422,800 marks at 8 marks to the dollar)."

The April Cover

In all the range of nature there is no object which so commonly inspires the finer emotions of mankind, and which, if it were removed, would leave the earth so bare of loveliness, as the tree.

Who can help but admire the beautiful specimen on the front cover of this issue as it proudly crowns the great rock, in the crevices of which its roots are so securely entwined as to withstand the storms of ages. The scene is in Estes Park, near Denver, Col.

Trees

(By Joyce Kilmer, A. E. F., Killed in France)

I think that I shall never see
A poem lovely as a tree.
A tree whose hungry mouth is pressed
Against the earth's sweet flowing breast;
A tree that looks at God all day
And lifts her leafy arms to pray;
A tree that may in summer wear
A nest of robins in her hair;
Upon whose bosom snow has lain;
Who intimately lives with rain.
Poems are made by fools like me,
But only God can make a tree.

—*Canadian Forestry Journal.*

Europe Needs Lumber for Reconstruction

It is a conservative estimate that Europe could use about seven billion feet of lumber per year *above its normal consumption* for reconstruction. The estimated requirements of the principal countries are:

England.....	2,000,000,000 feet
France.....	1,500,000,000 "
Italy.....	1,750,000,000 "
Belgium.....	750,000,000 "
Spain.....	750,000,000 "

—*By H. S. Graves, U. S. Forester.*

BIG LUMBER IN THE PHILIPPINES

WITHOUT much question, majority sentiment in the United States runs strongly in favor of the forestry movement and the effort to establish an adequate forestry policy here. But if popular knowledge of the subject were more comprehensive, question might be raised as to why the movement is not more obviously taking account of the forestry conditions wherever the authority of the United States could be expected to make itself felt in the direction of husbanding trees for lumber. Why do we not hear more from the forestry people about the timber of the Philippines, for example? The United States is certainly influential there, so much so, indeed, that the forests of that great insular group might almost be considered as a part of the aggregate timber resources of this country. And the influence of United States forestry experts, if persistently and intelligently exerted, might be expected to bring results in the islands much more swiftly than it would be reasonable to expect in the United States.

More than 700 species of wood grown in the Philippines are of value, either commercially or locally. Some of them are well suited for structural uses, for inside finish, for cabinetwork, and for carriage building. Some provide gums such as those from which gutta-percha and india rubber are made. Some yield nuts, spices or oils. Resins, rattans, sugar and alcohol are also among the products derived from Philippine trees, and bamboo, aside from multifarious local uses, is grown so profusely as to be worth considering as a material for paper pulp. Teak, also, that water-resisting, polish-taking, insect-repelling substitute for mahogany—it is teak logs which the elephants of Kipling's India tales are always so industriously piling, and it is teak which the British handle in such prodigious quantities out of Bangkok, Rangoon, and Moulemein—is found abundantly in the Philippines, so abundantly, in fact, that in controlling the supply there the Americans would be second to the British in the world supply of teak. And no wonder there is great variety

in the woods grown in the islands. Their virgin forests cover about the same area, in the aggregate, as the State of Kentucky. That is to say, about 40,000 square miles. And half as much again in second-growth forest, in itself a great store of lumber and firewood. It is to be noted, also, that virtually 99 per cent. of the timber belongs to the Philippine Government and is under the administrative control of the Bureau of Forestry.

The last term surely would seem to indicate that proper forestation is already provided for this insular source of lumber supply. But a glance at the most recent official report of the Governor-General of the Philippines shows that the proper handling of insular forest crops is not without its drawbacks. Not even the authority of the Government appears to be efficacious to accomplish all that the situation requires. For one thing, ships to take the lumber from the island ports to the countries where it would find a ready market are not available. Large sales and handsome profits are being missed because of this inadequacy. But even more to the point, as regards forestation, is the pernicious habit whereby it becomes possible for an individual to clear a piece of forest, use the land for two or three years, abandon it for a new location, and yet dispute title to the original tract with anyone who may come along afterward and undertake to make use of it.

If the American Forestry movement should go no further in respect to the Philippines than to spread a better understanding of the extent and value of the timber in this wonderful Pacific group, it would be doing a great service. If it could lend its influence to have the Philippine public lands so well surveyed as to head off those squatters who appear to be responsible for indiscriminate cutting, and to encourage the expansion and systematization of forestry efforts in the islands, the results would be far-reaching.—*Christian Science Monitor*.

It is the hardships and the "eternal grind" that have developed a race of men instead of a mass of jellyfish.



SAWDUST

A GOOD MEMORY

The most absent-minded man on record is the fellow who thought he left his watch at home and then took it out of his pocket to see if he had time to go back and get it.—*Ex.*

HIS RECOMMENDATION

Here is a letter of recommendation given by a butcher to a former employee:

"Whomsoefer is de boss—

"Dear Sir—Dis is to testify dot Hans Snyder vorked for me von week. Ven he left I was perfectly satisfied."
—*Ex.*

ONE ADVANTAGE OF A LARGE FAMILY

"Hospitality is all right, provided it is the right kind. But not the kind dispensed by Mrs. Sime of Salt Lake," remarked Senator King of Utah.

"'Won't you stop to dinner?' asked Mrs. Sime of a caller.

"'Oh, no, thanks; you have a large family. I wouldn't think of putting you to such inconvenience.'

"'No inconvenience at all,' declared Mrs. Sime. 'All I have to do is add another cup of water to the stew.'"

HOUSEHOLD HINTS

To remove fruit stains from linen so they will not return—use a pair of scissors.

A little Portland Cement added to oatmeal while boiling will give it body.

To entertain women visitors—let them inspect all your private papers.

To keep rats out of the pantry—place all food in the cellar.

The odor of cabbage, onions and many other vegetables, while being cooked, is offensive to most persons, but it can be destroyed by first coating your stove with rubber.—*We Stole This.*

GREAT LUCK

He chuckles and his smile is bland,

With joy he'd like to holler;

His wife went through his pockets, and
She overlooked a dollar.

The Salt Seller, Jan., 1920.

THE POOR WAITER

Old Lady (who has been lunching with her son).—Here, William, you left this quarter on the table by mistake. It's lucky I saw it, because the waiter had his eye on it.

WRITES WEIGHTY DISCOURSE ON NAILS

The men who make, sell, or use nails will all be deeply absorbed in the following weighty treatise on nails culled from "Life":

A nail is a short piece of iron which a man uses to aim at while he is hammering his thumb. Nails come in various sizes. A tack is a baby nail which is fond of standing upon its head in the dark when you are turkey-trotting around your room in bare feet, trying in vain to locate an electric button. An adult nail is two or three inches long and is found in boxes which are sent to you by express upon which you have to pay the charges, which have already been collected by the express company at the other end. Not being able to find the hammer, you vainly endeavor to extract this nail and others of its kind from the box, both with and without prayer, while your wife looks on with superb disdain.

Nails are also used to build houses, as sinkers on fish lines, and when applied internally to the feet, to promote and foster lockjaw. They come in vast quantities in hardware stores, but when you want just one to drive into the bathroom wall during your wife's absence to hang a razor strop on, you might as well look for a needle in a haystack.

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MAY

1920

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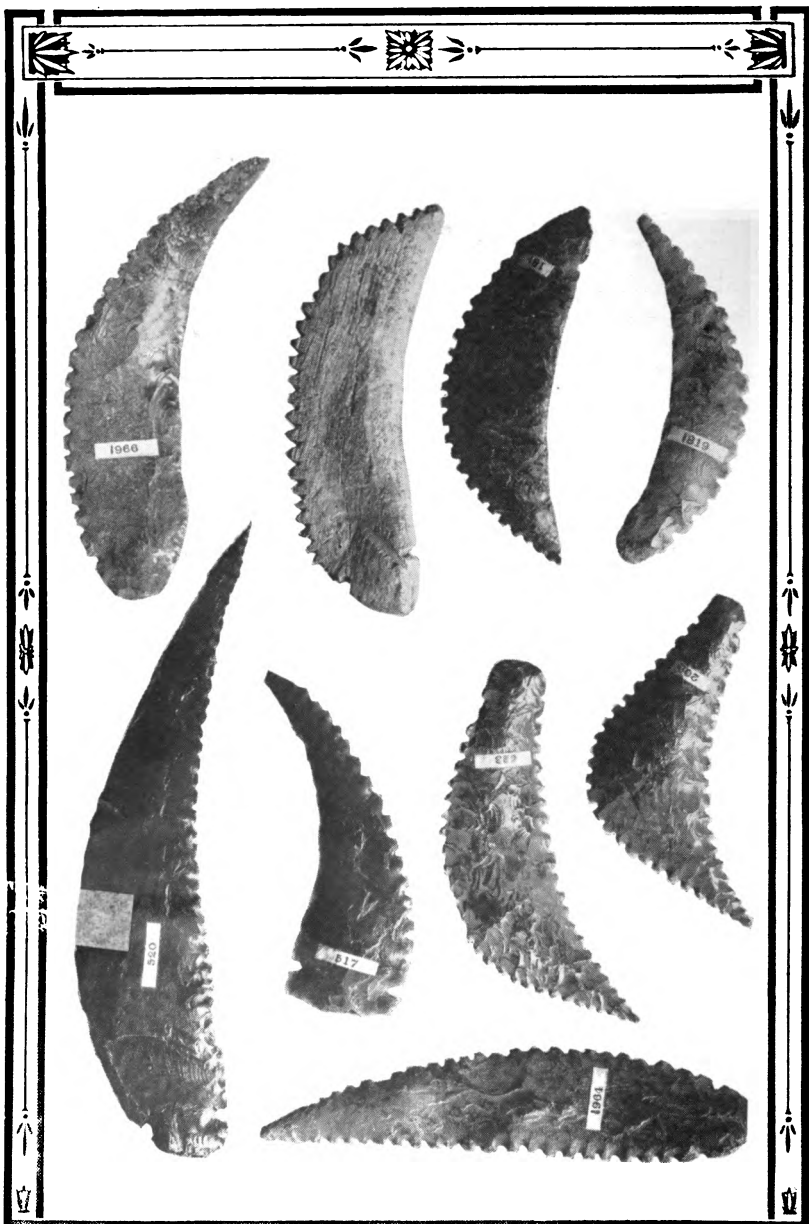
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**PREHISTORIC OBSIDIAN SAWS
OF CENTRAL CALIFORNIA
FROM THE JAMES A. BARR COLLECTION**

See Article by Mr. Barr on Page 55

THE DISTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

MAY, 1920

No. 4

EDITORIAL CHAT

VISION AND CONSERVATISM

Vision is that quality in a man that leads rail-splitters to become presidents; Conservatism is the thing that keeps his mind open to the advice and suggestions that come to him along the way.

Vision is that quality in a business that gives us the wireless and the telephone in place of the pony-express; Conservatism is the thing that keeps businesses out of bankruptcy courts as they climb to success.

It is Vision and Progressiveness on one hand against Conservatism and Cold Analysis on the other that build business.

One furnishes the driving power; the other applies the brakes. Sometimes a business runs wild until it crashes at a turn; sometimes the brakes are applied so strongly that business comes to a dead stop.

Vision is prone to forget that failure is possible; Conservatism forgets that it is necessary to look beyond the present.

No business can be successfully run without both elements—sufficient driving power and adequate braking equipment. Success is attained by the proper balance of the two.

Of the two, perhaps Vision is the thing that is most often lacking. Looking back thru business history, it seems that great success has come to those enterprises that had more than common Vision.

Take, for instance, the present question of forest conservation. Our Conservatism tells us it is new, it is untried, it has hundreds of opportunities of "coming a cropper" and injuring our business.

But we must have the Vision to judge forest conservation in the light of future conditions. We must not allow Conservation to condemn or approve it without first giving attention to Vision's story.

The balancing of Vision and Conservatism is a merciless task—a labor that is never finished. But to those who are successful, the rewards are most generous.

All great industries enjoying the fruits of world-wide prestige, have attained their position because of ability to plan for the future and, at the same time, to recognize their limitations.

*Quality
Sells*

OUR VANISHING TIMBER

**Experts Estimate Virgin Stands Will Be Depleted In About 50 Years.
Conservation, Reforestation, and Legislation Necessary
To Avoid Lumber Famine**

By GIFFORD PINCHOT, Commissioner of Forestry, of Pennsylvania

(Written Specially for the CRUCIBLE)

WITHOUT saws to fell trees and cut boards from logs we should have a hard time nowadays to keep roofs over our heads.

Without trees we should have but little use for saws and should stop making them. No doubt there will be plenty of saws so long as they can be kept busy, but unless we change our present tactics quite radically the time will soon come when saw timber will be exceedingly scarce in the United States, and then we shall have but little need for saws.

The situation is already much more critical than most people realize. Of

course the present high prices of lumber make the ordinary citizen sit up and take notice, but he seldom thinks the matter out from the ground up. There is, of course, an under-production of lumber in some regions at the present time, and the demand in general exceeds the supply. Such matters naturally affect prices, but the real trouble lies much deeper. It is the growing shortage of the raw material. We are consuming our timber resources about three times as fast as your young forests are growing, which makes it perfectly clear that sooner or later we shall reach the end of our rope.



Results of conservative methods of Logging in the National Forest. Young trees left for a second cut to supply need. Tops and branches piled for burning. The life of the forest is assured.

The best expert advice leads us to believe that we shall have cut down and used up all of our remaining virgin stands of saw timber in about fifty years. Does it matter very much, however, whether we are going to reach the end in twenty-five years, or fifty years, or even one hundred years? We are not dealing with an agricultural crop, such as wheat, where a shortage can be made good in the course of a year or two. We are dealing with a crop which takes from fifty to a hundred years to mature, and common sense dictates that we should start now to replenish our wasting stores, instead of talking about it for the next fifty years and then beginning to act when we have no timber left.

A famine either in grain or timber is felt, and felt seriously, long before the supplies are entirely exhausted. The shortage is relative, and in its early stages it is largely a local problem—a question of meeting steadily increasing demands from sources farther and farther from the chief centers of consumption. Excellent examples of this are the serious straits in which the manufacturers of wood pulp and box material in the northeastern states now find themselves.

Ten or fifteen years from now the bulk of our lumber must come from the Pacific Coast, and the greater part of it will be used east of the Mississippi River. This means an additional cost to the consumer of about 650 million dollars a year in freight charges.

What is the cause of our present difficulty, and what shall we do about it?

Originally we had about 850 million acres of virgin forests. Today we have less than 150 million acres left. Of the

other 700 million acres, some 350 million have been put to agricultural uses—a very good thing indeed. About 250



Results of destructive lumbering in Pennsylvania. Smaller trees and seedlings killed by fire. The forest soil destroyed. Forestry students, Penn. State College, making examination of the effect of fire.

million acres have been so slashed and burned that they are producing only a small amount of new timber of inferior grades, and 100 million acres have been so thoroughly devastated by the axe and by fire that they are producing nothing at all. They have become barren wastes. This unfortunate condition has come about because we have treated the forests like a mine.

When a ton of iron or coal is taken from the ground it is gone for good, and the mine is depleted just so much. When a thousand feet of lumber is cut from forest lands, it may be so cut as to leave the land producing a new crop, for timber is a renewable resource. Forest land is our capital; timber is what this capital produces. When we devastate forest land we deplete our capital, a very unwise thing to do.

If our timber lands had been properly handled in past we should now have forests of all ages from young to mature stands, growing upon the land we have cut over, and there would be no danger of a timber shortage.

Is it a difficult thing to prevent devastation of forest soils? Quite the contrary. It is a simple thing, and an inexpensive thing, provided we tackle the problem when we harvest our stands of virgin timber.

What sort of lands are we concerned with? We are concerned with commercial timberlands which are privately owned, for these lands comprise four-fifths of our standing timber, and from them comes 97 per cent. of our annual cut of lumber. The forest lands owned by the nation and the States are already taken care of. What we need, therefore, is nation-wide legislation which will compel private owners of forest lands to harvest their



Second growth White Pine. The result of protecting young growth and seedlings from fire.

crops in such a way as to keep their properties productive. Compulsory and nation-wide legislation is necessary in order to place all lumbermen on a similar competitive basis, and because no results worth while would come from the voluntary action of those few owners who are willing to operate with regard for the public interest. Legislation by the separate states is also essential on matters connected with forest taxation and forest fires.



Immense amount of material left in the woods after logging. Fire has already destroyed the greater portion. The utilization of such material is one of the problems of conservation.

I stand for decent citizenship. I am against the corporation when it does wrong, and I am against the mob when it resorts to violence.

—Theodore Roosevelt

THE PREHISTORIC OBSIDIAN SAWS OF CENTRAL CALIFORNIA

By JAMES A. BARR, Advertising Manager,
Sierra Educational News, San Francisco

(Written Specially for the CRUCIBLE)

See illustration of these Saws, frontispiece on page 50

AMONG the original saw makers were the Indians of Central California. Away back before Columbus ventured across the Atlantic, they were making saws of real "Disston Quality"! Just how the saws were made or how they were used or when they were made, no one can tell. Only the ancient camp sites and mounds and burial places are left and even these are now mostly obliterated by the hands of the plowman.

When the writer was a boy, something over forty years ago, he began to study the mounds, burial places and implements of these ancient saw makers. The Barr collection represents the exploration of more than 300 village, camp site and burial places. In all, the collection comprises fully 6,000 implements in obsidian, stone, bone, shell and clay.

Climate and environment combined to make the Central California region an ideal home for the Indian. The many rivers and channels were filled with fish and mussels. Water fowl swarmed in countless thousands. Elk, antelope and deer were plentiful. The native California oak furnished a yearly supply of acorns. With such a varied and unfailing food supply, with a mild climate, and protected by mountain ranges for the most part from the incursions of the tribes to the north, east and south, the Indians of the great central California region developed through generations a culture peculiarly their own. With a constant food supply and with little need for war, they had ample time for the manufacture of implements representing the highest type of Indian workmanship. Many distinctive forms in obsidian, stone, bone, shell and clay were developed in this favored region.

For more than forty years the writer has been on a "still hunt" for the prehistoric product of the saw makers of Central California. The collection now includes 158 of these really wonderful implements. This seems to be almost a "corner" on the product.

These saws vary from $\frac{1}{8}$ inch to $4\frac{1}{2}$ inches in length. A few are without serrations. Some are serrated on the convex edge; some on the concave edge; some on both edges. Most of them are notched as if for a handle. A few are double saws; in two, the outer edges form a right triangle and the inner the segment of a circle. Three are of soapstone while all others are of black obsidian. The soap-stone saws were, of course, for purely ceremonial purposes. One can only guess as to the use of these rare implements. All are fragile and could not have been used for sawing wood. One guess is that they may have been used to skin game or fish. Another guess is that they were used to scarify the flesh on ceremonial occasions. Owing to their extreme rarity it is certain they were not in common use.

In most cases the mounds and camp sites where these saws were found seem to have been used both as village sites and burial places. No part of any mound or camp site seemed to have been especially set aside as a burial place. Most of the saws were found near charred human bones. The most notable find was thirty-one obsidian saws, distributed in the form of a semi-circle around what seemed to be the feet of what was surely the "prince" of saw makers. With these saws were twenty-eight pieces of obsidian, evidently a stock of material ready for use.

Continued on Page 63

EARLY SAWMILLS IN PENNSYLVANIA

**Forty of them in Philadelphia County in 1760.
Chester, Lancaster, Northumberland and Cumberland
Counties, have most in 1810**

IN the present article we propose to extract from the pages of Scharf and Westcott's History of Philadelphia and Bishop's American Manufactures something about early sawmills in Pennsylvania.

The proof of the industry of the early Swedes is to be sought in their works. They were a scattered, ignorant race with no capital, few wants, and no occupations but those of husbandry and hunting. They were only a thousand strong when Penn came over, yet they had extended their settlements over a tract nearly two hundred miles long and seven or eight miles deep, building three churches and five or six block houses and forts, clearing up forests and draining swamps to convert them into meadow land. They had discovered and worked the iron deposits of Maryland in two or three places. They had built about a hundred houses, fenced in much of their land and made all their own clothes, importing nothing but the merest trifles, besides arms and ammunition, hymn-books and catechisms. They had built grist-mills and sawmills, having at least four of the latter in operation before Penn's arrival. According to Ferris, however, the frame of the house in which Governor Lovelace entertained George Fox in 1672 was made entirely of hewn timbers, none of the stuff being sawed. This house was standing a few years before he wrote in 1845.

Joost Andriansen & Co., in 1658, proposed to build a sawmill and grist-mill below the Turtle Falls, near New Amstel (New Castle) in the present State of Delaware. In a list of articles to be sent to the colony on the South River, or Delaware, in November, 1662, was iron-work for a sawmill for which was paid four hundred and fifty florins (\$180).

In reference to a mill existing a few years later on "Carcoon Creek." It was represented to the Upland Court, in March, 1678, that in consequence of the land being daily taken up around it, it would soon be left destitute of timber, and the Court therefore ordered one hundred acres of land to be appropriated for its use. (Hazard's Annals of Pennsylvania). The Swedes also had a mill supposed to have been a sawmill in Frankford, before the landing of Penn. It stood near the house of William Kinsey, the first erected in that place.

A sawmill appears to have been built for the use of the Colony by the first settlers under the Proprietary, soon after their landing. In a letter to the Free Society of Traders in 1683, giving an account of Pennsylvania, William Penn alludes to their sawmill for timber, and the glass house as being "conveniently posted for water carriage."

Richard Townsend, who came from England with Penn, and built the first grist-mill within the present limits of the city, also erected a corn and saw-mill on Chester Creek in Delaware Co.

"This mill," he says, "I bought ready framed from London, which served for grinding of corn and sawing of boards, and was of great use to us." (Clarkson's Life of Penn). This mill referred to by Penn appears to have been the joint property of himself, Caleb Pusey, Samuel Carpenter and others, probably including Townsend, by whom it was erected and superintended. The iron vane with their initials which surmounted it is still preserved.

Although corn mills were built in considerable number by the first German and English settlers, sawmills do not appear to have been numerous in the neighborhood of Philadelphia. They were said, a few years after the landing of Penn to have a sufficiency of mills,

and in different places; but sawmills are not particularized. Hand sawyers are mentioned as in demand in 1698, and received, for sawing pine boards, six to seven shillings, which would indicate increased demand for lumber without a proportionate decrease in the cost of production. Boards were then ten shillings per hundred; shingles ten shillings per thousand; timber six shillings the ton; and wheat four shillings a bushel.

In the neighboring county of Bucks, settled by English Quakers about this time, there appear to have been no sawmills as late as 1731, when the framed houses were covered with "nice shaved clap-boards" and the boards for floors and partitions were all sawed by hand. (Watson's History of Pennsylvania.) At least eleven mills were erected near Wissahickon, within the late township of Roxborough, in the northwest part of the city, previous to 1779, but did not include a sawmill according to a historical sketch by H. G. Jones. The "Chester Mills" including a sawmill, in

part belonging to the estate of Jonathan Dickinson, on Chester Creek, were advertised for sale in 1723.

The Mills upon Scull and Heap's Map of 1750 are as follows: The old Swedish Mill near the Bell Inn, is marked as the "Snuff Mill" near Cobb's Creek, north of the Bell, is Coultas' sawmill. A fulling mill was on the south side of the road, now called the road to West Chester, near the intersection of Cobb's Creek. Shultz's paper mill is northwest of Merion Meeting. A mill is marked on Mill Creek near the Schuylkill, the site afterwards called Moylandville. A sawmill is marked on the east side of the Schuylkill and the north side of Falls Run above the Falls. Sickles' Mill is near the same stream, and on the east side of the Wissahickon Road. Robeson's mill was farther north, at the mouth of the Wissahickon Creek. A paper mill stood near a branch of the Wissahickon, about the site of Rittenhouse' mill.

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An Early Pennsylvania Mill

THE IDLE MILLS OF DVINSK, RUSSIA

"Machinery! Give Us Machinery!" Is the Cry of the Working People

(Courtesy of the American Red Cross)

DVINSK is a city which once had seven lumber mills working night and day. Yet today, although Dvinsk is in what still remains one of the richest timber districts of Russia, there is no saw mill, planing mill, wood factory or factory of any kind running. Where ten thousand people were formerly employed, less than one hundred are now working, while the population of the city is reduced from 150,000 to 30,000 people.

It is not only that the factory buildings are gutted, roofless and windowless, every bit of their machinery has

been either smashed or shipped away, and the mill industries of the place are wiped out.

But the business men of Dvinsk who are thinking of the reconstruction of their city find it impossible to open up their mills or factories. They cannot even import machinery. For the invaders did not stop with wholesale destruction and robbery of the city's industries; when they went they took literally the railways with them, wrecking the roads behind them and confiscating the entire rolling stock of the district. There were just two engines

Continued on Page 62



The picture represents a typical residence of the upper class in many sections of Poland and Russia.

In normal times the large rooms are well heated by the immense stoves, but the fuel shortage has made them desirable today only as prospective firewood. An interesting feature is the entrance, never on the street level, but on the second floor, reached by a flight of covered steps. The windows are sealed tight and the rooms are never ventilated. The exception to this universal rule, as noted in the illustration, is due to the revolt of some American Red Cross officers who could no longer stand the stale air and forced open one of the windows.



Jack Bradshaw was a saw grinder employed by Henry Disston, when the saw business was in its infancy. Outside of the fact that Jack was a saw grinder, he was English, and a wee bit too fond of his ale, and of stopping out after pay day.

Henry Disston loved his workmen and treated them on a big and generous principal, but old Bradshaw was a very trying case. Finally, the patience of the master workman was tried beyond the limit and he was forced to discharge his otherwise efficient workman. A few days after, as Mr. Disston was making his usual daily round of the saw shop, he came across old Jack working very complacently at his grind-stone.

This caused the boss to sharply remark: "Jack, what are you doing here? Didn't I discharge you and tell you to clear out?"

"Yes," replied Jack, "but if you don't know when you have a good workman, I know when I have a good boss."

On down through grandfather, father, and son, it has been a natural development in the policy for master worker and his men to be on friendly terms.

Significant of this fact, as typifying the personal integrity, experience, and continuity of quality methods, is the following employment record:

21 men	50 to 60 years
80 men	40 to 50 years
180 men	30 to 40 years
330 men	20 to 30 years
609 men	10 to 20 years

Working beside the above 1220 men, are more than 2300 younger saw and tool makers of highest skill, very largely the grandsons of the older men. With the entire organization of over 3600, Disston progressiveness has been made a life habit.





ALASKA

WE may obtain a general idea of the forest resources of Alaska from "Forest Resources of the World" published by the U. S. Government, 1910, from which we quote as follows:

"Alaska has approximately 107,000,000 acres of forest land, of which 37,000,000 acres, situated along the south coast and the river valleys, bear relatively heavy forests of valuable species, while the remaining 70,000,000 occupy the interior to the limit of tree growth. The interior forest consists for the most part of scattered stands, and only from 50 to 75 per cent. of it can be said to be actually forested, estimating these stands to run 500 board feet to the acre; the interior forest contains not over 21,000,000 feet, board measure. This timber runs small and knotty, and is insufficient to supply the needs of the mining population, largely because much of it is inaccessible with the present means of transportation. With the increasing development of mines it is safe to assume that this interior forest will continue to be needed for local consumption and may fall short of supplying it. The forest of the south coast and of the river valleys are often dense and the trees large. Toward the north the trees fall off in size and the forest gradually assumes the character of the northern forest. Estimating the average stand per acre at 2000 feet, the total stand for this forest amounts to 75,000,000,000 feet, board measure, not quite twice the annual lumber cut of the United States. In this part of Alaska, fisheries and oil developing are the principal industries, so that the home consumption of timber is not so great, and in all probability this region

may, in the future, when transportation is developed, be able to export timber to the United States. However, owing to the relatively small amount of forest, it can contribute but a very small part of the timber used by this country."

The National Forests of Alaska

The most accessible and promising portion of Alaska's timber is comprised in the national forests of which *The Paper Mill*, under date of January 10th says:

"There are two national forests in Alaska, the Tongass, with the headquarters of the supervisor at Ketchikan, and the Chugah, the supervisor of which resides at Cordova. The timber in these national forests is for the use of the public. More than 6,000,000 feet of timber was cut in the Prince William Sound region last year by the lumber mills and canneries operating in that vicinity.

"While the timber in the national forests of Alaska cannot be compared with the products of outside forests from a standpoint of commercial lumber, still the Alaskan tree cannot be surpassed anywhere for making paper pulp, and the water-power necessary to such an industry is furnished by numerous mountain streams. The timber is also adapted to the making of box shooks to be used by local canneries."

From "INTERNATIONAL YEAR BOOK—1918"

"The receipts from the national forests in 1918 were \$96,939, with expenditures of \$54,411. There were cut 47,901,710 board feet of lumber, besides about 6,000,000 feet furnished free to the Alaska Engineering Commission for use in the government rail-

way construction. Alaskan lumber is now cheaper than the foreign, the latter imports having decreased over 15,000,000 board feet from 1917.

In regard to national forests (including those of Alaska), R. S. Kellogg in "LUMBER AND ITS USES" says: "The national forests will become increasingly important as time goes on, since they are so managed as to insure a permanent timber crop. All timber which can be cut from the national forest without impairing watershed protection is freely offered for sale. The magnitude of the government timber holdings and their potential supply of forest products, are but little appreciated by the general public."

Pulp Wood Possibilities of Alaska

At present, owing to the great shortage of pulp and newsprint paper, we are beginning to look to Alaska for a supply of that commodity and it is probable that our neglected northwestern step-sister will prove to possess an agricultural and timber wealth only awaiting intelligent encouragement and development and exceeding in value and permanency the gold of the Klondike; as have the orchards and farms of California, which prosper, while the gold craze of '49 remains but a picturesque memory.

The Newsprint Service Bureau, in a recent circular, states that "the pulp wood forests of Alaska, which are chiefly spruce and hemlock, would possibly produce, under careful management, a continuous yield of 2,000,000 cords per annum or about one-third of the present consumption of pulp-wood and products manufactured from pulp-wood in the United States.

"The national forests of Alaska have a coast line of 12,000 miles and are estimated to contain 77,000,000,000 board feet of standing timber. Within the last ten years, the forest service has sold 420,000,000 feet of timber in the Alaskan forests, from which have been produced lumber, box shooks, railroad ties, piling, etc., but no pulp-wood. With its limited funds for timber surveys, the forest service has been handicapped in exploring the timber resources of the territory, but has exerted every effort to develop the use of these resources. The sale terms offered

by the forest service have not delayed the development of this industry, but the obstacles have been the enormous transportation difficulties, invoking prohibitory freight rates, the lack of labor, and of towns, wharves and all supply facilities and the very large investment required for installation of paper and pulp plants."

"Alaska wants to throw open her millions of acres of national forests so that the billions of feet of paper wood of the Northland can relieve the pulp and newsprint famine," Governor Thomas Riggs, Jr., of Alaska, declared in Seattle recently, according to the New York Journal of Commerce of February 11th. Governor Riggs was in Seattle on his way to Washington where he expected to help pressing legislation intended to remove restrictions and allow pulp manufacturers to go into the Tongass and Chugah reservations, the Northern territory's two great reserves.

"Pulp and paper men are anxious to go to Alaska and establish mills as great as those operated in British Columbia, not far south of the Alaska boundary line" the Governor asserted.

"Several hundred million of good pulp-wood, including western yellow pine, hemlock, Sitka spruce, white fir and lodge pole pine, are on the forest reserves alone.

"The Tongass reserve in southeastern Alaska, is especially adapted to the manufacture of pulp and paper, forestry officials have reported. There is plenty of water-power, ocean harbors open the year round, timber skirting the water and weather similar to that of the Puget Sound."

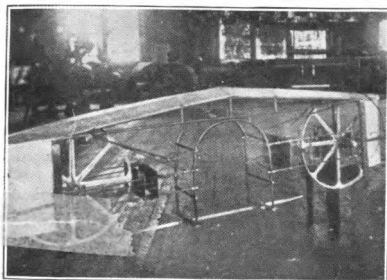
Confirmatory of the above, the Business Section of the Public Ledger of January 28th, quotes E. C. Erickson, employe of the United States Bureau of Forests, recently returned from Alaska as holding that the forest of Alaska offer a solution for the paper shortage problem. "In ten years virtually all the timber available for paper making will be gone in Wisconsin, Michigan and Minnesota," he declares. "The paper shortage will not be relieved until some promoters go to Alaska and establish pulp mills. Large capital would be needed to finance the project."

A New Tree Saw

"Below we show a portable band saw, devised by H. W. Howland, of Nacogdoches, Texas, which is adapted to fall ordinary sized trees and cut them into lengths afterwards. A copy of the patent produced by Mr. Howland on this device appears to afford him good protection, and the whole layout shows the ingenuity of saw filers. We believe, as a class, they are the most ingenious set of men connected with Lumbering." Thus wrote the editor of the Popular Science Monthly upon receiving the following letter from Mr. Howland:

In reply to yours of the 4th, wanting to know about my tree saw, this information I will gladly give you, not so much for the publicity, but for the many courtesies you have shown me.

I am mailing you picture of it today. This picture I am sending you is of the machine I built up in the filing room, and you might say it is all made by



Howland's Portable Band Saw

hand except the wheels and motor. Two men can handle it easy. On the trial, the men that formed the company now have it on a royalty, timed me, and I, with the assistance of a negro, cut a twenty-one inch tree down, also notched the tree with the saw in two minutes, seventeen seconds (2:17). I also cut this tree up in stove-wood lengths, starting at the butt and going to the top, on an average to the cut of twenty-one seconds.

The only trouble we found was that the motor wasn't strong enough as it wouldn't hold up to the speed that the

machine and saws would stand. The company is now having a special motor built and I expect after it is completed they will be ready to do business.

The day of the trial I sawed several trees and made my own electricity. I made the machine as near fool-proof as I could and I think it will be a great thing for the lumberman where the timber isn't too big, as I don't think it would work in large timber.

If you could see my filing room, you would think I was an Edison, with the labor-saving devices I have.

Idle Mills of Dvinsk, Russia

Continued from Page 58

left when the Poles entered the city. Thus, although this district is rich in timber, there is no means of transporting wood into the town.

So this city of saw mills is freezing to death. With all due apologies to Coleridge one might paraphrase his immortal lines in this way: "Lumber, lumber everywhere and not one stick to burn."

A ripping and tearing of timber and boards and spikes; a crowd of white-faced men, women and boys, in rags, fighting for a piece of plank, even for a splinter of pine siding; a pretty gable-roofed balconied cottage, torn joint from joint, staring windowless and doorless in its death throes at the wrecking mob; a sagging of joists and beams, then a crash, and a riotous scramble of the crowd for the spoils. This is a common scene in Dvinsk today.

It is a city of dismantled homes, and every day sees still more of them torn down and burned for fuel. In hundreds of cases, nothing is now left of these houses except the stone and mortar of the foundations and the chimneys.

The saw mills of Dvinsk are idle while the populace tear down the city over their heads to save themselves from death by freezing.

The American Red Cross has carried food and clothing and medicines to Dvinsk in large quantities to relieve the immediate suffering. But even the American Red Cross, omnipotent as the simple peasants believe it to be, cannot bring machinery into this city of silent factories.

Early Sawmills in Penna.

Continued from Page 57

Buzby's mill was upon Tacony Creek, near the junction of the Wingohocking.

In 1760, the assessors reported within the County of Philadelphia, forty sawmills. Oak, hickory, walnut and other lumber, either sawed near the city, or rafted down the Delaware, Schuylkill and other streams, was always abundant in the markets of Philadelphia, and was exported in considerable quantities. Mills for its manufacture were speedily multiplied on the rivers in the interior, where timber abounded. The industrious Germans of these counties had many mills. In 1786, within 39 miles of the Borough of Lancaster, one-third of whose population were manufacturers, there were sixteen sawmills. In Delaware, which constituted the three lower counties of Pennsylvania, sawmills existed on the Brandywine, Christiana, and other streams. Some of the first erections in this part of the country were within the present limits. Vincent Gilpin, in 1772, owned flour and sawmills on the Brandywine, two miles from Wilmington. There was also a sawmill within the borough.

The first saws made in Philadelphia were manufactured prior to the Revolution. The export of boards and scantlings from the port of Philadelphia in 1765 was 783,000 feet, the value of which at 3 pounds 10 shillings per M was 2470 pounds. Staves, heading, and shingles were exported in the same time to the value of 28,450 pounds. The export of planks and boards in the years 1772, '73 and '74 were respectively 1724, 4075 and 3309 thousand feet.

The census of 1810, from eleven out of 26 states and territories, returned 2526 common sawmills, and 21 mahogany mills, of which 1995 common sawmills and all the mahogany mills belong to Pennsylvania. The quantity sawed was 94,000,000 feet, of which 74,000,000 was in Pennsylvania. From New York and several lumber States, there was no return. Chester, Lancaster, Northumberland, and Cumberland had the greatest number of mills in Pennsylvania.

Towards the close of the eighteenth century, the improved mechanism of sawmills and grist-mills and the increasing value of lumber caused great quantities to be rafted down the Susquehanna to Baltimore and the Delaware to Philadelphia. The invention about the same time of arks, a species of huge boat or barge, constructed of sawn planks, capable of carrying 500 barrels of flour, or great quantities of lumber and other produce, and which were afterward broken up and sold for lumber, gave an impulse to the business.

The Prehistoric Obsidian Saws of Central California

Continued from Page 55

To show the painstaking care used by a man with a hobby in keeping data, I quote from field notes taken twenty years ago in making note of one of these saws: *See illustration Page 50*

No. 1964. Black obsidian saw. Serrated on both edges. $3\frac{1}{2}$ inches long. With this skeleton were found 8 saws. Five were of obsidian, all longer than the average. Three of the saws were of a new type being made of soapstone. The 8 saws were found in ashes and charred coals just above head of skeleton. The saws were in a compact bunch seven inches long. Between right arm and body was a small pipe. Under the head was a broken arrow point. By the right arm were two pestles. Wampum on breast and by arms. Skeleton 2 feet deep. Lying North and South, head to North. Island mound. November 6, 1900.

In delicacy, in beauty of design and completeness of finish these obsidian saws represent the highest type of prehistoric craftsmanship. And yet consider with what crude tools they were made. Without metals of any kind, the saw maker's only tools were crude bits of stone mixed with Indian patience. But their product endures and demonstrates a very real, even if prehistoric, "Disston Quality."



SAWDUST

OPTIMIST!

Remember the steam kettle—tho' up to its neck in hot water it continues to sing.
—*Shur-On Chronicle*.

UNGRATEFUL WIDOWS

Frank Holland: "Did she return your love, Bill?"

Bill Berry: "Yep, she said she had no use for it."—*Ex.*

WELL NAMED

Tenderfoot: "Why is your little brother named Bill?"

First Class Scout: "Because he was born on the first of the month."

DID WELL TO SING AT ALL

A celebrated vocalist was in a motorcar accident one day. A paper, after reporting the accident, added: "We are happy to state that he was able to appear the following evening in three pieces."—*Normal Instructor*.

DEPENDS ON CIRCUMSTANCES

Tourist: Who is the best doctor in the village?

Native: Wal, I allus recommend Dr. Killumquick.

Tourist: Are you a good judge?

Native: Jedge, no, I'm the undertaker.—*Ex.*

SOME MACHINE

While Haislip was here about two weeks ago he asked Rush if he had ever heard about those machines that can tell when a man's lying.

"Sure," answered Rush.

"Have you ever seen one?" Haislip asked.

"Seen one!" Rush comes back. "Well I guess so, I married one!"—*Ex.*

TAMPERING WITH NATURE

The weather man's notion of daylight saving is matched by that of the pious old lady who "hopes the government won't begin to fuss with the time," as she wants her clock to run "just as the Lord intended it should."

—*R. R. M. in the Boston Herald*.

PRESENCE OF MIND

The newspaper humorist went courting. He stayed late, very late, so late that the old man called down to his daughter, "Phyllis, hasn't the morning paper come yet?"

"No, sir," answered the funny man, "we are holding the form for an important decision."

And the old man went back to bed wondering if they would keep house or live with him.—*Boston Transcript*.

A SAD SONG

Among the passengers on board a ship crossing the Atlantic recently was a man who stuttered. One day he hurried to the captain. "S—s-s-s—" he stuttered.

"Oh, I can't be bothered!" said the captain angrily. "Go to somebody else."

The man tried to speak to every one on board, but no one would wait to hear what he had to say.

At last he came to the captain again. "Look here," said the captain, "I can tell you what to do when you want to say anything! you should sing it."

Suddenly, in a tragic voice, the man began to sing:

"Should auld acquaintance be forgot and never brought to mind?"

The bloomin' cook's fell overboard and is twenty miles behind."

—*Philadelphia Star*.

DIS

THE

DISSTON CRUCIBLE

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NOV 1920



JUNE

1920

THIS IS THE
BIG SAW
NUMBER OF THE
DISSTON CRUCIBLE
ANNOUNCING THE MAKING
of
**THE LARGEST
SAWS
IN THE WORLD**

by
Henry Disston & Sons, Inc.
PHILADELPHIA, U. S. A.

THE DISSTON CRUCIBLE

PRICE 10c PER COPY

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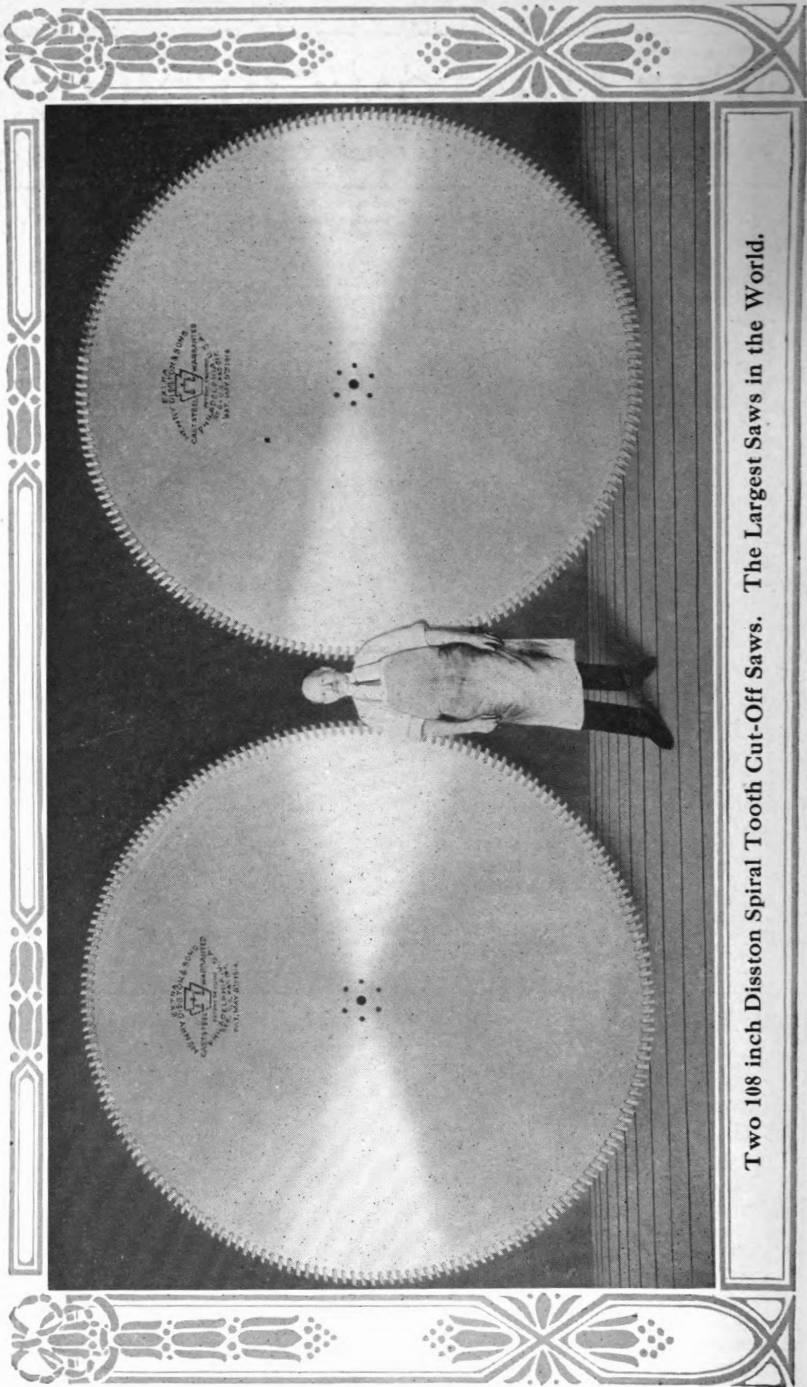
HENRY DISSTON & SONS
INCORPORATED

Keystone Saw, Tool, Steel and File Works
PHILADELPHIA

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Two 108 inch Disston Spiral Tooth Cut-Off Saws. The Largest Saws in the World.

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

JUNE, 1920

No. 5

EDITORIAL CHAT

LEADERSHIP

Since its inception 80 years ago, the House of Disston has constantly held the place of leadership in the saw-making industry.

Disstons were the first—

- To make Crucible Sheet Steel in the U. S.
- To make high-grade steel by electricity in the U. S.
- To build and install automatic machines for toothing saws.
- To introduce in the U. S. bandsawing machines for cutting wood.
- To harden saws under specially made dies, thus keeping the saws flat.
- To temper saws under hot dies, which insures uniformity of temper.
- To use automatic machines for grinding saws.
- To "stiffen" saws, thus restoring natural spring after saws are worked upon.
- In the U. S. to make Inserted Tooth Circular Saws for sawing metal.

As a matter of fact, much of the saw-making machinery in use in the Disston plant today was designed and originated by Disston workmen.

All this—improved and specially designed machinery, 80 years of leadership, highly skilled and trained workmen—gives us facilities for turning out a product of unequalled quality.

It is natural, therefore, that when the Coats Shingle Company was in need of saws larger than any that had ever been made before, Disston should be chosen to make them.

*Quality
Sells*

THE LARGEST SAWS IN THE WORLD

Henry Disston & Sons, Inc., Make Two Huge Circular Saws 108 Inches in Diameter to be Used in Cutting the Big Trees of the Pacific Coast

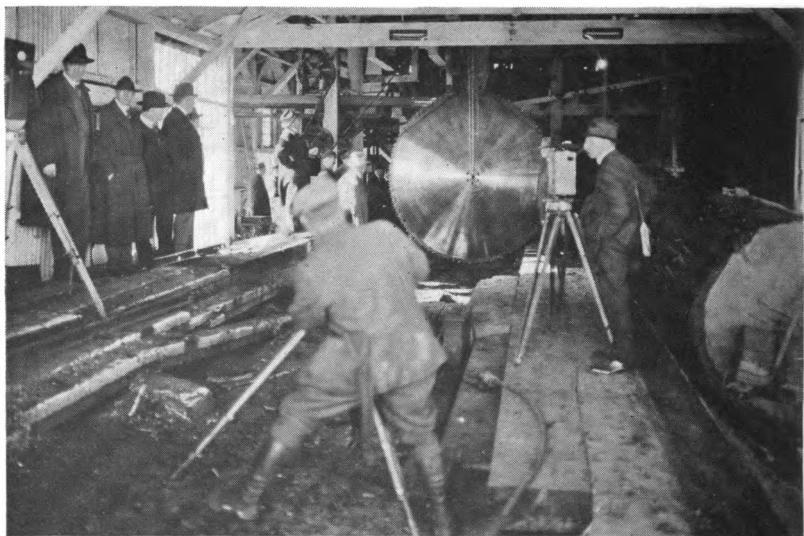
IN the making of large Circular Saws, Henry Disston & Sons, Inc., have had much experience. As long ago as 1876 they made one 100 inches in diameter for exhibition purposes. Some years after they made another 100-inch saw for cutting stone, each tooth of which was studded with a black diamond to give the necessary cutting edge.

But when it was suggested that they make Circular saws 108 inches in diameter to be used in cutting shingle bolts, most people laughed and thought the idea crazy. The strain would be too great, no mandrel could hold, a saw with a surface so large could not run straight and true. But even as Marconi accomplished his idea of the wireless telegraph, after all the world

mocked, so has the Disston firm done what seemed impossible.

Henry Disston & Sons, Inc., recently completed the two Largest Circular Saws ever made. These saws are now in use at the Coats Shingle Mill at Hoquiam, Washington, for cutting shingle bolts from the large trees of that section.

Each of the new saws measures 108 inches (9 feet) in diameter, and in the rim are inserted 190 teeth. One may gain some idea of so tremendous a saw by comparing it with a 54-inch saw, which is large as we ordinarily think of the term. The 54 inch saw requires for its making an ingot of steel weighing approximately 180 pounds, and its weight when finished is about 125 pounds. The 108 inch saw started



"Movie Camera-Men" on the Job at the Installation of the Big Saws. These Pictures Were Later Shown in Fox, Gaumont and Pathé News Serials

out as an ingot weighing 1140 pounds, and after reheating, rolling and trimming, the remaining weight was about 795 pounds. In size, the 108-inch saw is four times as large as the 54-inch saw.

The turning out of a huge saw is a difficult process when one realizes that the ingot must be not only fashioned into a huge plate exactly straight and true, but also that the steel must be uniform in quality throughout the entire surface. Such are the facilities and improvements at the Disston Works that the standard machinery was used throughout. All that was needed in addition was extra man power as "holders-up" during the smithing process.

These saws, after being thoroughly tested at the factory, were crated and loaded on a box car (an "automobile car" was required to carry them) for their long journey to the West Coast.

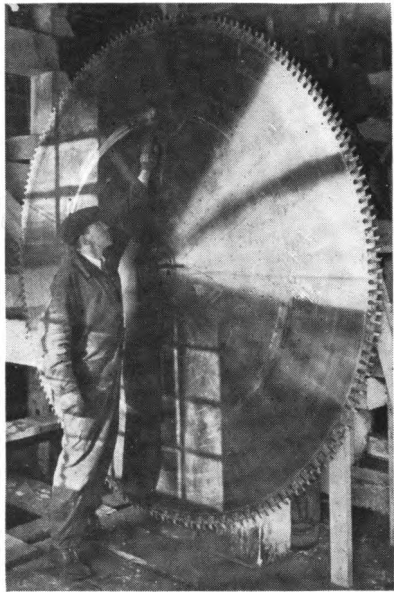
On April 10th, 1920, the 108-inch saws began their first run in the Coats Shingle Mill at Hoquiam, Washington. There was a large gathering of lumber and shingle men from that section present to witness the installation of the saws. Many came to say "I told you so," but all departed marvelling at the swiftness and accuracy of the saws.

Usually a special saw is built to fit machinery. But as these saws departed from the commonplace in size, so they did in requirements. Special machinery was necessary to carry them. To fully appreciate one of these immense saws, one must see it in action; starting off slowly, the speed gradually increasing, the humming attaining a higher and higher pitch, until full speed is reached. The serrated edge, traveling at a speed of 130 miles an hour, cut through those big Coast logs with an ease and rapidity that astonished experienced mill men. With an ordinary saw the shingle weavers frequently had to wait for bolts to accumulate, but with the installation of these saws the crews in the cutting and packing departments were fairly swamped.

The day was indeed a significant one for the shingle industry and for the House of Disston. To quote from a speech by Mr. D. W. Jenkins, Manager of the Disston's West Coast

branches: "With these saws a success, they will revolutionize shingle manufacturing. Smaller saws, of course, will cut the largest logs, but the objection to them has been that they cannot sever them completely, but do it in sections. This necessitates a great loss of time and means a waste of considerable timber. The larger saws cut without splitting."

The mill-men's party, after watching the saws in action, attended a banquet in the evening at the Hotel Gray-



"So Big"—Giving An Idea of the Size of the Saws

port, in Hoquiam, as the guests of Henry Disston & Sons, Inc. Every toast at the banquet referred either directly or indirectly to saws—which was natural considering the fact that the party was one of the largest gatherings of representative mill and shingle men seen in that section of the West Coast for some time.

D. W. Jenkins, Seattle, introduced E. C. Miller, the toastmaster. Those who responded to toasts were: Mayor Ralph L. Philbrick, of Hoquiam; J. A.

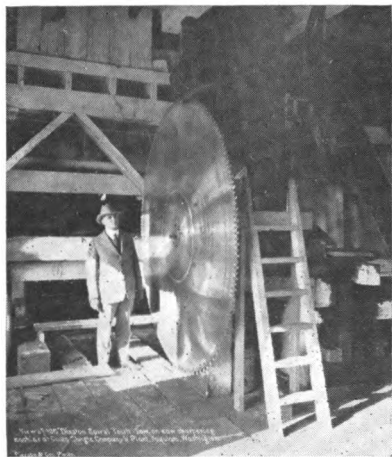
Lewis, of the Coats Shingle Company; J. S. Williams, of the Shingle Manufacturers; B. L. Grondal, of the University of Washington; Thorpe Babcock, of the Northwestern Lumber Company; J. W. Clark, editor of the Aberdeen Post; Roland H. Hartley, of Everett, candidate for nomination for Governor, and Lloyd Spencer, of the Seattle Engineering School. The visiting mill-men spent Sunday touring the Grays Harbor country and returned by way of Seattle Sunday evening.

It is doubtful if any feat of recent years in the saw industry has attracted as much attention as did the successful building of these giant saws. The Associated Press report for the day contained an account of their successful installation. The Fox, Gaumont and Pathé moving picture news service each had a camera man present

A Nature Puzzle



A wheel was lying on the ground in a Missouri farmyard, and a tree concluded to grow up between two of its spokes, little thinking of the predicament it would get into. It can be seen into what a tight place it has gotten itself. One of the spokes has been broken off entirely at the rim of the wheel and pressed back against another spoke. The spoke in front of the tree is also about to break because of outward pressure of the tree. The diameter of the tree shows that this process has been going on for a number of years. Now the puzzle is to get the wheel away from the tree!



Mr. Jenkins, Manager of Disston's West Coast Branches, and One of the Big Saws

and these pictures were shown in all parts of the country. Many of the lumber magazines carried an account of the event and a photograph of the saws.

It was indeed a memorable day for the house of Disston and for the shingle industry.

Care of Files

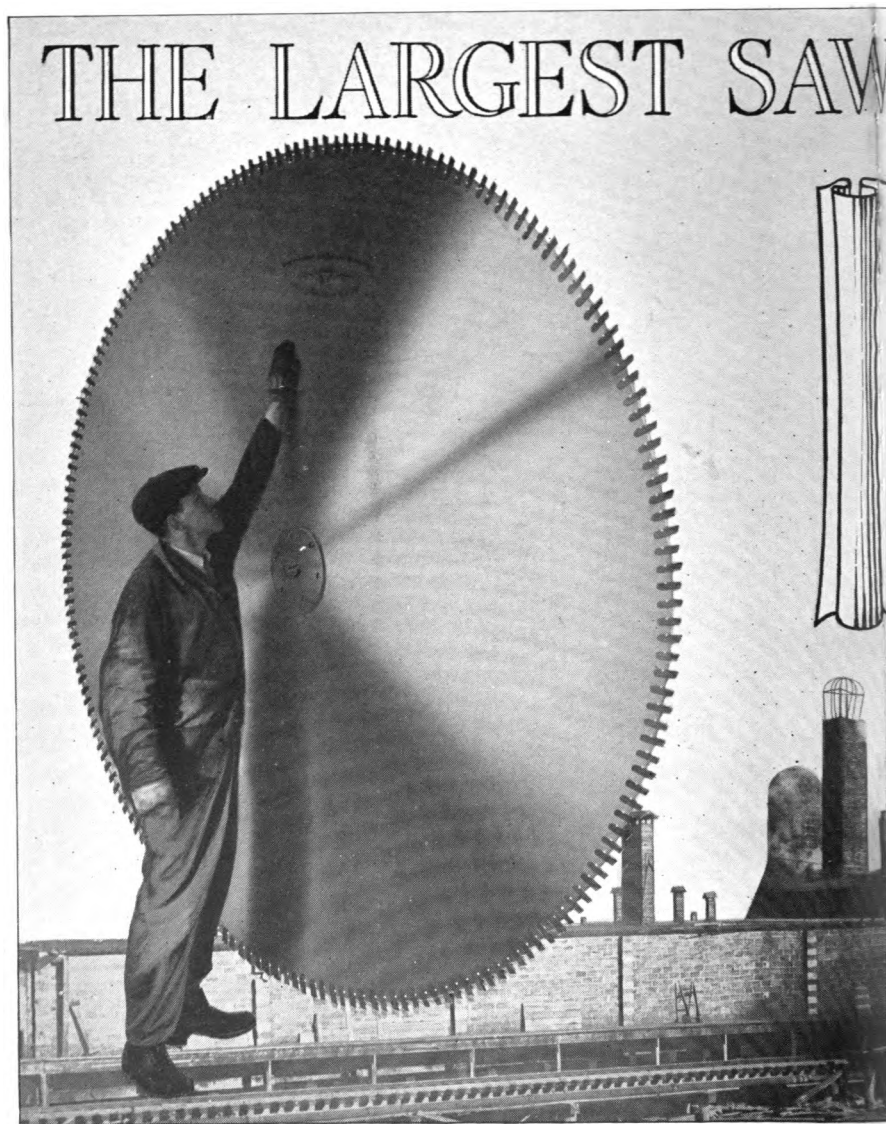
A good file is deserving of good treatment and proper appreciation by the filer any time. Moreover, as a rule, the really skilled filer has an appreciation for his good file and a skill in using it which insures the best results with the most satisfaction to himself and the least damage to the file. Those who are careless and slipshod in their filing and the care of files may get results, but carelessness is a handicap any time, and good files are worth so much today that they merit more thoughtful attention and more careful use than ever before. When you buy a file, pay the price and get a good one, then use it well and it will use you well.—*Yates Quality.*



Peterson & Co., Photo.

Banquet Henry Disston & Sons at Hoquiam, Washington, April 10th 1920, celebrating the installation of the largest circular saw in the world, 103' in diameter, at the Goetz Shingle Company's Plant.

THE DISSTON BANQUET AT HOQUIAM, WASH.

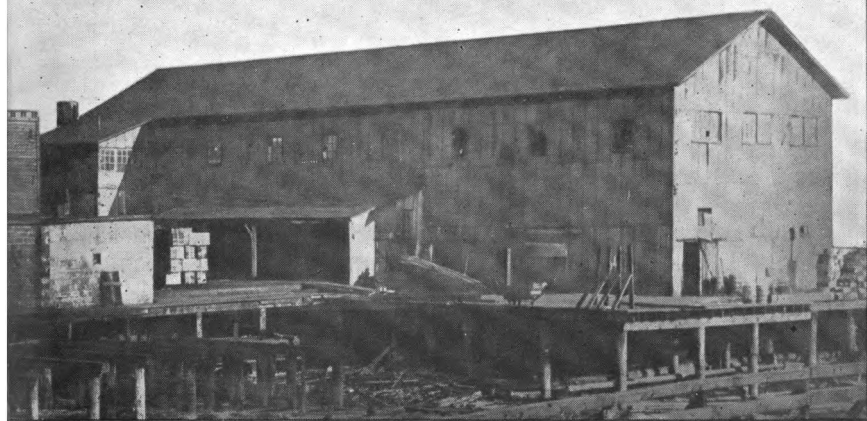


VS IN THE WORLD

THIS is one of the two Disston cut-off saws in use at the Coats Shingle Company's Mill. These saws are 108 inches in diameter and each one weighs, ready to run, 795 pounds. 190 spiral teeth are inserted in each saw. The successful building of these saws affords a striking example of the advantages of Disston experience and facilities.

You may never need saws as large as this. You will be interested to know, however, that Disston workmen and Disston equipment are of the kind that makes the building of the largest saws in the world—and the best saws of all kinds—possible.

HENRY DISSTON & SONS, Inc.
General Offices: Philadelphia, U. S. A.





Bill George, one of the Disston workers, while riding to the factory a short time ago was informed by an acquaintance that the Rubber works where he was employed had just finished a rubber belt weighing 17 tons.

Bill replied, "Oh by golly, that is alright, but you had to make it to drive those gosh darned big circular saws made by Disston."

This puts me in mind of the fact that it takes some saw shop to turn out circular saws 108 inches in diameter without any great effort on the part of man or machine. Some few years back when called upon to make the big band saws for the Pacific Coast, we responded without as much as turning a hair, and around the first of the year, when our Pacific Coast Manager advised that one of his friends and customers intended using saws 108 inches in diameter, if Disston could deliver the goods, we immediately wired him to hop to it and get the business, with the result that they were made, delivered, and started off without a hitch.

Great reliance was placed in Disston methods and confidence in our quality by the United States Government during the War, in favoring us with orders ranging from delicate surgical instruments for the Medical Department, to special armor plate made and heat treated in our steel works.

Disston facilities are such that we are prepared to handle the big things of the saw milling industry.





In answer to several inquiries, we wish to explain the purpose of our series of articles under the head of "Timber Resources of the World."

It is our purpose to present each month a digest of as much official information as we can get on the forest resources of one country. We hope to continue the series until we have presented information on each of the important countries of the world.

In addition to this, we will attempt to answer any questions on this subject that our readers care to address to us.—Ed.

BRAZIL

AFTER warning us that "not a single state of South America has made any forest survey or has any clear idea of its forest resources," "Forest Resources of the World," published by the U. S. Government in 1910 goes on to say regarding the subject of this article, "The forests of Brazil cover an area equal to one-half of Europe. The Amazon flows for a distance of 1860 miles through a virgin forest which stretches 1100 miles from East to West and 750 miles from North to South and occupies an area of 825,000 square miles. Many of the Brazilian woods have excellent properties. The following are among the most valuable: Perambuco, fustic, ironwood, and cedar. The forests yield other valuable products, as rubber, Brazil nuts, Paraguay tea, guarana, gums, and resins."

From "A Study of Economic Conditions in Brazil since 1913," issued by the Department of Commerce in 1920, we have a later view of Brazil's forest wealth. "About 48 per cent. of Brazil's total area, approximately 988,000,000 acres, is covered by forests. The forest resources of this country are varied and practically unlimited. Except in the South, where the Parana pines cover an area of about 197,600,000 acres, the forests are variegated, with no vast areas of any particular kind of tree, but rather a collection of all kinds. Many of these woods are hard woods of rare beauty, pulp woods, con-

struction woods, and woods for almost every known use. However, the marketing of these woods is somewhat difficult; first of all, hardwoods such as Brazil produces, blunt the axes and saws; secondly, the climate of the Amazon forests is malarial (we will find this contradicted in a measure in another extract); and in the last place, the foreign demands for these woods are small, since most of them have not become well-known up to the present time."

Of the valley of the Amazon, Mr. John F. Barry in an article entitled "The Great Possibilities of Amazonia," in the Bulletin of the Pan-American Union for March, 1920, says, "I have spoken mainly of agricultural possibilities in Amazonia because agriculture is, after all, the basis of real national prosperity. The Valley possesses mineral and forest resources which have as yet been almost untouched, if we exclude rubber. The forests contain fibers in infinite variety, many of them of great commercial value. There are oil-bearing nuts from which illuminating, lubricating, and edible oils can be extracted, and the British and Italians are actively engaged in development along these lines at the present. The forests of the State of Para alone contain upwards of 300 varieties of timber, and there are many cabinet woods which would be almost priceless if placed on the New York market. There are trees which give a pulp suitable for paper making;

bark needed in the tanning industry; vegetable dyes; balata, gums, resins, medicinal plants in endless variety."

In another article, "The Little-known Amazon Valley; Its Immense Possibilities," Mr. Barry further tells us, "There are Americans who have a definite mental picture of Amazonia as a region of swampy forests, full of snakes, of dank tropical growth, noisome streams infested with alligators, where fevers prevail and human life is cheap. The Amazon Valley has not had a case of yellow fever in ten years; malarial fever is no more prevalent in the greater part of its area of over 3,000,000 square miles than it is in our own south. The Amazon does not periodically overflow its banks and inundate the Valley. It does this in certain low-lying sections, but there are hundreds of thousands of square miles of level plains and rolling country, thinly afforested, suitable for cattle raising, sugar and planting and all kinds of agriculture, where the climate the year round is "glorious," with cities and towns as clean, healthy and well-policed as any in the world, and the land is never inundated.

Amazonia is today the greatest and richest undeveloped region in the world. It possesses natural resources—forests, agricultural, mineral—so great as to be almost unbelievable. There will soon be factories for the manufacture of ropes, cordage and sacking from the inexhaustible supplies of fibres to be found in the forest; there will some day be great sawmills as the lumber industry is developed."

Of sawmills in Brazil, Trajino de Medeiros in the "Brazilian American," has this to say: "An industry which assumed during the war much greater importance and which now should increase still more is that of sawmills. Today in the state of Parana, this activity has prospered greatly, and I think will continue so to prosper for many years. Both in the South and North of Bahia, the industry begins already to expand, and everything points to the belief that this region together with that of the Amazonas, constitute the greatest forest reserves of the world, and from these sources

Europe will draw her requirements of timber for rebuilding after the war. The North Americans, especially those of California and New Mexico, will find in this centre a vast outlet for their activity."

Referring again to "Brazil, A Study of Economic Conditions since 1913," we will examine into some of the principal Brazilian woods and their uses and other details of interest.

Parana Pine.—This variety of tree receives its name from the State in which it is so plentiful and is the most important tree of commerce in Brazil. It is dissimilar to the American pines, but more comparable to the yellow cypress which it resembles in texture, though it does not possess all the valuable properties of the latter-named tree. The tree varies in length from 40 to 70 feet and from 10 to 80 inches in diameter. The wood is pale yellow, while the heart wood shades darker and frequently shows narrow red lengthwise streaks. It displays no grain, is soft, not light; flexible, moderately elastic, and fairly easy to work. Two properties have proved unfavorable to the greater commercial use of pine from Brazil—perishability and instability in holding shape. Both of these are traceable to the same obstacle, the difficulty of seasoning and kiln drying the wood. These difficulties can be corrected if the properties of this tree become better known.

The Southern Brazil Lumber and Colonization Company holds 556,475 acres of Parana pine in the States of Santa Catharina and Parana, estimated to contain 5,000,000,000 feet of standing timber. Its mills at Tres Barras have a capacity of 40,000,000 board feet in a year. The logs are handled at the mills on a monorail system; there are planing mills, dry kilns, a box factory, and the most modern equipment generally. Parana pine is the most formidable competitor in Rio de Janeiro of Scotch fir and American and Norwegian spruce.

One of the most important hardwoods is the Cedro, or *Cedrela brasiliensis*, commonly known as the Spanish cedar. It is important in Brazil, for it ranges through the Repub-

lic from the Amazon to the Paraguay River. The largest and best grades come from the forests of the Southern zone. It is the only soft hardwood exploited to any great extent. Because it is soft, easily worked, capable of holding paint, and of taking polish, it is the first of all the Brazilian woods in economic importance. Cedro constitutes one of Brazil's important materials of export. Its principal uses are for sashes, doors, blinds, furniture, and interior trim.

Peroba.—Several varieties of this tree are found distinguishable by their color. The wood is often beautifully grained, thus accounting for its uses in high-grade joinery and cabinet work. It takes the part in the wood-working industry of Brazil similar to that of the birch and maple in the United States, and is used for construction work, for flooring, and house finish.

Jacaranda.—There are three varieties of this wood known in Brazil, all of which are attractive and used for cabinet work, but due to high prices they have not been marketed extensively.

Massaranduba.—This tree is unusual for its red color, which is very intense. It is exceedingly strong, hard and heavy; its fibers almost indistinguishable; is of compact texture, and is considered one of the best woods for work demanding great resistance. It is used largely for construction work of all kinds, basic, railroad construction, cars, trolleys, sleepers, hydraulic and naval construction work. Its roots and bark contain much tannin and are also used in the dyeing industry. The sap of the tree is milky white and is sought by the natives as a source of food.

Vinhatico.—This species is often called Brazilian mahogany, but it resembles the mahogany of Mexico and Central America only in the general appearance of its texture, being, unlike the mahogany, of a yellowish color. It is useful for buildings, boats, and furniture making.

The cheapest Brazilian wood of commerce is the *louro*. Next to the cedro, it is the softest of the Brazilian

hardwoods, and because of this is a favorite with the natives for hand-sawed lumber. It is widely used, owing to the fact that it is cheaper. It is not durable, strong, nor resistant to the white ant, and therefore is in demand chiefly for cheap, temporary construction, concrete forms, scaffolding, etc. Due to the fact that it lasts under water, it is useful for boat building. It also finds a useful place in the tanning industry, as well as for tooth-picks and matches.

Acapu.—This wood resembles ebony, being black in appearance. It is one of the chief woods for export from the Amazon Valley. This wood is very dense, strong and hard, and is used for flooring, interior trim, and all kinds of construction.

Brazil Wood.—This variety, known in North America as "Vermillion," is a fire-red wood, hard, heavy, strong, dense and durable. It is used as a dye-wood, a cabinet wood, for vehicles, dock construction, and railroad ties.

Angico.—Is found throughout the Republic. It is similar in appearance to Peroba and grows very rapidly. In addition to its use for naval and hydraulic construction, cabinet making and railway sleepers, it is useful for other purposes. The bark shows an analysis of 40 per cent. tannin and also yields a gum which is employed for hat-making; the leaves are used for fuel, giving an intense heat.

The consumption of wood as fuel is very heavy in Brazil, owing to the lack of coal. This demand makes a heavy drain even upon the rich Brazilian forest, but, fortunately, timber of the kind used for fuels grows rapidly in Brazil, so that the supply is constantly renewing itself.

Exports of woods from Brazil were valued at \$561,051 in 1913; \$385,268 in 1914; \$541,244 in 1915; \$1,647,136 in 1916; and \$1,163,910 in 1917.

Lumber imports have shown a steady decrease, from 166,959 long tons in 1913 to 11,069 long tons in 1917. This can be ascribed to lack of tonnage, high prices with a consequent curtailment of building operations, and increase in the use of native woods.

Continued on Page 79

SAW MILLS IN THE COLONIES

Wind Saw Mills Erected on Manhattan Island as Early as 1633. First Saw Mill in Massachusetts Erected 1663; in Ohio, 1789

LAST month we told something about Pennsylvania sawmills in the early days of the province. It remains to make some mention of the industry in the other colonies, first acknowledging our indebtedness to Bishop's "History of American Manufactures."

Lord Caernarvon defined timber as "an excrescence on the face of the earth, placed there by Providence for the payment of debts." This over-business-like view of our forest resources seems to have been first taken to heart by his trans-Atlantic countrymen, for, though it is stated that the first sawmill was erected in Massachusetts in 1663, its first introduction in England was not until 1663, and even then, owing to the short-sighted opposition of labor, who feared it would deprive the hand-sawyers of their work, the invention was not firmly established until 1783. In 1767 a sawmill was destroyed by the populace.

In New York the Dutch and Swedish settlements on the Delaware and North River were early in possession of sawmills driven both by wind and water. Wind sawmills were erected on Manhattan Island by the Dutch as early as 1633.

In 1650 there were still no sawmills in the Virginia colony, and in Carolina the sawmill does not appear to have come into extensive operation during colonial times.

We have spoken of Pennsylvania in a previous article. In New Jersey, the earliest account we have met of sawmills was about the year 1682, when New Jersey was assigned to William Penn and others. Some eight or ten towns existed in New Jersey at that time, containing from 300 to 500 inhabitants. It is probable that some of them previously possessed sawmills. During 1682, however, the first sawmill erected in Woodbridge was erected by Jonathan Bishop.

The number of sawmills in Maine in April, 1682, was 24, of which 6 were at Kittery.

In Massachusetts proper, where timber was less abundant and the pursuits more varied, sawmills were nevertheless numerous in early times. In the central county of Worcester, for ex-



Typical Wind Saw Mill Erected by the Dutch on Manhattan Island

ample, though it has few streams and no navigable rivers, not less than 90 sawmills are enumerated in 1793.

Rhode Island, whose first exports were lumber, pipe-staves, etc., as early as 1639-40 enacted a law to regulate the price of boards, etc., at the mill, indicating that the Colony already possessed these useful appurtenances to new settlements.

In Connecticut, the younger Winthrop, afterward Governor of Connecticut, had a swamill at New London previous to 1654.

Of course, many early sawmills were destroyed by the Indians, or the French and Indians acting in conjunction. The first sawmill in the present state of Ohio was built in the year 1789.

In 1790 mill saws were manufactured at Canton, Mass. to the number of 150 or 200 annually.

In Canada an appropriately named Mr. Sawyer, who had been carried to Canada as a captive by the Indians, built for the French on the river Chamblee, near Montreal, in 1706, their first sawmill, as the price of redemption of himself and son. There was, previous to that, no sawmill in all Canada and no artificer capable of building or working one.

Timber Resources of the World - Brazil

Continued from Page 77

Southern yellow pine, North American pine and spruce are the chief woods imported into Brazil, chiefly from the United States and Canada.

For the present Brazil is dependent upon importation for her soft woods. Lack of transportation facilities makes it more practical to ship Parana Pine, the softest Brazil wood, to Argentina and Uruguay rather than to Brazilian ports, leaving them dependent upon importation. Brazil has magnificent river systems and growing net-works of railroads. A few years will undoubtedly bring Brazil to take her place among the lumber-exporting nations of the first rank.

Woods for Tanning and Dyeing.—Brazil abounds in woods useful in the tanning and dyeing industry. Many of them are used locally, and with adequate transportation would become prominent in the export field.

Pulp Woods.—The European War, by cutting off the markets in the countries which formerly supplied Brazil's needs of paper pulp, has given the incentive for the production of paper pulp in Brazil from native woods. In 1916 there was one plant manufacturing paper pulp with an annual output of 1200 tons. The pulp thus produced from Brazilian woods is of an inferior quality and cannot be used except in combination with imported pulp. The cost of native production is very high, due to high transportation rates and the expense of collecting the woods from stands scattered over large areas.

Rubber.—The sap of a dozen different Brazilian trees smoked over a palm nut fire produces rubber. The production of rubber in Brazil is not a plantation industry, as in Ceylon, Burma, Java, and the Malay Peninsula. The rubber trees occur scattered in a dense jungle. Perils of wild beasts, savages and disease face the rubber gatherers. In the Amazon Valley the rubber may be carried on the backs of the gatherers for many miles before a stream is reached, when it is taken on canoes or floated on rafts down to Manaos or even Para. The small amounts of plantation rubber may be taken on mule back and rarely on a railroad to the river or port of shipment. An industry carried on in this way cannot hope to compete with the modern methods of rubber cultivation employed in other countries. Economic pressure will soon compel Brazil to undertake the systematic cultivation of rubber. A small beginning has been made of rubber manufacture in Brazil.

Other Forest Products.—Next in importance to rubber as a commercial forest product comes *Mate*, which also provides a separate industry of importance. Among the other products of the forests are vegetable wax, vegetable oils, medicinal plants, and nuts.



SAWDUST

EXPLAINED

"Waiter, this coffee is nothing but mud."

"Yes, sir; it was ground this morning."—*Voo Doo.*

SOME TIME AFTER JULY FIRST

A henpecked little man was about to take an examination for life insurance.

"You don't dissipate do you?" asked the physician. "Not a fast liver, are you?"

The man hesitated a moment, looked a bit frightened, then replied in a small piping voice, "I sometimes chew a little gum."—*Argonaut.*

MUST HAVE BEEN

Judge—"What brought you here?"

Prisoner—"Two policemen."

Judge—"Drunk, I suppose?"

Prisoner—"Yes, both of them."—*Life.*

PAGING MR. DOE

A Philadelphia clubman dreamed that he died and went to heaven. While sitting in a beautiful palace a cherub came through paging him.

"Call for Mr. Doe! Call for Mr. Doe!"

"Here you are, my boy," the clubman said, beckoning to the page. "I'm Mr. Doe. What is it?"

"Your wife wants you on the ouija board, sir."—*Ex.*

HOW AN EDITOR GOT RICH

He started poor as a proverbial church mouse twenty years ago. He has now retired with a comfortable fortune of \$50,000.00.

This money was acquired through industry, economy, conscientious effort to give full value, indomitable perseverance, and the death of an uncle, who left the editor \$49,999.50.—*Empco Paper News.*

THE BEST ONE

Parson—"Do you know the parables, my child?"

Johnny—"Yes, sir."

Parson—"And which of the parables do you like best?"

Johnny—"I like the one where somebody loaf and fishes."—*Ex.*

DEPENDS

"Bobby," said the lady in the street car, severely, "why don't you get up and give your seat to your father; doesn't it pain you to see him reaching for a strap?"

"Not in a street car," replied Bobby cheerily, "but it does at home."—*Ex.*

COULDN'T MISS HIM

A man named Dodgin was recently appointed foreman at the gas works, but his name was not known to all the employees. One day while on his rounds he came across two men sitting in a corner, smoking, and stopped near them.

"Who are you?" said one of the men.

"I'm Dodgin, the new foreman," he replied.

"So are we," replied the other workers, "sit down and have a smoke."—*Ex.*

FOR SALE

One Ford Car with piston ring; two rear wheels; one front spring; has no fenders, seat or tank; burns lots of gas; hard to crank; carburetor busted half-way through; engine missing; hits on two; three years old, four in the spring; has shock absorbers and everything; radiator busted, sure does leak; differential dry, can hear it squeak; ten spokes missing; front all bent tires blown out; ain't worth a cent; got lots of speed, will run like the deuce; burns either gas or tobacco juice; tires all off, been run on the rim. A damn good Ford for the shape it's in.

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THE DISSTON CRUCIBLE



JULY

1920

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Q These saws are ground on lines that conform exactly to the breast of the saw, leaving the blade perfectly uniform in thickness throughout the entire length of the cutting edge. They are tapered to an extra thin back, which gives the maximum amount of clearance without sacrificing the necessary elasticity and stiffness.

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This Magazine is Published for the Advancement of the Interests of
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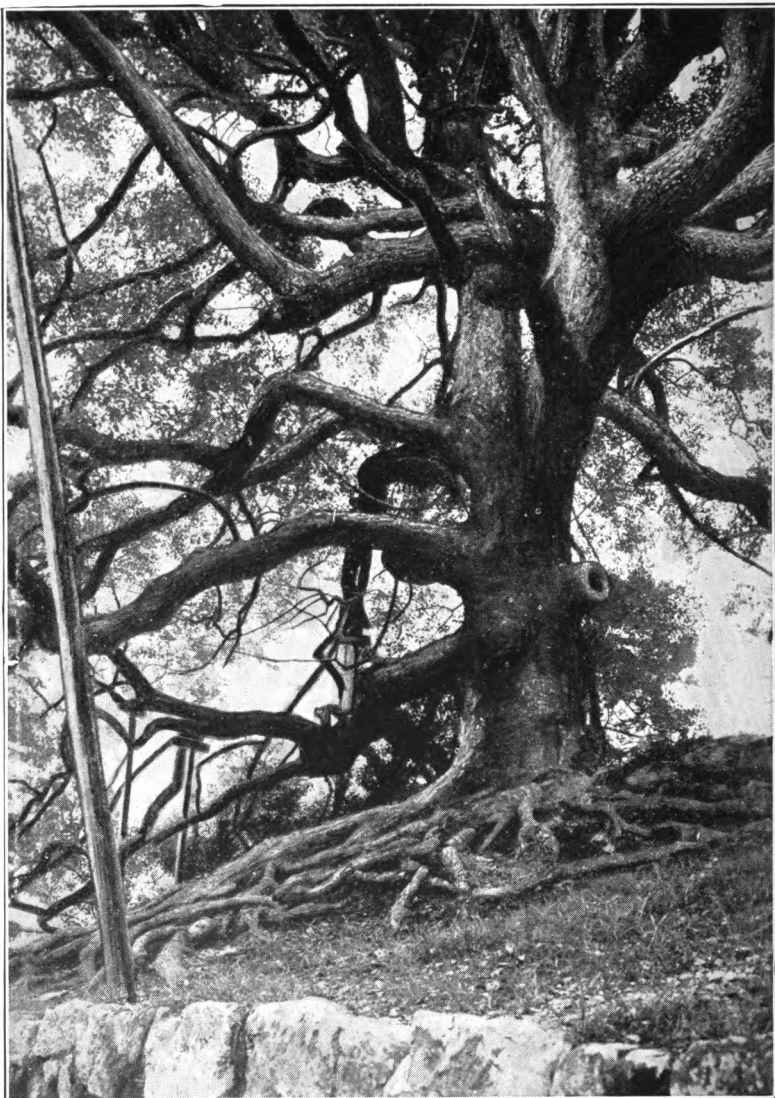
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COURTESY OF THE DUPONT MAGAZINE

THIS CAMPHOR-TREE IS CENTURIES OLD.

Photographed in Kiangsee Province, China. The limbs of the tree are so valuable that the owners prop them up with heavy timbers to insure against their breaking down during high wind-storms.

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A MAGAZINE FOR THE MILLMAN

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No. 6

EDITORIAL CHAT

Who Profits Most?

A business can be built in a year, in a month, even in a day; or the building of a business can command the greatest efforts of a lifetime.

Craft, cunning, shrewdness, if diligently practised, may bring a result resembling success; but the constant application of sincerity, experience, and craftsmanship build for a success that all others can but imitate and envy.

A great thinker once said, "A business is but the lengthened shadow of a man." Whatever is your aim, your ideal—rest assured that it is known to all with whom you deal.

Let no man be mistaken. Just as his true character will be known to his friends, so will the dominating idea behind his business be apparent in every transaction.

The business that, spurning opportunities for mean profits, devotes its entire energies to the development and maintenance of a reputation and quality, often envies the seeming progress of a sharp-trading competitor.

But such a business has none to envy. As by natural right, the superior quality of its product, honestly maintained, brings to it the friendship of each user. This friendship, multiplied again and again, builds a Good Will that is the greatest reward in business.

A business carrying the Good Will of its customers has little to fear. Temporary set-backs and interferences it may have, but as long as its ideal is maintained, it will rise above small mistakes and errors.

Let the directors of such a business keep their greatest asset and duty ever in mind, and profits will be satisfactory.

Look at the businesses that have had more than ordinary success. Who are they? They are the firms that do *more* than their duty, that give *more* than agreed, that work for quality and service rather than for profit.

For it is the rule that he profits most who covets profit least.

*Quality
Sells*

FORESTRY AND THE LUMBERMAN

Are There Any Unsurmountable Differences of Opinion ?

By E. T. ALLEN

Forest Economist, Western Forestry and Conservation Association

(Written specially for the Disston CRUCIBLE)

Illustrations by courtesy of "Yates Quarterly"

YOU are proposing a real service in using the Crucible to melt down the scraps and froth of forestry controversy and trying to get something that lumbermen can look at and weigh.

Practical lumbermen are interested in forest conservation. They deplore waste. They want to perpetuate their industry. They see the advantage of having it permanently support prosperous communities. They do not willingly invite popular disapproval. They are average good citizens, as public-spirited as any element of the population. They know about as well as any what can and cannot be done under existing conditions.

Why, then, is there lodgment anywhere—in their minds or the minds of foresters or public—of the idea that forestry and lumbering are in conflict? That forestry threatens profitable business or that the industry is inherently opposed to public welfare? Why the

insistence that there is a divorce of what would appear to be mutual interests?

Mostly because it is human to talk too much and too carelessly. Also to consider talk instead of things.

Nobody knows when the first forest reformer called lumbermen vandals and the first lumberman called foresters theorists. Probably both have been dead a long while. But they started something, and ever since the hereditary champions of both clans have been shying verbal bricks at each other through a dust of suspicion and misunderstanding that neither side lets settle long enough to disclose that non-combatants get most of the bricks and that nowadays even the champions would mostly look alike with their faces washed.

To add to the excitement of the game, the thoroughly proficient talk-forester uses a language his adversaries cannot understand, so as to make his threats

seem far more terrifying than they really are. The anti-forestry generals, being as a rule less gifted in making poison gas and smoke screens out of language, depend more on digging-in methods. They keep up a fair fire of "impractical" and "theoretical" charges, but their main strategy lies in defence—which is a less joyful system because it don't hurt the other fellow and besides you



One of the greatest scourges in the lumber industry today—"fire."

don't know what he may do next.

As in all unprofitable games, there are fixed rules. First and most important is to avoid discussion of the real things to be done to assure adequate forest perpetuation, or of how to do them. One side says, "We don't know what they are, but there must be laws to make you do them." The other says, "We don't know what they are, but we won't do them." Rule two is for both sides to be as irritating as possible, never giving the other credit for being honest. Rule three is to view with alarm, as virtual treachery, any effort to bring everyone together in really constructive co-operation for mutual good.

Consistently carried on for years, with all available publicity, this controversy has pretty well bewildered both public and lumbermen. With the further human tendency to believe anybody who says you are oppressed and he is going to lick your enemies, both have been too inclined to support extreme positions and overlook the real facts of common grounds on both sides.

Meanwhile and notwithstanding, if you disregard the professional controversialists, both sides are getting together. While their champions were too busy to watch them, foresters and lumbermen have sneaked out of their respective camps and become acquainted. They rarely go back. There are more outside of camp now than there are inside. Strange to say, the lumberman has found the average forester neither vicious nor impractical—at least he is willing to learn. And vice-versa. Stranger still, it appears that a very considerable proportion of lumbermen are trying hard to do, or actually are doing, almost exactly

what sensible foresters advocate as possible at this time. The desirable things they are not doing prove mainly to be dependent on action by the public, not on the lumberman's initiative.

The better class of leaders on both sides have stopped quarreling and joined the fraternizing outsiders, making common cause to educate both lumberman and public, not in hostility but in their mutual needs and responsibilities. About the only good feudists left are the professional agitators who, finding old issues and supporters conspicuously absent, are trying to invoke

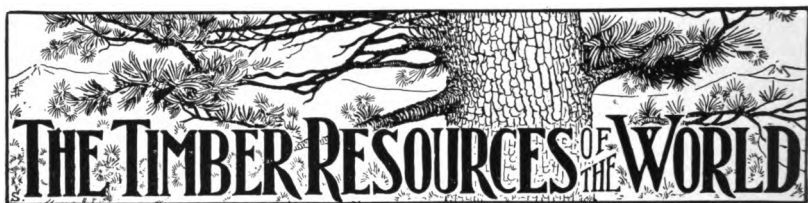


Planting trees in cut-over land for future use. This is a matter of precaution that must be adopted by lumber companies and the Government, as our great forests are rapidly being depleted.

new ones. For example, when they find lumbermen and foresters working out local problems in a local common-sense way, they abandon controversies over state regulation and begin all over on the merits of federal regulation as the only solution.

On the whole, lumbermen and foresters are now very closely in accord in principles. Not so much so as to details, perhaps, but there is no fundamental difference here—only the need of time and information to determine the most practicable methods. It is generally recognized that tree-planting and costly changes of cutting methods

Continued on Page 95



In answer to several inquiries, we wish to explain the purpose of our series of articles under the head of "Timber Resources of the World."

It is our purpose to present each month a digest of as much official information as we can get on the forest resources of one country. We hope to continue the series until we have presented information on each of the important countries of the world.

In addition to this, we will attempt to answer any questions on this subject that our readers care to address to us.—Ed.

NORWAY AND SWEDEN

FROM 1814 to 1905 Sweden and Norway were united under a single king, but in the latter year this union was dissolved and Norway chose its own ruler. In this article we will consider the forest resources of the two countries separately.

Our authority for Norway is "FOREST RESOURCES OF THE WORLD," published by the U. S. Government.

"With a total land area of 124,130 square miles, Norway possesses a forest area of 16,848,000 acres, or 21 per cent. of the total land area. The bulk of the forests lie in the Northeast, where the proportion of forest is 38 per cent.; in the North the forest occupies only 6 per cent. of the land area, and in the Central part 13 per cent. The state forests comprise 4,801,700 acres or 28.5 per cent. of the forest area. Over one-half of this amount is in the Northern provinces of Tromsø and Finnmark; and of this, only 1,970,000 acres are really productive forest land. Corporation forests occupy 775,000 acres, or 4.6 per cent. Private forests comprise 11,271,300 acres or 66.9 per cent.

"Coniferous forests occupy 75 per cent. and hardwoods 25 per cent. of the total forest area. Among the hardwoods, beech, elm and oak, especially the pedunculate oak, predominate. However, the hardwoods do not play an important part economically. Beech forms forests only south of Christiania;

oak on the Southern and Eastern coasts up to 63 degrees North latitude; and birch extends beyond the Arctic Circle inland as well as along the Coast.

"The most common of all trees is the pine. It extends beyond the Arctic Circle to 70 degrees north latitude, and forms the most northern forest in existence. It occurs all over the country. Its vertical range is also higher than that of spruce. It ordinarily reaches maturity at one hundred and fifty years, but in the mountains and in the North at two hundred years. The spruce does not extend beyond the Arctic Circle, and grows on the western coast only scatteringly or singly. In the South it can be utilized at an age of from seventy to eighty years; in the rest of the country between one hundred and twenty and one hundred and fifty years.

"In Norway the growth extends much farther North than in any other country.

"The annual cut is given as 345,000,-000 cubic feet or 20.4 cubic feet per acre. The convenient access to the Western coast, with its deep, sheltered fjords, caused the depletion of the forests in that region. It is estimated that, during the last one hundred and fifty years, 15,000 acres of private forests have been cleared each year. These figures indicate that the forests of Norway are now being overcut. One-fifth of the total cut (69,000,000 cubic feet) is exported, and the rest

(276,000,000) remains for home consumption. The peculiarity of the export is that the bulk is in the form of logs and staves, and not of sawed lumber. This is in contrast to Sweden, which exports chiefly sawed lumber.

"The Norwegians realize that at the present cut and export, they are cutting not only the annual growth but the capital itself, and therefore the forests cannot last very long."

The export from Norway of sawn and planed wood goods was 323,183 M. ft. board measure in 1913, and 247,500 M. ft. B. M. in 1919. The average export for the years 1904-1913 was 428,411 feet.

SWEDEN: Passing to Sweden, a country of much greater importance in the lumber industry, we shall quote in part from an article by Carl Berg, Mgr. Director of the Swedish Wood Exporters' Association, in the Swedish number of the New York Evening Post, October 18, 1919. According to this authority, the forest land area of Sweden is 51,903,000 acres or 52 per cent. of the total area.

"Sweden, in a preponderant degree, is a wood-producing country. The Northern part, two-thirds of the total area of the country, and equal in area to Great Britain and Ireland, forms a single continuous belt of forests, stretching from the Gulf of Bothnia to the Mountain region of birch forest, where the coniferous forest ceases. The southern parts of the country are likewise wooded to a large extent, and the various products of the forests have from time immemorial been exported from North and South in considerable quantities. The Swedish forests consist chiefly of white and red pine, fir and spruce, both kinds being of excellent quality, especially in the Northern provinces. These rich and enormous resources in forests would not, however, alone be sufficient to create the present industry. Most of the forests in the northern part of Sweden would, in fact, on account of the rough and broken ground, be inaccessible and practically worthless deserts but for the co-operation of two circumstances, which guarantee a favorable result: the long winters with the abundance of snow, favoring transport, and the nu-

merous water courses. The latter which intersect the vast woodland with their widely spreading tributaries, have during the past fifty years been developed and transformed into floating ways by means of which the timber at comparatively small expense is brought down to the sawmills and other factories, which as a rule are situated on the coast. The Swedish floating ways have a total length of 29,000 kilometers, considerably more than half the circumference of the earth.

"During the winter, intense work is going on in the big wastes, where timber cutters and drivers with their horses camp out together in a sound and hardening outdoor life, sometimes in severe cold. The logs thus felled are barked and cut up in the forest and subsequently brought down to the floating ways in huge cartloads. When spring sets in, the floating of the timber in brooks, specially constructed channels, runnels and rivers ensues, and in the course of summer and autumn, millions of logs are sorted and divided at the sorting towns for account of the various owners in order then to be transported to the mills and factories."

In regard to these mills, an article on "Industrial Sweden" in the "World Salesman" for May, 1920 says, "The sawmill industry in Sweden can show a magnificent development during the 19th century. It cannot be stated with certainty when saw-mills were first established in Sweden, perhaps it took place during the Middle Ages. Without doubt, water saw-mills have existed here for many centuries, but it was not until the 19th century that the saw-mill industry received a manufacturing character. This occurred in connection with the fact that the demand of other countries is primarily for sawn goods.

"In 1821, the year when the first reduction of customs on lumber was made in England, there were in Sweden 3633 saw-mills. Forty years later, Sweden owned 59 steam saw-mills and 4933 water and wind saw-mills and the export of planks and boards alone amounted to 1,478,000 dozens. After another fifteen years this export had been tripled and the export of all the

Continued on Page 92

PROPERTIES OF VARIOUS HARDWOODS, A

COMMON AND BOTANICAL NAME	LOCALITY WHERE GROWN	WEIGHT PER CUBIC FOOT			SPECIFIC GRAVITY OVEN DRY Based on volume when green	SHRINKAGE FROM GREEN TO OVEN DRY CONDITION		
		Green	Air Dry	Kiln Dry		In Volume	Radial	Tangential
1	2	3	4	5	6	7	8	9
		Lbs.	Lbs.	Lbs.		Percent	Percent	Percent
Alder, red (<i>Alnus oregona</i>)	Snohomish Co., Wash.	46	28	27	.37	12.6	4.4	7.5
Ash, Biltmore (<i>Fraxinus biltmoreana</i>)	Overton Co., Tenn.	45	29	26	.51	12.6	4.2	5.9
" black (<i>Fraxinus nigra</i>)	Ontonagon Co., Mich.*	53	36	34	.45	15.2	5.0	7.8
" " "	Marathon Co., Wis.	52	35	34	.47	..	..	..
" blue (<i>Fraxinus quadrangulata</i>)	Bourbon Co., Ky.	46	41	39	.53	11.7	3.9	6.5
" green (<i>Fraxinus lanceolata</i>)	Highland Parish, La.	47	39	38	.52	11.7	..	..
" " "	New Madrid Co., Mo.	49	42	40	.53	13.2	4.6	7.1
" Oregon (<i>Fraxinus oregona</i>)	Lane Co., Oreg.	46	39	37	.50	13.2	4.1	6.1
" pumpkin (<i>Fraxinus profunda</i>)	New Madrid Co., Mo.	46	37	36	.48	12.0	3.7	6.3
" white (<i>Fraxinus americana</i>)	Stone Co., Ark.	47	42	41	.55	12.6	4.3	6.4
" " "	Oswego Co., N.Y.	51	46	44	.58	14.0	5.2	8.7
" " "	Poughkeepsie Co., N.Y.	46	28	27	.50	12.6	4.1	6.8
Aspen (<i>Populus tremuloides</i>)	Rusk Co., Wis.	47	27	26	.36	11.1	3.3	6.9
" largetooth (<i>Populus grandidentata</i>)	Sauk Co., Wis.	43	27	26	.35	11.6	3.1	7.9
Basswood (<i>Tilia americana</i>)	Potter Co., Pa.	41	27	26	.32	16.5	6.8	9.9
" " "	Marathon Co., Wis.	41	25	24	.32	14.5	6.2	8.4
Beech (<i>Fagus stropunicea</i>)	Hendricks Co., Ind.	56	45	43	.56	16.5	4.6	10.5
" " "	Potter Co., Pa.	54	43	41	.53	15.8	5.1	10.6
Birch, paper (<i>Betula papyrifera</i>)	Rusk Co., Wis.	51	36	37	.47	16.3	6.6	8.8
" sweet (<i>Betula lenta</i>)	Potter Co., Pa.	59	47	46	.59	15.0	6.3	7.6
" yellow (<i>Betula lutea</i>)	" " "	56	45	43	.55	16.7	6.9	8.9
" " "	Marathon Co., Wis.	59	44	43	.54	17.0	7.9	9.0
Buckeye, yellow (<i>Aesculus cotandra</i>)	Savier Co., Tenn.	49	25	24	.33	12.0	3.5	7.8
Buckthorn, cascade (<i>Rhamnus purshiana</i>)	Lane Co., Oreg.	50	36	35	.50	7.6	3.2	4.6
Butternut (<i>Juglans cinerea</i>)	Sauk Co., Wis.	45	26	25	.35	9.4	3.6	5.7
" " "	Savier Co., Tenn.	47	28	27	.36	11.1	3.0	6.5
Cherry, black (<i>Prunus serotina</i>)	Potter Co., Pa.	46	36	34	.47	11.5	3.7	7.1
" wild red (<i>Prunus pennsylvanica</i>)	Savier Co., Tenn.	33	26	27	.35	12.8	2.8	10.3
Chestnut (<i>Castanea dentata</i>)	Baltimore Co., Md.	53	30	29	.40	10.4	3.3	6.5
" " "	Savier Co., Tenn.	56	30	29	.39	12.9	3.4	6.8
Chinquapin, western (<i>Castanopsis chrysophylla</i>)	Lane Co., Oreg.	61	42	31	.42	13.2	4.6	7.4
Cottonwood (<i>Populus deltoides</i>)	Penicott Co., Mo.	49	29	28	.37	14.1	3.9	9.1
" black (<i>Populus trichocarpa</i>)	Snohomish Co., Wash.	46	24	23	.28	12.4	3.6	8.6
Cucumber tree (<i>Magnolia acuminata</i>)	Savier Co., Tenn.	50	34	32	.44	13.6	5.2	8.1
Dogwood (flowering) (<i>Cornus florida</i>)	" " "	55	54	52	.54	19.9	7.1	11.5
" eastern (<i>Cornus nuttallii</i>)	Lane Co., Oreg.	55	47	45	.58	17.2	6.4	9.6

TABLE AND COMPARATIVE. (See Notes Page 90)

STRENGTH IN BENDING		STRENGTH IN COMPRESSION PARALLEL TO GRAIN		STRENGTH IN COMPRESSION PERPENDICULAR TO GRAIN		STIFFNESS		HARDNESS		SHOCK RESISTING ABILITY		SHEARING STRENGTH PARALLEL TO GRAIN	
Modulus of rupture	Relative Strength Compared to Oak Oak=100	Maximum Crushing Strength	Relative Strength Compared to Oak Oak=100	Fibre Stress at Elastic Limit	Relative Strength Compared to Oak Oak=100	Modulus of Elasticity in bending	Relative Stiffness Compared to Oak Oak=100	Load required to indent a 0.4 inch ball one half inch diameter	Relative Hardness compared to Oak Oak=100	Work to Maximum Load in bending	Relative Shock resisting ability compared to Oak Oak=100	Shearing Strength	Relative Shearing Strength Compared to Oak Oak=100
10	11	12	13	14	15	16	17	18	19	20	21	22	23
lbs. per sq. in.		lbs. per sq. in.		lbs. per sq. in.		1000 lbs. per sq. in.		Lbs.		inch lbs. per cu. in.		Lbs. per sq. in.	
6,540	76	2,960	84	313	43	1,167	89	440	42	8.0	60	770	59
9,270	107	3,980	113	875	120	1,335	102	853	81	11.6	87	1,232	94
6,000	69	2,340	66	409	56	1,107	84	552	53	11.3	85	866	66
6,000	69	2,260	64	452	62	960	73	..	..	13.1	98	..	..
9,650	112	4,180	118	994	137	1,241	95	1,028	98	14.7	111	1,543	118
8,880	103	4,040	114	801	110	1,319	101	732	70	10.6	80	1,202	92
10,040	116	4,360	124	1,012	139	1,480	113	1,007	96	13.0	98	1,318	101
7,570	88	3,510	99	653	90	1,132	86	790	75	12.2	92	1,191	91
7,600	88	3,360	75	989	136	1,043	80	752	72	9.4	71	1,214	93
9,920	115	4,220	120	689	122	1,416	108	1,008	96	13.3	100	1,336	102
10,760	126	4,610	131	794	109	1,635	125	1,083	103	16.3	123	1,604	123
8,310	96	3,390	96	705	97	1,285	98	780	75	12.6	102	1,163	91
5,280	61	2,160	61	203	28	840	64	318	30	6.9	52	625	48
5,850	68	2,720	77	269	37	1,185	90	366	35	6.1	46	813	62
5,270	61	2,450	69	221	30	1,149	88	263	25	4.9	37	626	48
4,450	52	1,820	52	197	27	842	64	222	21	5.8	44	568	45
8,610	100	3,480	99	605	83	1,353	103	908	87	14.1	106	1,264	97
7,720	89	3,080	87	609	84	1,131	86	740	71	10.9	82	1,155	88
5,770	67	2,210	63	304	42	1,013	77	486	46	15.0	113	786	60
8,590	99	3,560	101	525	72	1,490	114	894	85	15.6	117	1,219	93
8,610	102	3,520	100	469	65	1,490	114	736	70	19.0	143	1,083	83
8,390	97	3,400	96	439	60	1,597	122	754	72	14.2	107	1,145	88
4,820	56	2,050	58	210	29	981	75	286	27	5.4	41	662	51
6,320	73	3,270	93	670	92	631	48	731	70	13.4	101	1,151	88
5,870	68	2,580	73	258	35	1,008	77	394	38	8.4	63	761	58
4,680	56	2,250	64	287	39	931	71	379	36	7.9	59	748	57
8,030	93	3,540	100	444	61	1,308	100	664	63	12.8	96	1,127	86
5,040	58	2,170	61	265	36	1,042	79	386	37	6.2	47	677	52
6,010	70	2,710	77	400	55	949	72	448	43	7.4	56	845	65
5,230	61	2,230	63	366	50	910	69	402	38	6.7	50	749	57
7,030	81	3,020	86	491	68	1,016	77	602	57	9.5	71	1,013	78
5,260	61	2,280	65	242	33	1,013	77	344	33	7.8	55	681	52
4,830	56	2,160	61	204	28	1,073	82	253	24	5.0	38	601	46
7,420	86	3,140	89	408	56	1,565	119	515	49	10.0	75	991	76
6,790	102	3,640	103	1,033	142	1,175	90	1,408	134	21.0	158	1,516	116
8,210	95	3,640	103	872	120	1,090	83	979	93	17.0	128	1,297	99

Explanatory Notes of Hardwood Tables

By courtesy of
U. S. Department of Agriculture
Forest Service
Forest Products Laboratory
Madison, Wis., June, 1918

The value of the hardwood tables on pages 88 and 89 are based on tests of small, clear unseasoned green specimens 2 x 2 inches in cross-section-bending 28 inches span.

The columns of this table are numbered at the top from 1 to 23. The notes which follow are similarly numbered and refer to these columns.

(3) Average green material.

(4) About 12 or 15 per cent. moisture—average condition reached without artificial heating by material sheltered from precipitation—North Central States.

(5) About 8 per cent. moisture.

(3, 4, and 5) Any individual lot of lumber in the condition specified in columns 3, 4, and 5 would probably vary 5 per cent. from the figures given with a possible variation of as much as 20 per cent. For example, young thrifty pines will have a high moisture content when freshly cut, and will probably weigh 20 per cent. above the average given.

(6) This specific gravity is determined on a basis of green wood. In the case of partially dry wood there would be some shrinkage with a consequent increase in specific gravity or density. This increase for air-dry wood (12 to 15 per cent. moisture) gives a specific gravity about 10 per cent. higher than for green wood. For kiln-dry wood the specific gravity would still be higher.

(7, 8 and 9) Oven dry means entirely free from water. The shrinkage from a green to a kiln-dry condition (8 per cent. moisture) is generally about 75 per cent. of the shrinkage of an oven-dry condition. The shrinkage from a green to an air-dry condition (12 per cent. to 15 per cent. moisture) is generally about 50 per cent. of the shrinkage to an oven-dry condition.

(10 and 11) The strength value given (modulus of rupture) is for green wood. This strength value for air-dry wood is about 50 per cent. greater than that for the green, while for kiln-dry wood

it is about double that of the green, depending on the degree of dryness. The above does not apply to structural timbers with defects which may influence the strength of the piece more than the moisture content of the wood.

(12 and 13) The strength value given (maximum crushing strength) is for green wood. This strength value for air-dry wood is a little less than twice as great as for the green, while for kiln-dry wood it may be from two to three times that of the green, depending on the degree of dryness.

(14 and 15) The strength value given (compression perpendicular to grain) is for green wood. This strength value for air-dry wood is about $1\frac{3}{4}$ times as great as for the green.

(16 and 17) The strength value given (modulus of elasticity in bending) is for green wood. This strength value for air-dry wood is about 25 per cent. greater than that for the green.

(18 and 19) The strength value given (hardness) is for green wood. It is an average of the values for radial and tangential hardness. This strength value for air-dry wood is about 33 per cent. greater than that for the green.

(20 and 21) The ability of the wood to resist shock is a combination of strength and toughness.

(22 and 23) The strength value given (shearing strength) is for green wood. It represents an average of the values for radial and tangential shearing strength. This strength value for air-dry wood is about 50 per cent. greater than for the green. The shearing strength of kiln-dried wood is greater than for air-dry wood.

The Front Cover

The scene on the Front Cover is a common one in the Marion County, Oregon, National Forests. The cross-cut saw and axe, the two instruments used in felling the monarchs of the forests, are conspicuous.

It takes the hardy, experienced woodmen but a short time to fell a great tree and cut it into logs of proper length, ready to be skidded to the railroad, if he uses one of Disston's special high-grade Pacific Coast cross-cut and felling saws, which are especially designed for use in that section.

A SIMPLE WAY TO SOLVE A BIG PROBLEM

By "PINE KNOT"

(Written specially for Disston CRUCIBLE)

THERE are many well-seasoned veterans in the sawmill trade, to whom the suggestion contained in this article will be not only a valuable aid to better work, but an eye-opener as well. It is the experience of the writer that where trouble arises with the sawing, the blame is laid on everything (principally the saw) before the real source of the poor work is discovered or acknowledged.

When I say veterans of the mill trade, I mean more particularly those men who have had a long varied experience in the care and operation of large circular saws in sawmills that range in size from the light powered mill relying upon the capacity of an old fashioned over-shot water wheel, to the very modern, up-to-date mill with its high pressure steam power plant, and its steam appliances for operating the carriage, "nigger," etc.

In the majority of cases these represent the best that money can buy. The finest saws, and the most cleverly designed machinery that human ingenuity and skill are capable of producing.

And yet, with all these facilities at hand, and the skilled knowledge of an experienced operator to fall back upon, it not infrequently happens that a new circular saw from a maker who has acquired a world-wide reputation for good saws, will disappoint both the owners and operators.

Notwithstanding the fact that the saw is perfect in material, temper, and workmanship, and is fitted in the best possible manner by a painstaking and competent filer, they will not turn out as large a quantity of well-manufactured lumber as had been anticipated. The saw is sensitive, runs in and out of the cut, becomes hot on the rim, and makes uneven lumber—especially when the log is fed on the saw at a moderate or fast feed.

Nothing goes wrong without a cause, and while there are many causes for the saw not "standing up," as it should, the odds are in favor of laying the trouble, in the case of a circular saw, largely to the *saw guide*.

A saw guide, while it may be held *firmly* in position, is not always placed in the *proper* position. Usually it is

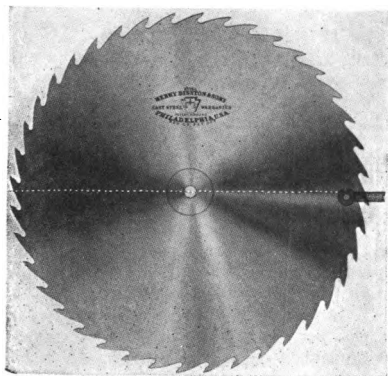


Fig. 1

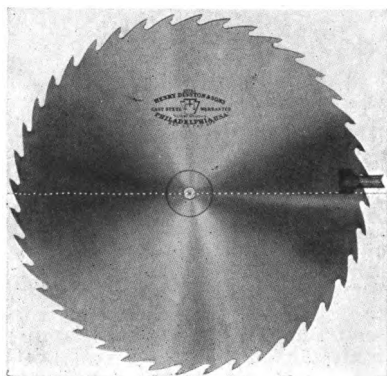


Fig. 2

found that the guide has been placed too far below the cut, which allows the saw to be deflected from a straight line before the guide has really had an opportunity to support the saw. The guide should be placed in a position that will bring the jaws as high as they can be placed, and still allow the head blocks to pass over (see figure 2). This simple change in the location of the guide will enable it to properly support the saw, and prevent its being deflected from a straight line.

In the small or portable saw mills, the builder, as a rule, puts a 4, 5, or 6 inch collar on the saw arbor, and then places the saw guide so as to bring the center of the guide just on a line with the center of the collar (see figure 1).

This is a method of placing saw guides in position, that has been employed for many years. But years ago, a saw mill man used a much thicker saw than he is willing to use now. And while it naturally follows that a thick saw plate is stiffer and will stand up better than a thin one, consequently the thick saw did not need as much support from the saw guide as the thinner one, and the saw guide was placed below the center of the saw.

If, instead of this, the guide was placed so as to bring its center directly in line with the *top edge* of saw collar, the saw would get a great deal more support from the guide, and "stand up" better in making slab cuts. It would be easier to operate, lessen the percentage of miscuts, and give much better service generally, for the work or cutting is all done above the center of the saw.

While I have found some mill men who objected to raising the guide because of possible interference with knots, I can say, positively, that if the proper attention is given to setting a log in position on the carriage there can be no trouble from this source. Turning the knot up carries it away at once, and after the first cut there will naturally be plenty of clearance.

During my early experience in the construction and repairing of mills and saws I once spent two days carefully testing out a mill where the circular saw refused to cut properly. Accidentally I discovered that shortly be-

fore the trouble began the old guide had been replaced by a new one. Repairing and setting up the old guide again, banished the trouble that I had not been able to remove in two days' search. Then and there I determined that I would always go to the guide first when called in to "doctor" a mill. I have gained a lot of experience since that time, but to this day my first move when looking over a circular saw mill is to note the position of the guide.

Editor's Note: We are always glad to present any suggestion that may help the mill man and we endorse all that our friend "Pine Knot" says in this article.

Timber Resources of the World—Norway & Sweden

Continued from Page 87

rough and sawn lumber increased to a value of more than 100 million Kronor. In 1912, the figure was increased 300 million Kronor for the entire lumber export."

The area of the State forests in Sweden is given in "Forest Resources of the World" as 18,641,000 acres in 1898. "Of this amount, the State actually owned 10,063,000 acres, while the remaining 8,578,000 acres were either the joint property of the State and of institutions or were merely under State control. The forest area, which is owned jointly by the State and private individuals, amounted to 2,295,000 acres.

In 1919 1,762,200 M. ft. B. M. of sawn and planed wood goods were exported.

Our latest data for the Swedish newsprint and wood pulp industry is found in Commerce Reports for June 12th, which says in part, "The world appears to be in the grip of a paper shortage without parallel in recent years. This is reflected by the present price of newsprint paper in Sweden. Swedish operators are receiving \$348 a ton for their product. They were glad to get \$187 in November, 1919. Such prices, of course, have stimulated production to a marked degree. There are 11 mills in Sweden engaged in the manufacture of newsprint paper. In 1919 their

total production was but 100,000 tons of this paper. During the first 3 months of 1920, production was increased to such an extent that the exports alone are expected to reach 140,000 tons in 1920. The growth of the Swedish wood-pulp and cellulose industry is not without interest. In 1892 the country produced 46,000 tons of mechanical mass and 48,000 tons of chemical mass, which had increased in 1915 to 305,000 tons mechanical mass and 910,000 tons chemical mass. The country ranks next to the United States in the cellulose industry. Sweden's 900,000 tons compare favorably with the 1,500,000 tons of the United States. Canada, which has tripled its production in recent years, is producing approximately 700,000 tons per year, while Germany in 1913 produced 840,000 tons.

"As the total value of Sweden's exports for 1919 was placed at \$425,854,000, it will be observed that one-half of the country's export may be credited to its forestry production, wood proper having been exported to a value of \$119,260,000, and pulp, pasteboard and paper to the value of \$103,450,000."

Another well-known product of Sweden, matches, we all recall, was hardly popular here during the war, and for some time after save as a subject for jest. "Since September the Swedish match industry has been working to its full capacity. The shortage of raw materials felt during the war has disappeared, but there is still difficulty in obtaining suitable wood."

The Swedes are noted for wise and far-seeing forest conservation and avoidance of wasteful methods in logging operations and saw-mills. Said a recent Swedish visitor to this country in "Pulp and Paper Magazine" for May 20th, "I was most impressed by the tremendous amount of waste rather than by the sawmill, planing mill and pulp mill. I was, of course, impressed by the latter, but more by the waste than by the amount of production and the terrible speed. The two weeks I spent in the lumber camps made me feel sorry for your forests. It was positively awful to see timber slaughtered in this way."

A Hat Made of Wood



We have heard of wooden shoes, but never the wooden hat that has arrived as the novelty of the spring millinery season. Though American made, it is creating its first furore in Paris, where one of the original models was sent on the day of its creation. The others are in the possession of Miss Clara Moores, star in "Shavings," who is shown above; and another actress in her company, Miss Eleanor Martin.

On the opening night of "Shavings" a tired New York designer, N. C. Smolin, sat in the audience with a French maker of hat styles. A floor full of shavings in the play gave Smolin an inspiration. The next day he executed a hat made of fine wood shavings blocked into a smart shape, dyed a fashionable color and enameled. This model was submitted to the French designer who took it abroad, declaring that Paris would go wild over wooden hats.

Next you may expect to see a bevy of excited maidens hanging around buildings under construction, anxiously waiting for a carpenter to drop a few shavings for their new millinery creations.—*The Three Partners.*

Camphor Farming

We have for our frontispiece a camphor-tree, several centuries old. It resembles a huge wooden octopus, but it is very valuable. We are indebted to DuPont Magazine for the cut and following camphor-industry data:

A great deal of the camphor used in the United States is imported from Japan and the island of Formosa. However, the camphor industry in China is an important one, in which both family and governmental interests are involved. Families are principally interested in the joint ownership trees. It is not uncommon for a family that numbers as many as two thousand people, considering both direct and collateral relations, to hold an equity ownership in a single camphor-tree like the one illustrated.

Before such a tree can be sold, however, a license must be obtained from the central government authorities, and also from the local officials. After permission to sell a tree is secured the sale takes place, and the proceeds, which average \$225 for a tree, are divided among the owners with regard to their several equities.

Some camphor is being produced in the United States, and it is believed that eventually American production in Florida will suffice to take care of domestic needs. Thirty-six years ago the United States Department of Agriculture purchased a tract of three thousand acres near Palatka, Florida, and planted camphor-trees in long hedge-rows. This camphor farm is today a splendidly developed area. Hedge-cuttings are gathered once or twice a year and distilled in accordance with modern chemical practise. By this method the life of the hedges is preserved and the product can be obtained annually for many years. Considering that the life of the camphor-tree in China is about 500 years, there is little fear that the industry in America will be short lived, for the trees thrive as well in certain favored sections of Florida as they do in China or other sections of the East.

In 1913, the Arlington Company, now one of the DuPont American Industries, purchased a tract of approxi-

mately twelve thousand acres at Waller, Florida, as the starting point in developing a large camphor farm. This is probably the largest acreage devoted to camphor-growing in America.

Tree Embraces Log



Several centuries ago when only Indians populated Oregon, a cedar, near Port Orford, fell after it had attained size and maturity. In the course of years a tideland spruce seedling began to thrust its roots into the decaying bark. Its roots have now entirely circled the still sound cedar log, and embrace the spruce in a grip that cannot be broken.

Chicago's Historic Trees

Chicago has several claims to representation in the "hall of fame for trees" inaugurated by the American Forestry Association for the recognition of famous trees throughout the United States. Numerous interesting facts are connected with certain trees in the city. For instance, in the Perennial Gardens in Lincoln Park there is a tree that is a shoot from a willow that overlooked the prison of Napoleon on the island of St. Helena.

In the garden also is a tree that grew from a slip of the Washington elm on Boston Commons. It is, however, a

slip from the replanted tree, as the original tree was destroyed by the British during the Revolution. In Washington Park, marked by a huge boulder, is a tree planted by General Grant in 1878 when he stopped in Chicago on his way west previous to his trip around the world.

At various places along the north shore following closely along the lines of the old Indian trails, curious trees were formerly broken or tied down with saplings by Indians to mark these trails. Only a few years ago there were eleven of these trees in perfect alignment, leading from the site of an old Indian village in Highland Park in a north-westerly direction for several miles. Most of these trees are still standing and can easily be identified.

A north shore tree that has become historical is known as the Pottowattamia tree. The tree, now dead, was known as the largest tree in Illinois, a cottonwood 150 feet high and eighteen feet in diameter.—*Southern Lumberman*.

Change in Custom of Chinese Carpenters

Gradually the Chinese carpenter and contractor is being led to give up the long-established custom of estimating the lumber requirements for a building in cubic feet and buying the estimated amount in the log and sawing it out. He is slowly realizing, after some years of education on the part of the foreign yard trade, that dimensions can be furnished direct from the yard in any number of pieces cheaper than a 16 by 16 inch or 20 by 20 inch can be hauled to the point of consumption and whipsawed into the required sizes by a Chinese sawyer. The latter can get more lumber out of a square with his homemade saw—usually made from a barrel hoop, tempered and filed—than would be the case were the square put through a circular or band mill, since the kerf is considerably less; but the cheapness of the Chinese operation does not offset the wasted time nor is the expense of whipsawing justified when the actual dimensions needed can be bought at the start.—*Dept. of Commerce*

Forestry and the Lumberman

Continued from Page 85

need not be extensively employed to assure adequate forest reproduction. In most regions forest fire prevention is the first essential. With this to safeguard the result, simple encouragement of restocking by natural means may be desirable. Over large areas existing practice and results are quite satisfactory. Elsewhere they do not present insurmountable obstacles, provided the public will meet the industry half-way by better fire protection and tax laws. Progressive lumbermen as a rule are willing to do their part and want obstructionists in their own industry made to do as much. The problems are always largely local and foresters now admit this, urging mainly no more than that all elements sincerely co-operate to attack them and do what can be done consistently with justice and sound business. The chief need now is for lumbermen to sit into the game themselves under these new rules, individually and through committees, and prove their competence to play it as it should be played.

On the other hand, if they do not do this, the present co-operative spirit and truce to hostilities will hardly continue. The trouble-makers will say "I told you so," the constructive forest reformers in and out of the industry will become discouraged, and the public will again be aroused to prejudice and hostility. The outcome may easily be, probably will be, impractical regulation.

Lumbermen will do far better to accept, and guide by participation, local steps conforming to local conditions for better fire laws and organized protection, some disposal of dangerous debris, stronger and non-political state forest departments, tax reform, state cut-over land purchase, and like fundamentals of such an American forest policy as must inevitably develop with the consideration of a great but diminishing resource. If they do this, the federal government will perforce aid and encourage such a program, but not impose long-range domination.

E. T. ALLEN.



SAWDUST

THREE FAMOUS EXPLORERS

Col. Roosevelt—the River of Doubt.
Gen. Pershing—the River of Kraut.
Gov. Edwards of New Jersey—the
River of Drought.—*Ex.*

NOT VERSED IN ETHNOLOGY

"Ernest," said the teacher of geography, "tell what you know about the Mongolian race."

"I wasn't there," explained Ernest hastily. "I went to the ball game."

Ex.

MEW—MEW

The cat that nightly haunts my gate,
How heartily I hate her!
Some night she'll come and mew till
late,
And then I'll mew-ti-later.

—*Cartoons Magazine.*

THE KISS

"But"—
"No."—
"Just"—
"No."—
"Once"—
"No."—
"Please"—
"N—"
* * *

"Henry, why don't you shave!"

—*Widow.*

PREACHER VS. DOCTOR

Willie had swallowed a penny, and his mother was in a state of alarm.

"Helen," she called to her sister in the next room, "send for a doctor; Willie has swallowed a penny!"

The terrified and frightened boy looked up imploringly.

"No, mamma," he interposed, "send for the minister."

"The minister?" asked his mother, incredulously. "Why the minister?"

"Because papa says he can get money out of anybody."

BEFORE AND AFTER

Mistress—"You don't seem to know about finger bowls, Norah. Didn't they have them at the last place you worked?"

Maid—"No, ma'am. They mostly washed themselves before they came to the table."

MEAN THING!

An Atlanta husband, having offended, came home the evening of the quarrel with a parcel under his arm.

"Darling," he said to his wife, "look here. I've got something here for the person I love best in all the world."

She came forward with a shrug.

"Humph! What is it?" she said. "A box of stogies?"

"DID Y' CUT 'IM DOWN?"

Pat Hogan that used t' drive a team for me come running out of th' barn one mornin' yellin' like an Indian. "Whaddy' think!" he howls, "Mc-Carty's hung his self t' a harness hook!" "Shut up!" sez I, "did y' cut 'im down?" "Oi did not," sez he, "he ain't dead yit!"—*The Grid.*

YE COUNTRY EDITOR

Most any man can be an editor. All the editor has to do is to sit at a desk six days a week, four weeks a month, and twelve months in a year, and edit such stuff as this:

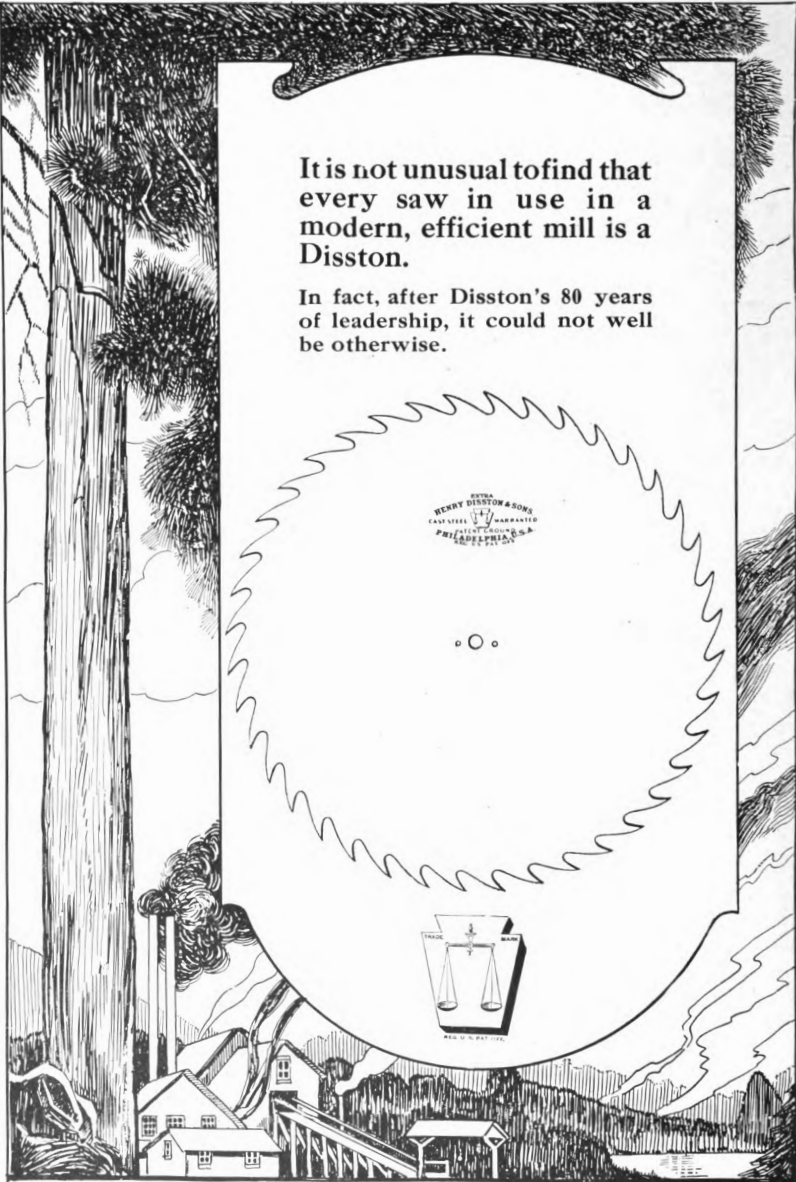
"Mrs. Jones, of Cactus Creek, let a can-opener slip last week and cut herself in the pantry. Joe Doe climbed on the roof of his house last week looking for a leak and fell, landing on his back porch. While Harold Green was escorting Miss Violet Wise from the church social last Saturday night a savage dog attacked them and bit Mr. Green on the public square. Mr. Frang, while harnessing a broncho last Saturday, was kicked just south of his corn crib."—*Yarmouth Light.*

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AUGUST

1920



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every saw in use in a
modern, efficient mill is a
Disston.

In fact, after Disston's 80 years
of leadership, it could not well
be otherwise.

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PHILADELPHIA U.S.A.
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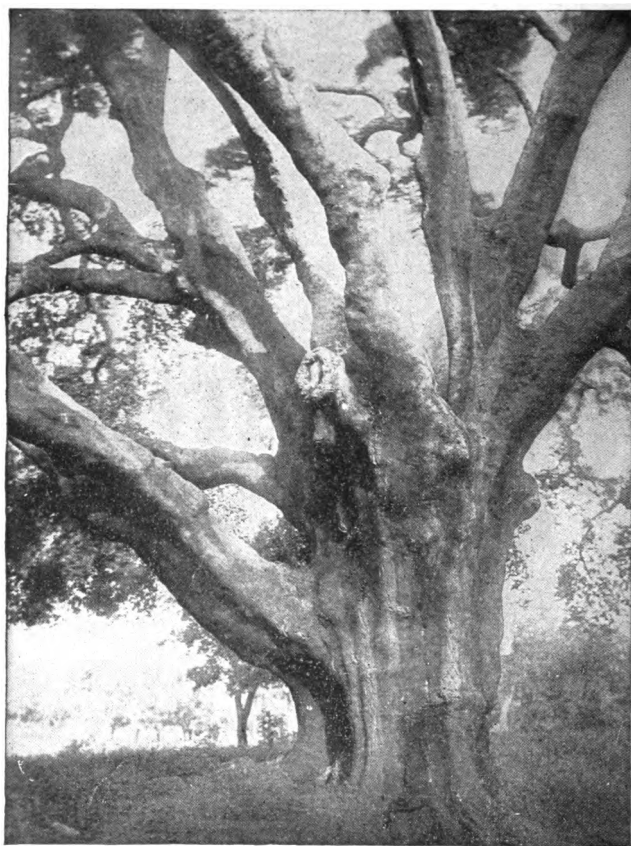
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**GNARLED TRUNK OF AN
OLD CORK OAK**

By Courtesy of Armstrong Cork Co., Pittsburgh, [Pa.]

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

AUGUST, 1920

No. 7

EDITORIAL CHAT

The Value of Information

Up at Madison, Wisconsin, there was held a meeting that should be of interest to every man who makes his living in any one of the many industries that are dependent on lumber—it was the Decennial of the Forest Products Laboratory.

This Forest Products Laboratory has been established at Madison just ten years. Mr. Carlile P. Winslow, Director of the Laboratory, defines the aim and purpose of the institution as follows:

"The Forest Products Laboratory is called an institution of industrial research. Its object is to acquire, disseminate, and apply useful knowledge of the properties, uses, and methods of utilization of all forest products.

"This has been the guiding thought in the development of the Forest Products Laboratory—the systematic acquiring of useful knowledge that may be transformed into the power that builds up American industries. . ."

The Forest Products Laboratory (which is a branch of the United States Forest Service) is not an experiment. It has long ago proved to be a paying proposition and a big boon to the lumber industry in all its branches. The following (also taken from Mr. Winslow's speech) are only three of the many instances where great benefits have been derived from the work done there:

"Work on water-resistant glues and plywood for airplanes carried on at the laboratory during the war emergency alone saved the War Department \$6,000,000 in their procurement of such material during a twelve months' period.

"Investigations carried on at the lab-

oratory during the past year regarding the use of hull fiber and second cut cotton linters for pulp and paper has made available 200,000 tons for this purpose and has resulted in the establishment of large plants with potential production of 300 tons per day and an annual sales value of \$15,000,000.

"Improved methods of turpentine developed by the Forest Service resulted in increased yields and less injury to timber, with net savings aggregating \$4,000,000 per year."

It is not our intention, and it is not necessary in this article, to take up any brief for the Forest Products Laboratory. The point of our statements regarding that institution is simply this:

It is almost impossible, in this day of high-pressure activity, to conduct any business without going outside our own little circle for information pertaining to that business.

What are you, as a business man—be you owner, operator, sawyer, filer, woodsman, or what—doing to take advantage of the many institutions (of which the Forest Products Laboratory is but an outstanding example) that are maintained solely to study and bring *specialized* expert advice to bear on the very problems that you are facing every day?

In most cases advice of this kind is free for the asking; what it may mean to you in dollars is illustrated by the three examples cited from Mr. Winslow's speech. Perhaps it would pay all of us to give careful, systematic consideration to this too-often-neglected part of our work—the collection and utilization of all available data pertaining to our business and our industry.

*Quality
Sells*

HOW CAN A "NATIONAL FOREST POLICY" BE ACHIEVED FOR THE UNITED STATES?

By BOLLING ARTHUR JOHNSON

In the "Cornell Forester," 1920

THERE has been a great discussion going on between the lumbermen of the United States and the foresters of the United States, since early in March,

1919, as to what should be done to bring the lumbermen and the foresters closer together, that co-ordinate harmony might ensue, so there might grow out of that harmony, a National Forest Policy for our country.

I am a professional listener, and while I never have any doubt as to what my conclusions are, I am very chary about EXPRESSING those conclusions, and in this matter of a National Forest policy, I never have been ready to make more than what the scientific research man would consider a "report of progress."

Realizing that the forester and the lumberman and the people of the United States have got to get closer together than they are NOW before anything is EVER accomplished—and realizing that the attitude of mind, of the professional FORESTER—in order that he may become of "the greatest use to the lumber industry"—will have more to do with solving this question than any other single thing—I will give a word picture of what I believe the FORESTER should BE and of what I know the lumberman IS, and will do this with the hope that what I have to offer will add something to a better understanding between the LUMBERMAN and the FORESTERS.

There has been altogether too MUCH

diplomacy and PRESERVATION of ETHICS, and altogether too MUCH of an endeavor upon the part of both sides of this discussion to handle the subject with wool-lined and heavy gloves—RATHER than going at the matter with hammer and saw and ax!

We have ALL hedged about this affair with an altogether too nice and lady-like attitude to get VERY far with SUCH a SUBJECT!

The forester being a man of the schools, cleverly and fully educated, desiring more to see his formulas worked out and his ethics PARAMOUNT than could be described by "money in the till" as measuring the result of

work well done; being a man of a profession which never CONTEMPLATED the amassing of money as denoting success in life, has FAILED to recognize the very OPPOSITE inclinations of the LUMBERMAN.

Of course this is not true of ALL foresters and neither does it matter whether it is true or not—provided the forester has deported himself in such surface way as to carry a CONVICTION of this attitude to the mind of the lumberman.

I maintain that this is the basic cause for the lumberman's opposition to the forester, whether the forester has been able to see the condition or not. The forester is HIGHLY specialized in his grasp of FORESTRY and all it means to him—but he is not highly specialized and has a very MARKED lack of information as to



This is how Bolling Arthur Johnson looked to our artist when he "stopped off" and had a talk about forest conservation with the Crucible Editor the other day.

the effect his attitude naturally **MUST** have upon the lumberman.

This statement is carefully thought out, and deliberately made, with no desire to be "delicate"—and—with **ONLY** a desire to "know the truth" because the Bible says "the truth shall set ye free."

In making this statement about the attitude of foresters and its effect on the lumber mind, I am referring to both **INDEPENDENT** and **GOVERNMENT** foresters, as a **CLASS**.

In any reference I make to lumbermen and **THEIR ATTITUDE** toward foresters, I do not refer to all lumbermen, but to the majority of lumbermen—to the very large and **OVERWHELMING** majority of lumbermen—**FOR**—there are **MANY** lumbermen, of course, who have—themselves—battered their way through football wedges and conscientiously worked their way through university courses, whether approaching them from the necessity or doing janitor work to pay for their matriculation, or from the "Gold Coast" of some opulent Eastern university.

Now, the majority of lumbermen do not lumber out of books and have a clean cut, inherited opinion of the rights of property, as set down in the constitution of the United States. His trees belong to him to have and to hold to cut as he pleases.

While it is altogether probable that the great public has something to say

about all this thing of "A National Timberland Policy" for the United States, the majority of lumbermen have not considered the great public as having anything to do with **THEIR** business any more than they have an interest in the great **PUBLIC'S** business; and very naturally resent anybody telling them what they shall do with their trees and how they shall do it, **QUITE** as much as **ANY** other man would resent public interference with

the amount of money he should use for his personal pleasure, or what style of car he should drive, or where he should bank his money, or what type of woman he should choose for his wife!

The great majority of lumbermen have not very seriously considered that the base of their property is something emanating from the public domain and that there **IS** a so-called "wasting industry."

The majority of the lumbermen of the United States realize that they

are misunderstood and brow-beaten by the public press, by bureaucratic Washington, by government and by public opinion, and they **RESENT** it, and they have never **YET** been able to organize a machine to fight it.

I could name 150 lumbermen—giving their initials and home addresses, without misspelling a name or giving a wrong location where those lumbermen might be found ordinarily—which list when it had been compiled would contain the names and addresses of



"There never was any 1,000-foot pile of lumber which had the same exact value of any other 1,000 feet of lumber."

practically ALL of the high class lumbermen in the United States who had ever made a call of courtesy or one of business in a voluntary way on the Forest Service in Washington, or who had any knowledge or any care for the wonderful institution that the Forest Service is, as it is now housed and as it now functions in the Atlantic Building in our National Capitol.

Lumbermen generally—that is, the majority of lumbermen—know a great deal more about the Forest Products Laboratory at Madison than they do about the Forest Service at Washington, but they have no real patience with scientific affairs as a whole. They are not interested in efficiency diagrams or especially in statistics, but are deeply and particularly interested in advancement in public favor of the particular wood which they individually manufacture and the amount of money which is in the till at the end of the year.

This attitude does not under any circumstances establish the fact that the lumberman is ignorant—far from it. He is like "Barney Fagan's Highborn Lady"—"Born that way."

Yes, I know the above statement needs explanation, for it is a statement and not an argument—a statement of fact—a hurdle set up. Let me help you leap that hurdle!

God never made any two trees alike and he made many species of

trees—all the varieties of fir and hemlock, pine of all colors and hardwoods, each with its special attribute—and NEVER any common denominator of value, but the false and FIATED denominator of "so much per thousand feet." There never was any 1,000-foot pile of lumber which had the same exact value of any OTHER 1,000 feet of lumber, even if it all came out of the same tree and same log and all was cut to one particular dimension. THEREIN are the differences that beset ANY man who endeavors to make the lumbermen of the United States all of a similar opinion concerning his trees or what shall be done with them to get the most out of them.

Manufacturing methods differ in great measure with each species of wood manufactured and one locality with another. For this reason, there is no NATIONALLY and INTERNATIONALLY known unit of value in LUMBER.

A pig of iron is a pig of iron at Gary, at Hongkong on the Thames embankment, or in the Gogebic Range; a bushel of wheat—with but little difference in grade—is comparable with all OTHER bushels of wheat—whether situated in North Dakota or by the edge of the Black Sea—BUT—1,000 feet of lumber is not like any OTHER 1,000 feet of lumber that



"God never made any two trees alike."

(Continued on Page 110)



Steel is the basis of all saw making. Good steel goes a long way toward the making of quality tools. If you start out with a poor grade of steel, all the heat treatment in the world will not make it a high-grade quality. On the other hand, if good steel is used and it receives improper treatment the result will also be an inferior product. The only difference is—in the latter process you are wasting good steel, while in the former you are “doping” poor material.

Ideal conditions prevail where the raw materials are under the control of the manufacturer of the finished article. Thus Henry Disston reasoned back in 1854 when he first started to manufacture crucible steel for his high-grade saws—he being the first saw maker in the United States to make his own steel, and for many years the only one.

We manufacture steel for all types of saws, the high quality of which is carefully maintained by expert steel makers and chemists.

Physical and actual tests are made of all steel in our Products Testing Department before it is converted into saws.

Such safe-guards assure the manufacture of saws and tools of the greatest efficiency and durability.



PROPERTIES OF VARIOUS HARDWOODS, A

COMMON AND BOTANICAL NAME	LOCALITY WHERE GROWN	WEIGHT PER CUBIC FOOT			SPECIFIC GRAVITY OVEN DRY Based on volume when green	SHRINKAGE PER CENT GREEN TO OVEN DRY CONDITION	
		Green	Air Dry	Kiln Dry		In Volume	Radial
1	2	3	4	5	6	7	8
		Lbs.	Lbs.	Lbs.		Percent	Percent
Elder, pale (<i>Sambucus glauca</i>)	Douglas Co., Oreg.	65	37	36	0.46	15.6	4.4
Elm, cork (<i>Ulmus racemosa</i>)	Marathon Co., Wis.	53	44	43	.58	..	..
" " "	Rusk Co., Wis.	54	46	43	.57	14.1	4.8
" slippery (<i>Ulmus rubescens</i>)	Hendricks Co., Ind.	55	43	42	.54	15.6	5.1
" " "	Sauk Co., Wis.	56	37	36	.47	13.4	4.9
" white (<i>Ulmus americana</i>)	Potter Co., Pa.	53	35	33	.44	14.4	4.2
" " "	Marathon Co., Wis.	45	33	32	.43	..	..
Greenheart (<i>Nasiranda rodicea</i>)	Demaree, So. America	72	62	60	.80	12.9	5.8
Gum, black (<i>Nyssa sylvatica</i>)	Sevier Co., Tenn.	45	36	35	.46	13.9	4.4
" blue (<i>Eucalyptus globulus</i>)	Alameda Co., Calif.	70	54	52	.62	22.5	7.6
" cotton (<i>Nyssa aquatica</i>)	Pemiscot Co., Mo.	54	34	33	.45	12.5	4.2
" cotton (<i>Nyssa aquatica</i>)	St. John's Parish, La.	66	37	35	.48	12.4	4.4
" red (<i>Liquidambar styraciflua</i>)	New Madrid Co., Mo.	46	36	..	.43	..	..
" " "	Pemiscot Co., Mo.	54	36	34	.45	15.0	5.2
Hackberry (<i>Celtis occidentalis</i>)	Hendricks Co., Ind.	47	39	38	.50	14.0	4.2
" " "	Sauk Co., Wis.	51	38	36	.48	13.8	4.9
Haw, pear (<i>Crataegus tomentosa</i>)	" "	63	49	47	.62	..	..
Hickory, big shellbark (<i>Hicoria laciniata</i>)	Sardis, Miss.	62	49	47	.60	17.6	7.4
" " "	Napoleon, Ohio	65	57	55	.65	20.9	7.9
" bittersweet (<i>Hicoria minima</i>)	" "	64	49	47	.60	..	..
" mockernut (<i>Hicoria alba</i>)	Sardis, Miss.	62	49	47	.61	16.5	6.9
" " "	Chester Co., Pa.	65	55	53	.66	18.9	8.4
" " "	Webster Co., W. Va.	62	..	..	.66	..	..
" nutmeg (<i>Hicoria myristiciformis</i>)	Sardis, Miss.	61	43	42	.56	..	..
" pignut (<i>Hicoria pabra</i>)	" "	62	50	48	.63	15.0	5.6
" " "	Napoleon, Ohio	64	53	51	.66	15.3	6.3
" " "	Chester Co., Pa.	65	54	52	.66	16.9	6.8
" " "	Webster Co., W. Va.	63	57	55	.67	21.2	8.5
" shagbark (<i>Hicoria ovata</i>)	Sardis, Miss.	63	49	47	.61	16.0	6.5
" " "	Napoleon, Ohio	64	54	51	.64	18.4	7.9
" " "	Chester Co., Pa.	63	47	45	.61	..	..
" " "	Webster Co., W. Va.	65	52	50	.65	16.5	6.5
" water (<i>Hicoria aquatica</i>)	Sardis, Miss.	69	46	44	.61	..	..
Holly, American (<i>Ilex opaca</i>)	Sevier Co., Tenn.	57	40	39	.50	16.2	4.5
Hornbeam (<i>Ostrya virginiana</i>)	Rusk Co., Wis.	60	36	36	.63	18.6	8.2
Laurel, California (<i>Umbellularia californica</i>)	Douglas Co., Oreg.	55	39	37	.51	11.9	2.8
" mountain (<i>Kalmia latifolia</i>)	Sevier Co., Tenn.	62	49	47	.62	14.4	5.6

L AND COMPARATIVE. (See Notes Page 106)

STRENGTH IN BENDING		STRENGTH IN COMPRESSION PARALLEL TO GRAIN		STRENGTH IN COMPRESSION PERPENDICULAR TO GRAIN		STIFFNESS		HARDNESS		SHOCK RESISTING ABILITY		SHEARING STRENGTH PARALLEL TO GRAIN	
Modulus of rupture	Relative Strength Compared to Oak Oak=100	Maximum Crushing Strength	Relative Strength Compared to Oak Oak=100	Fibre Stress at Elastic Limit	Relative Strength Compared to Oak Oak=100	Modulus of Elasticity in bending	Relative Stiffness Compared to Oak Oak=100	Load required to embed a 0.44-inch ball one-half inch diameter	Relative Hardness Compared to Oak Oak=100	Work to Maximum Load in bending	Relative Shocking ability Compared to Oak Oak=100	Shearing Strength	Relative Shearing Strength Compared to Oak Oak=100
10	11	12	13	14	15	16	17	18	19	20	21	22	23
per sq. in.		lbs. per sq. in.		lbs. per sq. in.		1000 lbs. per sq. in.		lbs.		inch lbs. per cu. in.		lbs. per sq. in.	
790	76	3,040	86	519	71	904	69	718	69	8.8	66	1,091	84
9,430	109	3,740	106	696	96	1,222	93	..	..	19.4	146	..	..
9,550	111	3,820	108	813	112	1,165	89	988	94	20.3	153	1,276	98
9,510	110	3,990	113	730	100	1,314	100	722	69	11.7	88	1,185	91
7,710	89	3,180	90	468	64	1,215	93	653	62	16.1	121	1,089	83
7,010	81	2,920	83	410	56	1,020	78	546	52	11.2	84	922	71
6,940	80	2,700	76	292	40	1,052	80	..	..	11.8	89	..	..
18,240	211	9,910	281	1,633	226	2,792	213	1,511	144	12.0	90	1,921	147
7,040	81	3,040	86	599	82	1,031	70	642	61	8.0	60	1,097	84
11,230	130	5,250	149	1,019	140	2,006	153	1,344	128	13.9	105	1,346	118
7,290	84	3,330	94	620	85	1,054	80	710	68	0.4	63	1,227	94
7,380	85	3,550	101	451	62	1,045	80	699	67	7.8	59	1,031	79
6,450	75	2,690	76	..	..	1,138	87	..	..	..	..	..	..
7,230	84	2,990	85	455	63	1,154	88	522	50	9.4	71	1,072	82
7,800	90	3,310	94	575	79	1,170	89	784	75	19.6	147	1,128	86
6,210	72	2,550	71	475	65	911	69	677	65	13.5	102	1,056	81
7,650	89	3,110	88	980	135	964	74	1,204	115	22.7	171	1,356	104
11,110	129	4,520	128	994	137	1,562	119	..	..	24.3	183	1,162	89
9,880	114	3,260	92	1,000	138	1,099	84	..	..	36.2	272	1,272	93
10,280	119	4,570	129	986	136	1,399	107	..	..	20.0	150	1,237	95
10,640	125	4,600	130	1,055	146	1,625	124	..	..	18.6	140	1,270	97
11,110	129	4,320	122	958	132	1,508	115	..	..	31.7	238	1,282	98
12,720	147	5,240	148	..	..	1,883	144	..	..	24.1	161	..	..
9,060	105	3,980	113	938	129	1,289	98	..	..	22.8	171	1,031	79
11,760	136	4,870	136	1,101	151	1,665	127	..	..	24.7	166	1,207	92
12,360	143	4,760	135	1,224	166	1,553	118	..	..	27.7	208	1,247	109
11,450	133	4,820	137	1,130	155	1,605	122	..	..	34.9	262	1,358	104
11,810	137	4,820	137	1,114	153	1,769	135	..	..	30.6	230	1,396	107
11,330	131	5,060	143	1,158	159	1,638	125	..	..	16.7	126	1,262	97
10,990	127	4,360	124	1,080	149	1,346	103	..	..	34.1	256	1,421	109
10,170	118	4,370	124	..	..	1,392	106	..	..	11.9	89	1,245	95
11,000	127	4,600	130	972	134	1,752	134	..	..	18.3	138	1,263	97
10,740	124	4,660	132	1,088	150	1,563	119	..	..	16.8	141	1,440	110
6,540	76	2,640	75	610	84	897	68	792	76	10.8	81	1,130	87
8,540	99	3,570	101	733	101	1,153	88	1,168	111	13.3	100	1,374	105
6,640	77	3,020	86	801	110	715	55	1,003	96	16.8	126	1,272	97
8,440	98	4,310	122	1,110	153	924	70	1,299	124	12.5	94	1,669	128

Explanatory Notes of Hardwood Tables

By courtesy of
U. S. Department of Agriculture
Forest Service
Forest Products Laboratory
Madison, Wis., June, 1918

The value of the hardwood tables on pages 104 and 105 are based on tests of small, clear unseasoned green specimens 2 x 2 inches in cross-section-bending 28 inches span.

The columns of this table are numbered at the top from 1 to 23. The notes which follow are similarly numbered and refer to these columns:

(3) Average green material.

(4) About 12 or 15 per cent. moisture—average condition reached without artificial heating by material sheltered from precipitation—North Central States.

(5) About 8 per cent. moisture.

(3, 4, and 5) Any individual lot of lumber in the condition specified in columns 3, 4, and 5 would probably vary 5 per cent. from the figures given with a possible variation of as much as 20 per cent. For example, young thrifty pines will have a high moisture content when freshly cut, and will probably weigh 20 per cent. above the average given.

(6) This specific gravity is determined on a basis of green wood. In the case of partially dry wood there would be some shrinkage with a consequent increase in specific gravity or density. This increase for air-dry wood (12 to 15 per cent. moisture) gives a specific gravity about 10 per cent. higher than for green wood. For kiln-dry wood the specific gravity would still be higher.

(7, 8 and 9) Oven dry means entirely free from water. The shrinkage from a green to a kiln-dry condition (8 per cent. moisture) is generally about 75 per cent. of the shrinkage of an oven-dry condition. The shrinkage from a green to an air-dry condition (12 per cent. to 15 per cent. moisture) is generally about 50 per cent. of the shrinkage to an oven-dry condition.

(10 and 11) The strength value given (modulus of rupture) is for green wood. This strength value for air-dry wood is about 50 per cent. greater than that

for the green, while for kiln-dry wood it is about double that of the green, depending on the degree of dryness. The above does not apply to structural timbers with defects which may influence the strength of the piece more than the moisture content of the wood.

(12 and 13) The strength value given (maximum crushing strength) is for green wood. This strength value for air-dry wood is a little less than twice as great as for the green, while for kiln-dry wood it may be from two to three times that of the green, depending on the degree of dryness.

(14 and 15) The strength value given (compression perpendicular to grain) is for green wood. This strength value for air-dry wood is about $1\frac{3}{4}$ times as great as for the green.

(16 and 17) The strength value given (modulus of elasticity in bending) is for green wood. This strength value for air-dry wood is about 25 per cent. greater than that for the green.

(18 and 19) The strength value given (hardness) is for green wood. It is an average of the values for radial and tangential hardness. This strength value for air-dry wood is about 33 per cent. greater than that for the green.

(20 and 21) The ability of the wood to resist shock is a combination of strength and toughness.

(22 and 23) The strength value given (shearing strength) is for green wood. It represents an average of the values for radial and tangential shearing strength. This strength value for air-dry wood is about 50 per cent. greater than for the green. The shearing strength of kiln-dried wood is greater than for air-dry wood.

Heavy Destruction of Timber by Fire

Timber sufficient to build 2,750 new five room houses was destroyed by fires on the National Forests in California last season. Fifty-five million feet of California's available timber supply, worth more than 133,000 on the stump, went up in smoke within a few short months.

—From *American Forestry*.



WEST AFRICA

THE authors of an article "West Africa, the Elusive" in the London Daily Telegraph, after speaking of the influences of the vast forests of Northern Russia, say "Tropical forest breeds a consciousness very different in its effects. Is it fear? One tries to penetrate the recesses of the undergrowth, with no success. On either side of the path lies a deep, green-black wall, peopled, one knows, with animals and birds and reptiles, though none show themselves. Wherefrom, one conjectures, emanates a curiously uncomfortable feeling of being watched. One attempts again and again to pierce the veil, and was it, or was it not, that one saw, or thought one saw, a pair of yellow eyes intently following one? Suddenly the place seems chilly. A twig drops and then a leaf from a cotton tree; both cause one to start at the terrible commotion these atoms make as they reach the ground. Supposing one lost one's way; supposing one had heart-failure or something to prevent one from leaving behind these depths once and for all. One hurries along with the carriers, and feels inclined to join in their song as they once more reach the light of the burning sun. Maybe the old scribes, responsible for the Bible, wrote of what they understood better than twentieth century theologians, when they warned their following against the "powers of darkness." They may have seen untrodden, dense, silent jungle, that would have supplied the necessary key to their exhortations. And so once again the query: "What is that sensation; is it fear? Probably."

These views do not coincide with those of A. S. Le Souef in the Canadian

Forestry Journal. "The forests of Africa are more interesting than those of Australia in that they are the abode of many wild animals. Elephants are fairly numerous, and where they have been much hunted, one has to be circumspect in their vicinity, as they are apt to charge. Monkeys may always be seen, while the tracks of leopards, antelope, wild pigs and many smaller animals show that the forests are well-patrolled at night."

It will probably be a long time before West Africa lives down its reputation as "the White Man's Grave." Nevertheless, this will doubtless come, for tropical medicine and sanitation are advancing with rapid strides, the diseases peculiar to the tropics are being conquered, and as it becomes more and more necessary and profitable for the white man to utilize the vast resources of the equatorial regions, it will pay to drain swamps and eliminate pest-spots. Even now he begins to find it perfectly possible to be healthy in the tropics if he eschews alcohol and leads a sensible life, with an occasional vacation to temperate lands.

To quote from Commerce Reports, May 17, "West Africa, proper, and as understood by European traders and officials, is that long stretch of about 3,000 miles of the continent from Port Etienne to and including the Portuguese Kongo. It is made up of Mauritania, Senegal, Upper Senegal, Upper Volta, Niger Territory, Portuguese Guinea, Gambia, French-Guinea, Sierra Leone, Liberia, the Ivory Coast, the Gold Coast, Togoland, Dahomey, Nigeria, the Cameroons, Spanish Guinea, and the French, Belgian and Portuguese Kongos; 20 large, well-organized states. There are more than 40 ports through

which the import and export trade of these colonies and protectorates passes, amounting to more than \$450,000,000 in 1919. The greater part of this is a growth that has taken place during the past 25 or 30 years and is principally in the hands of the British, French, Belgians and Portuguese, though the United States has shared a part of it indirectly, and during the war quickly gained second place among the countries supplying the exports. England has continued to hold the first place, principally on account of Manchester cotton goods. Before the war Germany was second in rank among the countries exporting goods to West Africa, furnishing principally "trade spirits." Germany was also the second in rank among the purchasers of West African raw products. The government machinery of each state works smoothly on the whole. With few exceptions one is as safe nowadays as in the most civilized countries."

"There are two American logging companies in the Ivory Coast, one in the Gold Coast, and some American mining interests in the Kongo."

Only recently have we learnt anything at all definite in regard to West Africa's timber resources. We will endeavor first to gain a general idea of them and afterward go a little more into detail with respect to some of the different states.

"Forest Resources of the World" published by the United States Government, 1910, says, "The equatorial zone is supposed to contain virgin forests able to replace Canada and Sweden in the market. Mélad shows that the equatorial forest is much less rich and extensive than has been thought. Near the Gulf of Guinea, between 10° N. and 4° S., there is a wooded area which is estimated at from 45 to 60 miles wide. East of this zone are found savannas, covered for hundreds of miles with coarse grass and scrub growth. Such is the Soudan and the French and Belgian Kongo as far east as the upper basin of the Kongo River and its tributaries, where another large forest area is found. The Equatorial zone thus consists of two great forests, one along the Western Coast of Guinea and the other in

the Center on the upper basin of the Kongo River, divided by a vast treeless area.

From the "Timberman," April, 1920, we quote a later general view: "There are on the West coast of Africa from Liberia to the Congo, to a depth of from 50 to 300 kilometers, forests second only to those of the United States and perhaps Brazil, which are destined to supply Europe for a long time. Several firms familiar with the qualities of the timber have in former years made attempts to market and introduce these woods. It was not until after the quality and comparative cheapness of these species were recognized that this trade commenced to grow, assisted by the improvement in woodworking, tools and machinery. Just before the war Hamburg brokers took part in the development of this industry. The trade increased in a few years and became an economic factor. It is estimated that about 500 different species of wood grow in the West African timber belt, but only an insignificant portion has so far found its way to market. Among the woods are Okume, Spanish or French, according to its origin in Spanish Guinea or French Gabon, is used for cigar boxes and commonly known as cigar wood; also for veneers and as a substitute for mahogany. Mahogany of two species, the aromatic and the capeli, is found over the entire coast country. Pear, Moabi, and N. Jabi are found principally in Kamerun and Gabon. These are excellent furniture woods. Others are: African nnt, ebony, padona, lemon, zebra, African poplar, apzelia, and poplar. These latter appear principally in Kamerun and are useful for various technical purposes and in the manufacture of furniture.

Much of this region is not yet sufficiently accessible and has not been investigated, and the difficulties of cutting and transporting the timber to the coast are many. In some regions the logs are cut and squared before they are brought out. Logs are rolled by native labor to the waterways. In the rainy season sudden rises in the water courses are taken advantage of to raft the timber to the coast. In the

rainy season workmen watch day and night for the opportune time to raft the logs down stream, for if an opportunity is allowed to pass, the logs sometimes lay over for a whole season. In 1913, 115,000 tons of okume and 30,000 tons of mahogany were imported into Germany. The war brought a complete stop to this enterprise."

Regarding forests and lumbering, we will conclude with a few extracts from "Trade and Shipping in West Africa" by Durant Ferson Ladd, Special Investigator for the U. S. Shipping Board, an interesting pamphlet recently issued.

IVORY COAST: "In general the country is divided into two zones, the forest zone and the open bush country of the plateau region. Extensive forests border on the lagoons, extending back into the interior and covering roughly about 50,000 square miles, equal to about one-third of the area of the colony. From these regions tapped by rivers much valuable wood is brought each year. Mahogany is the principal wood of export importance, although many other varieties are found which have a market value. There are a number of apparently good furniture woods of unlimited quantities. Many logs ranging from 1 to 5 tons are seen around Grand Bassam. After the trees are cut up country and dragged to the river, it takes from two to three months to bring them down to the Coast. The wet season sees them flooded down to the larger waterways, where at the end of the season, the larger rafts of from 100 to 500 logs are assembled and brought down to be squared. Logs must be made ready for shipment on schedule, as those remaining in the salt water over 8 to 10 days are liable to become wormy. The most highly paid workmen are the axmen who square the logs. Labor is extremely hard to get, as natives are leaving the coast for other colonies. Large orders have been placed by the French Government for reconstruction work."

GOLD COAST: "The country adjoining the Coast line is wooded for a depth of 200 miles on the western boundary, and for about 150 miles in

land in the center and on the eastern boundary. Recently much of the wooded area in the eastern section has been cut away for cocoa plantations. The forests near the coast yield valuable woods. The mahogany industry around Axim, in the western part of the colony, is of importance commercially to the United States. The Ankobra River waters this area, and furnishes means of transportation for bringing down the timber from up country. Today concessions for practical operations are hard to get. There are plenty of uncut areas, but the cost of getting the timber out is too great. The natives themselves operate to a certain extent, bringing the logs down the river and selling them at the best price. Some timber buyers are dependent upon this source for their supply. No timber is left in the bush over a year. Most of the logs are squared or partially squared to make closer stowage. One large American company maintains three or four steam launches, saw mills and other equipment under the direction of 8 or 10 white men, half of whom are American. These people are the largest mahogany operators on the coast. The value and quantity of lumber exported in 1918 exceeded the 1917 shipments by £68,521 or 99 per cent in value and by 7,199,255 sq. ft. in quantity. This is only a partial revival of a trade which during the war had suffered enormously.

NIGERIA: The bulk of the forests of Nigeria are in two zones. "A belt of swamp and Mangrove forest which follows the coast line and varies from 10 to 60 miles in depth. It includes the delta of the Niger and is intersected by innumerable rivers and creeks. A belt of dense tropical forest from 50 to 100 miles wide intersected by rivers and streams and very rich in oil palm trees, which constitute the chief wealth of Nigeria. The Southern Provinces are very rich in forests. In addition to palm oil and kernel trees, there is an abundance of raphia palm, valuable mahogany, timber resembling walnut and cedar, and other hardwood good for building; also soft white and medium hardwoods suitable to replace imported timber. However, local saw

mills are needed before satisfactory results can be obtained. American timbermen should look carefully into the opportunities offered by Nigeria in new woods, which can profitably be exploited as soon as increased transportation facilities are developed." The natives make a curious use of files in the colony, "The broad end is flattened out and the pointed end driven into a wooden club and used as a chopper. The export figures for mahogany show that prior to the war the United States and Germany were the only importers of Nigerian timber and that after the opening of hostilities that the U. S. took Germany's share."

THE CAMEROONS: The coast line of the former German colony "extends some 200 miles and is covered with mangrove swamps to a depth in places of 20 miles. Palms and other tropical vegetation are found on the lowlands. The forests are thick with large trees entangled with tall creepers. There are many different woods obtainable in the forests of this colony and in the Gaboon district to the South. The principal woods are mahogany, okume (an excellent wood for cigar boxes, etc.), walnut, ebony, redwood, paper wood, ironwood, and a number of bastard woods suitable for every need. The cost of operation would seem to be low. One young Frenchman asked about American firms who might consider operating in this section of Africa. He stated that a mahogany log cost from 2 to 5 francs (40 cents to \$1.00) when purchased on the river from the natives in Gaboon and that much could be obtained through barter. However, these facts cannot be vouched for and the cost of bringing the logs alongside a ship may be prohibitive as an investment. Around Duala the forest region extends from the Coast some 250 miles up country.

Paper Pulp From Seaweed

"That the manufacture of paper pulp from seaweed is proving a profitable undertaking in Japan seems evidenced by the fact," says the U. S. Consul in that country, as reported by the Bureau of Foreign and Domestic Commerce, "that the only company

manufacturing this pulp is building another factory. This concern was organized in December, 1919, and is producing, by a secret process, about 50 tons of pulp daily, which is largely used in the composition of cigarette paper. The new plant, when completed, will have a daily capacity of 150 tons of pulp. The present price is about five cents a pound."

How Can a "National Forest Policy" be Achieved for the United States?

(Continued from Page 102)

ever has been, or *will* be, when it comes to giving it a *value*. Therein is the reason why there are so many manufacturers' associations in the lumber trade and why those manufacturers' associations have up to date paid vastly more attention to making the lumber-consuming world conscious of the fact that THEIR lumber is better than all OTHER lumber and have paid so LITTLE attention to what any government bureau, or any scientific man in the bureau, or OUT of it, may consider to be the proper treatment of his raw product, whether it be in the PILE or in the FOREST.

The analytical Forest Service man and independent forester and scientific lumberman will get a fundamental truth out of these words without boiling them to fever heat or reducing them into an epigram; and yet this is not pessimism. This is not only the TRUTH, and I wish all in interest would try to make the most of it—because—along lines of truth are the gateways to co-operation, co-ordination, solidarity! Upon no other basis can a National Lumber Policy for the United States be established.

The forester of the future—the NEAR future—has a wonderful opportunity to help if he accepts conditions as they are.

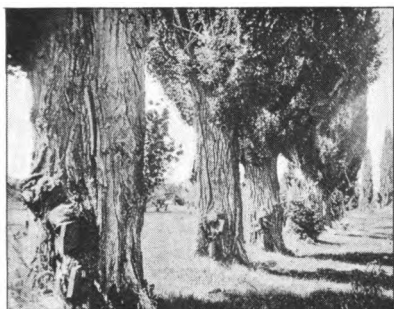
The forester has as much right to an opinion as the lumberman who has several million dollars in the bank—but the viewpoint of the forester will mean nothing unless it comprehends the RIGHTS of all CONCERNED.

The Front Cover

On the front cover of this issue is portrayed a scene in Loveland Canyon, Colorado. As we study this view we marvel at nature's lavish and varied display of color, variety of trees, shrubbery, and rock formation. One can almost hear the ripple of the brook and see the snowy cloud leap from the mountain peak into the heavens, and feel the tonic effect of the pine-scented air as he stands in the silence of one of nature's cathedrals.

An audible expression of admiration would likely echo adown the canyon as if to accentuate the sentiment in the memorable expression of the Swiss poet, Amiel: *"Mother of marvels, mysterious and tender nature, why do we not live more in thee?"*

Trees Capture Fence



Many years ago a gentleman in New York utilized a row of Irish poplars in making a fence by nailing boards to them. In the course of time the trunks of the trees, in growing, overlapped the boards, until, at the present time, the boards are at the center of the trunks. Not needing the fence any longer, the owner sawed off the boards, the remnants of which can be plainly seen protruding from the trunks of the trees in the near foreground.

There are men who are happier at a mass meeting of the unemployed than they are at work.—*Ex.*

Cork

The frontispiece of this CRUCIBLE is reproduced from a photograph of a "Gnarled Trunk of an Old Cork Oak." For it and the following descriptive matter we are indebted to the Armstrong Cork Co., Pittsburgh, Pa.:

"It remained for the elder Pliny, however, in his wonderful work on natural history, written in the first century of the Christian era, to make the most remarkable reference to cork to be found in ancient literature:

"The cork oak is but a very small tree and its acorns of the very worst quality * * *; the bark is its only useful product, being remarkably thick, and if removed will grow again. * * * This substance is employed more particularly attached as a buoy to the ropes of ships' anchors and the drag-nets of fishermen; it is used only for the bungs of casks and as a material for the winter shoes of women.'

"Cork jackets—life-preservers—are mentioned by Plutarch. Thus five of the principal functions which cork fills in the world to-day were recognized two thousand years ago. In the fifteenth century glass bottles were introduced, which gave such great impetus to its general use that the real beginning of the cork industry may properly be said to date from that period. Some conception of its importance today may be gathered from the fact that the importations of the United States of crude and manufactured cork now aggregate almost \$5,000,000 in value annually.

"The word *cork* is derived from the Laten *cortex*, meaning bark, and the study of its origin and manufacture leads at once to those remantic countries bordering the Mediterranean Sea.

"Flourishing as it does in a hot, semi-arid climate, there seems to be no reason why this valuable tree should not be successfully introduced in the Southern and Southwestern sections of the United States; in fact, in the year 1858 the United States Government took certain steps in this direction, and even went so far as to distribute seedlings to interested persons in several states. The Civil War interfered, however, and the experiments were never fully carried out."



SAWDUST

HOW'S THIS FOR A DEFINITION?

A girl is a female of the species whom we stop kissing at twelve and start again at twenty.

LET HER DOWN EASY

Herman R.: "Did you make those biscuits, my dear?"

R.: "Yes, darling."

Herman: "Well, I'd rather you would not make any more, sweetheart."

R.: "Why not, dear?"

Herman: "Because, angel mine, you are too light for such heavy work."

NATURAL HISTORY

They were looking at the kangaroo at the zoo when an Irishman said:

"Beg pardon, sor, phwat kind of a creature is that?"

"Oh," said the gentleman, "that is a native of Australia."

"Good hivins" exclaimed Pat, "an me sister married one o' thim."

FEARFUL STRUGGLE

They were discussing the war. "I suppose this is the most fearful struggle the world has ever seen," said the traveling salesman.

"Oh, I don't know," replied the postmaster. "I once saw two Jew highwaymen trying to take money from a Scotchman."—*Case Eagle*.

STREET-CAR ETIQUETTE

A small boy, who was sitting next to a very haughty woman in a crowded car, kept sniffing in a most annoying way, until the woman could stand it no longer.

"Boy, have you got a handkerchief?" she demanded.

The small boy looked at her for a few seconds, and then, in a dignified tone, came the answer:

"Yes, I 'ave, but I don't lend it to strangers."—*Graphica*.

POOR MARY

Dear Teacher:—

Pleas exkuse Mary frum skool to-da—yisterda she got wet in the A. M. and had a chill in the P. M.

WHAT IN THUNDER IS THE MATTER WITH THIS OLD WORLD OF OURS

Too many pitchers and not enough catchers.

Too many engineers and not enough firemen.

Too much sliding and not enough climbing.

Too many ornaments and not enough dishwashers.

Too many short skirts and not enough waist material.

Too many silk stockings and not enough old fashioned sox.

Too much affinity and not enough divinity.

Too much religion and not enough Christianity.

Too much reputation and not enough character.

Too many skeleton keys and not enough Yale locks.

Too much effect and not enough cause

Too much selfishness and not enough generosity.

Too many Pole-cats and not enough Roses.

Too many red roses and not enough red cheeks.

Too many hammers and not enough horns.

Too many dollars and not enough sense.

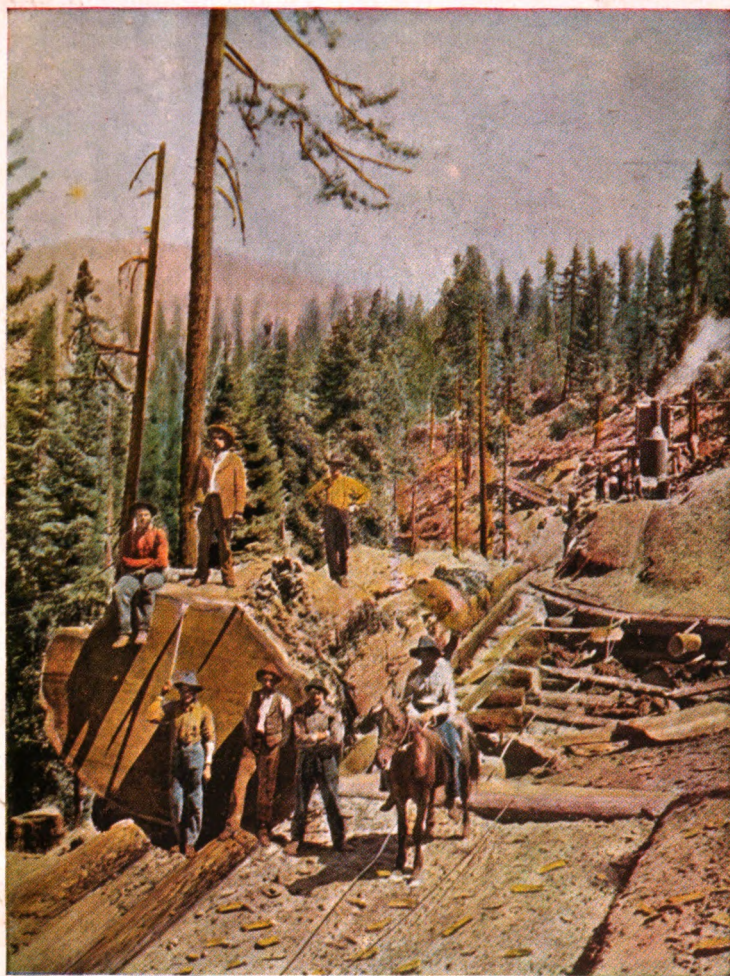
Too many cures and not enough preventatives.

"Too much," that's at the bottom of it all—whether it's food, smokes, religion or carbohic acid. "Too much" will kill it and kill it quick.

528.03

DIS

THE DISSTON CRUCIBLE



SEPTEMBER

1920

DISSTON

HENRY

CROSS-CUT SAWS



REG. U. S. PAT. OFF.

The Disston **HENRY** Cross-Cut Saw is manufactured from finest Disston-Made Steel.

It is tempered by the exclusive Disston process, which gives the superior edge and set-holding qualities which have made the Disston Cross-Cut Saws the favorites with Lumbermen wherever used.

The **HENRY** Saws are ground on lines that conform exactly to the breast of the saw, leaving the blade uniform in thickness throughout the entire length of the cutting-edge; they are tapered to an extra thin back, which gives maximum clearance without sacrificing the necessary elasticity and stiffness.

In design, material, temper and workmanship these saws represent the best in Cross-Cut Saws. When properly fitted, they will cut faster, run easier, and last longer than any other saw of the same width and weight.

Henry Disston & Sons

INCORPORATED

PHILADELPHIA, U. S. A.

THE DISSTON CRUCIBLE

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\$1.00 YEARLY IN ADVANCE

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This Magazine is Published for the Advancement of the Interests of
Millmen by

HENRY DISSTON & SONS
INCORPORATED

Keystone Saw, Tool, Steel and File Works
PHILADELPHIA

BRANCH HOUSES

Chicago, Ill.; New York; Boston, Mass.; Cincinnati, Ohio; Seattle, Wash.;
Portland, Ore.; New Orleans, La.; Memphis, Tenn.; San Francisco, Cal.;
Bangor, Me.; Sydney, Aus.; Vancouver, B. C.
Canadian Works: - Toronto, Canada

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"HENRY DISSTON created a new American industry. He gave to the United States the greatest saw works in the world, and founded an industrial university wherein a dozen useful trades are taught. Not only did he redeem us from all dependence on foreign countries, but turned back the tide and made them accept his products and this simply by peaceful demonstration of superior skill in manufacturing."

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

SEPTEMBER, 1920

No. 8

Yesterday, Today, and Tomorrow

On another page in this issue we tell a little about the *Yesterdays* of the House of Disston—days of which everyone of us are mighty proud.

We are equally proud of the place of leadership maintained by our institution *Today*.

But the achievements of *Yesterday* and *Today* are valuable only as an indication of what will come *Tomorrow*.

All the knowledge and experience that made possible our triumphs of *Yesterday* are here in increased measure *Today* and will enable us as leaders, to give even greater service to saw and tool users *Tomorrow*.

*Quality
Sells*

FORESTS— THE NATION'S BACKBONE

By CHARLES LATHROP PACK

President The American Forestry Association

Written specially for the CRUCIBLE

INTO such common use has come the telephone that few give thought to its commercial value. The same can be said of electric lights, the automobile, the wire-

less. Indeed, the aeroplane now whirs overhead and we no longer pause to locate the aviator and to wonder. We stood in more or less awe of these things when first introduced, but as they became common to our every-day life we turned to new things. The same can be said of wood. Little thought has been given its source. People see lots of trees in a journey from New York to

Chicago, and little or no consideration is given to the fact that every industry in the commercial life of our nation is absolutely dependent in one form or another on wood—and that means upon our forest resources. Let us

look at the facts squarely. Here they are:

We are consuming lumber three times as fast as we are producing it.

Experts predict our saw log lumber will be gone in fifty years.

The bulk of the original supplies of yellow pine in the South will be gone in ten years, and within seven years 3000 manufacturing plants there will go out of existence.

White pine in the lake states is nearing exhaustion and these states are paying \$6,000,000 a year in freight bills to import timber.

New England, self-supporting in lumber twenty

years ago, now has to import one-third of the amount used. It has \$3,000,000 invested in wood and forest industries, employing over 90,000 wage earners.

Fire destroys over \$20,000,000 worth



YOUNG FOREST OF YELLOW PINE.

"The bulk of the original supplies of yellow pine in the South will be gone in ten years."

of timber every year and kills the reproduction upon thousands of acres of forest lands.

Within fifty years our present timber shortage will have become a blighting timber famine.

Forests can be protected from fire, regrowth can be encouraged, conservative cutting can be practised, reforestation can be accomplished, but it takes from fifty to one hundred years to mature a timber crop.

Forest devastation must be stopped, lands now in forest must be kept continuously productive, forest lands now devastated and idle must be put to work.

Now let us turn to a tabulation of the various uses of wood that come to mind. For example:

Lumber and timber products, planing mill products, sash, doors, blinds, and general millwork, window and door screens and weather strips, wooden packing boxes, cigar boxes, barrels and kegs, turned and carved woods, lasts, wooden furniture, including rattan and willow, show cases, billiard tables

and materials, looking glasses and picture frames, sewing machine cases, baskets and rattan and willow ware, coffins and burial cases, rules, matches, pulp woods, wood carpet, charcoal, treated and preserved woods, carriages and wagons, aëroplanes, agricultural implements, dairymen's, poulterers' and apiarists' supplies, wood for engraving, musical instruments and materials, paper and wood pulp, phonographs and graphophones, tobacco piles, refrigerators and kitchen cabinets, ships and boards, toys and games, turpentine and rosin, washing machines and clothes wringers, wood distillates, artificial limbs, professional and scientific instruments, handles, clocks, playground equipment, printing material, trunks, shuttles, spools and bobbins, firearms, pulleys and conveyors, patterns and flasks, pulps and wood pipe, tanks and silos, bungs and faucets, brooms and carpet-sweepers, paving materials, pulpers' woodwork.

That list will give some idea of the importance of the campaign of the

Continued on Page 126



These great piles of lumber would indicate inexhaustible supply, but "within fifty years our present timber shortage will have become a blighting timber famine."

OUR EIGHTIETH BIRTHDAY

1920 Marks Eightieth Year in the Growth and Development of the House of Disston

JUST eighty years ago, in a little shop in Philadelphia, Henry Disston founded a saw manufacturing business that has grown steadily, until now the House of Disston occupies sixty-eight buildings on a factory site covering sixty-one acres, and employs more than 3600 workmen.

Few businesses can look back to the ideals and enterprise of the founder with more pride than the House of Disston. Henry Disston was a figure who will always be remembered in the saw-making industry as one of its most notable leaders.

His early life was full of those trials and set-backs which proved the worth of so many of our early American business men. To quote from an old volume of biographies:

"Henry Disston, Saw Manufacturer, was born at Tewkesbury, England, in 1821, and is a son of Thomas Disston. Thomas Disston, after his son's birth, moved to Derby where he engaged in the manufacture of lace machines. He instructed his son in the business and also in the general principles of mechanics.

"While yet a youth, Henry Disston, with his sister and father, came to America, where he landed at Philadelphia, after a tedious voyage of sixty days. The son experienced some difficulty in getting a position, but eventually found one with Luidley, Johnson & Whitecroft, where he learned the art of manufacturing saws, and remained with them until he was twenty-two years old.

"At that time, his employers failed and Henry Disston, accepting some tools and materials in lieu of wages due him, determined to start a saw factory of his own.

"For three years the business was

conducted with varying success. There was a great prejudice against American-made saws which was exceedingly difficult to overcome; it was necessary for this young manufacturer to spend half of each week soliciting orders, employing the other half to fill them.

"In 1844 he was induced to occupy part of a building furnished with steam power—the first steam saw-factory in the country.

"After much trouble with this and succeeding landlords, he determined to rent no more buildings, but to build one and own it. His first workshop and his own property covered but twenty square yards.

"The severe financial crisis of 1857 did not affect him in the least; but he feared the result of the Civil War which broke out in 1861. He was in position to manufacture military accoutrements and soon received large orders. He also sent twenty-five men to the army, paying their wages and keeping their places open during their absence.

"In 1862 he added a rolling mill for the production of plates. In 1864 his works were destroyed by fire, but he at once improvised on the old ground workshops which were all in running order within ten days after the calamity. He also enlarged his premises and doubled his manufactures. Saws were no longer the only article made by him, but other articles in steel were added to the line."

* * *

Here we have the record of a struggle that many men would have given up. That record is an inspiration. The House of Disston may well be proud that its products have passed this

strenuous test; that its products, in spite of prejudice against domestic and unknown goods, in spite of wars, national financial troubles, and the keenest competition, have won world-wide renown. For there is no country in the world into which Disston Tools have not entered. And everywhere these tools have given impetus to the growing regard for a great organization and its products.

At first Henry Disston worked alone. But help came to him as his sons grew older and were ready to stand by the father. At his death the sons continued the business with the same regard for sterling quality. That spirit of thoroughness and honesty has been instilled in every member of the House of Disston.

And as these sons grew older, and some of them died, their sons, the grandsons of Henry Disston, took their places. And even as their fathers, they have maintained the high standard of quality and efficiency that Henry Disston demanded.

With such a foundation, with such leaders, with such precedent, is it any-

thing to be wondered at that the House of Disston operates the largest saw making factory in the world?

The present officers of the company are:

Frank Disston
President and Treasurer

Henry Disston
1st Vice-President

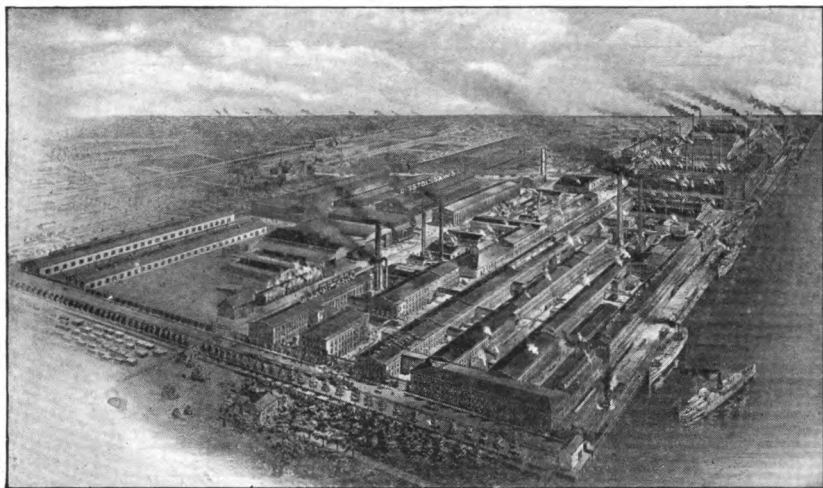
Edmond B. Roberts
2d Vice-President and Secretary

Wm. D. Disston
3d Vice-President

S. Horace Disston
4th Vice-President in Charge of Sales

Hamilton Disston
5th Vice-President in Charge of Purchasing, Statistics, Employment, and Police

Wm. S. Armstrong
Assistant Secretary and Assistant Treasurer



61 Acres

THE PLANT OF HENRY DISSTON & SONS, Inc.
Situated along the Delaware River, Tacony, Northeast Philadelphia

68 Buildings

PROPERTIES OF VARIOUS HARDWOODS, A

COMMON AND BOTANICAL NAME	LOCALITY WHERE GROWN	WEIGHT PER CUBIC FOOT			SPECIFIC GRAVITY OVEN DRY Based on volume when green	SHRINKAGE FROM GREEN TO OVEN DRY CONDITION		
		Green	Air Dry	Kiln Dry		In Volume	Radial	Tangential
1	2	3	4	5	6	7	8	9
		Lbs.	Lbs.	Lbs.		Percent	Percent	Percent
Locust, black (<i>Robinia pseudacacia</i>)	Sevier Co., Tenn.	58	49	48	0.66	9.8	4.4	6.9
" honey (<i>Gleditsia triacanthos</i>)	Hendricks Co., Ind.	66	51	49	.70	8.6	..	..
" " "	Penisacot Co., Mo.	60	44	42	.68	11.3	4.2	6.6
Madrone (<i>Arbutus menziesii</i>)	Butte Co., Calif.	66	43	42	.54	16.2	5.1	11.7
" " "	Douglas Co., Oreg.	59	48	46	.58	17.6	5.5	11.9
Magnolia (evergreen) (<i>Magnolia foetida</i>)	Winn Parish, La.	62	35	34	.46	12.3	5.4	6.6
Maple, Oregon (<i>Acer macrophyllum</i>)	Snohomish Co., Wash.	47	34	32	.44	11.6	3.7	7.1
" red (<i>Acer rubrum</i>)	Marathon Co., Wis.	54	38	37	.51	..	..	..
" " "	Potter Co., Pa.	49	36	34	.46	12.6	3.8	8.1
" silver (<i>Acer saccharinum</i>)	Sauk Co., Wis.	46	34	32	.44	12.0	3.0	7.2
" sugar (<i>Acer saccharum</i>)	Hendricks Co., Ind.	54	43	41	.55	14.3	4.9	9.1
" " "	Potter Co., Pa.	58	44	42	.55	14.7	4.8	9.2
" " "	Marathon Co., Wis.	56	44	42	.58	..	..	..
Oak, bur (<i>Quercus macrocarpa</i>)	Sauk Co., Wis.	61	45	43	.58	12.7	4.4	8.9
" California black (<i>Quercus californica</i>)	Butte Co., Calif.	64	38	37	.49	13.6	4.1	6.4
" " " "	Douglas Co., Oreg.	68	40	39	.53	10.6	3.1	6.8
" canyon live (<i>Quercus chrysolepis</i>)	Butte Co., Calif.	71	56	54	.70	16.2	8.0	14.3
" chestnut (<i>Quercus prinus</i>)	Sevier Co., Tenn.	62	46	45	.57	16.7	5.5	9.7
" cow (<i>Quercus michauxii</i>)	Winn Parish, La.	65	50	48	.60	19.4	5.9	9.2
" laurel (<i>Quercus laurifolia</i>)	" " "	66	47	46	.56	19.0	3.9	9.5
" Pacific post (<i>Quercus garryana</i>)	Douglas Co., Oreg.	69	50	48	.54	13.4	4.2	9.0
" post (<i>Quercus minor</i>)	Stone Co., Ark.	60	47	46	.59	16.0	5.7	10.6
" " "	Winn Parish, La.	66	49	47	.60	16.5	5.2	8.9
" red (<i>Quercus rubra</i>)	Stone Co., Ark.	65	45	43	.57	14.5	4.2	8.3
" " "	Hendricks Co., Ind.	64	44	42	.57	13.1	3.7	8.3
" " "	Richland Parish, La.	67	50	48	.56	..	..	..
" " "	Sevier Co., Tenn.	61	42	41	.53	15.3	3.7	8.5
" Spanish (lowland) (<i>Quercus pagodesfolia</i>)	Winn Parish, La.	67	49	47	.61	16.4	5.2	10.8
" " (highland) (<i>Quercus digitata</i>)	" " "	62	42	40	.52	16.3	4.5	8.7
" swamp white (<i>Quercus platanoidea</i>)	Hendricks Co., Ind.	69	52	50	.64	17.7	5.5	10.6
" tanbark (<i>Quercus densiflora</i>)	Willits, Calif.	66	44	43	.56	..	..	..
" water (<i>Quercus nigra</i>)	Winn Parish, La.	63	45	43	.56	16.4	4.2	9.3
" white (<i>Quercus alba</i>)	Stone Co., Ark.	59	48	46	.59	15.8	5.2	8.3
" " "	Hendricks Co., Ind.	61	47	46	.60	14.3	4.9	9.0
" " "	Richland Parish, La.	67	48	46	.60	16.0	4.8	9.2
" " "	Winn Parish, La.	63	47	46	.59	16.9	5.4	9.5

L AND COMPARATIVE. (See Notes Page 122)

STRENGTH IN BENDING		STRENGTH IN COMPRESSION PARALLEL TO GRAIN		STRENGTH IN COMPRESSION PERPENDICULAR TO GRAIN		STIFFNESS		HARDNESS		SHOCK RESISTING ABILITY		SHEARING STRENGTH PARALLEL TO GRAIN	
Modulus of rupture	Relative Strength Compared to Oak Oak*100	Maximum Crushing Strength	Relative Strength Compared to Oak Oak*100	Fibre Stress at Elastic Limit	Relative Strength Compared to Oak Oak*100	Modulus of Elasticity in bending	Relative Stiffness Compared to Oak Oak*100	Load required to embed a 1/4 inch ball one half its diameter	Relative Hardness Compared to Oak Oak*100	Work to Maximum Load in bending	Relative Shock resisting ability Compared to Oak Oak*100	Shearing Strength	Relative Shearing Strength Compared to Oak Oak*100
10	11	12	13	14	15	16	17	18	19	20	21	22	23
Lbs. per sq. in.		Lbs. per sq. in.		Lbs. per sq. in.		1000 Lbs. per sq. in.		Lbs.		Inch=Lbs. per cu. in.		Lbs. per sq. in.	
13,800	160	6,800	193	1,486	196	1,649	141	1,568	160	16.4	116	1,755	134
12,360	143	4,970	141	1,684	232	1,732	132	1,846	176	17.3	130	1,990	162
9,800	113	4,310	122	1,366	186	1,201	92	1,297	124	11.7	88	1,592	122
7,410	86	3,230	92	594	82	1,072	82	771	74	7.9	59	1,226	94
7,680	88	3,340	95	617	112	844	64	970	93	11.9	89	1,456	111
6,780	78	2,700	76	570	78	1,106	64	738	70	15.4	116	1,043	80
7,390	86	3,240	92	554	76	1,095	64	624	60	8.7	65	1,108	85
8,310	96	3,680	104	606	83	1,445	110	..	..	9.8	74	..	..
7,470	86	3,090	88	456	63	1,395	106	603	58	11.3	85	1,084	83
5,820	67	2,490	71	456	63	943	72	592	56	11.0	83	1,053	61
8,860	103	3,670	104	653	90	1,462	112	910	87	12.7	95	1,324	101
9,490	110	3,870	110	704	97	1,524	116	920	88	13.6	102	1,380	106
8,620	102	4,000	113	870	120	1,437	110	..	..	9.6	72	..	..
7,180	83	3,290	93	636	115	677	67	1,108	106	10.7	80	1,353	104
5,740	66	2,530	72	695	96	786	60	728	69	7.5	56	987	76
6,630	77	3,070	87	1,093	150	684	52	980	94	10.2	77	1,297	99
10,550	122	4,690	133	1,475	203	1,340	102	1,570	150	14.4	108	1,696	130
8,030	93	3,520	100	657	90	1,372	105	894	86	9.4	71	1,211	93
8,480	98	3,540	100	707	97	1,350	103	1,106	106	12.8	96	1,262	97
7,940	92	3,170	90	707	97	1,393	106	996	95	11.2	84	1,182	91
7,720	69	3,570	101	1,375	189	792	60	1,392	133	13.7	103	1,624	124
7,380	85	3,330	94	1,148	166	913	70	1,074	102	9.1	66	1,299	99
8,780	102	3,620	103	964	133	1,259	96	1,182	113	13.0	98	1,256	96
8,100	94	3,440	97	844	116	1,248	95	1,042	99	12.7	95	1,220	93
7,780	90	3,210	91	807	111	1,268	97	1,011	96	11.4	86	1,163	89
8,120	94	3,460	98	682	94	1,474	112	892	85	9.8	74	1,053	81
6,790	79	2,700	76	554	76	1,170	89	854	81	12.1	91	1,020	78
10,850	126	4,620	131	944	130	1,790	137	1,244	119	14.7	111	1,321	101
6,920	80	3,030	86	675	93	1,141	87	862	82	8.0	60	934	72
9,650	114	4,360	124	943	130	1,593	122	1,158	110	14.5	109	1,296	99
10,710	124	4,840	137	1,355	186	1,678	128	..	..	..	..	..	..
8,910	103	3,740	106	766	106	1,552	118	1,006	96	11.1	83	1,240	95
8,090	94	3,520	100	829	114	1,137	87	986	94	12.1	91	1,194	91
8,640	100	3,530	100	727	100	1,211	100	1,048	100	13.3	100	1,306	100
7,760	90	3,490	99	1,004	138	1,194	91	1,155	110	8.9	67	1,253	96
8,690	101	3,700	106	757	104	1,344	103	1,039	99	11.9	89	1,243	95

Explanatory Notes of Hardwood Tables

By courtesy of
U. S. Department of Agriculture
Forest Service
Forest Products Laboratory
Madison, Wis., June, 1918

The value of the hardwood tables on pages 120 and 121 are based on tests of small, clear unseasoned green specimens 2 x 2 inches in cross-section-bending 28 inches span.

The columns of this table are numbered at the top from 1 to 23. The notes which follow are similarly numbered and refer to these columns:

(3) Average green material.

(4) About 12 or 15 per cent. moisture—average condition reached without artificial heating by material sheltered from precipitation—North Central States.

(5) About 8 per cent. moisture.

(3, 4, and 5) Any individual lot of lumber in the condition specified in columns 3, 4, and 5 would probably vary 5 per cent. from the figures given with a possible variation of as much as 20 per cent. For example, young thrifty pines will have a high moisture content when freshly cut, and will probably weigh 20 per cent. above the average given.

(6) This specific gravity is determined on a basis of green wood. In the case of partially dry wood there would be some shrinkage with a consequent increase in specific gravity or density. This increase for air-dry wood (12 to 15 per cent. moisture) gives a specific gravity about 10 per cent. higher than for green wood. For kiln-dry wood the specific gravity would still be higher.

(7, 8 and 9) Oven dry means entirely free from water. The shrinkage from a green to a kiln-dry condition (8 per cent. moisture) is generally about 75 per cent. of the shrinkage of an oven-dry condition. The shrinkage from a green to an air-dry condition (12 per cent. to 15 per cent. moisture) is generally about 50 per cent. of the shrinkage to an oven-dry condition.

(10 and 11) The strength value given (modulus of rupture) is for green wood. This strength value for air-dry wood is about 50 per cent. greater than that

for the green, while for kiln-dry wood it is about double that of the green, depending on the degree of dryness. The above does not apply to structural timbers with defects which may influence the strength of the piece more than the moisture content of the wood.

(12 and 13) The strength value given (maximum crushing strength) is for green wood. This strength value for air-dry wood is a little less than twice as great as for the green, while for kiln-dry wood it may be from two to three times that of the green, depending on the degree of dryness.

(14 and 15) The strength value given (compression perpendicular to grain) is for green wood. This strength value for air-dry wood is about $1\frac{1}{2}$ times as great as for the green.

(16 and 17) The strength value given (modulus of elasticity in bending) is for green wood. This strength value for air-dry wood is about 25 per cent. greater than that for the green.

(18 and 19) The strength value given (hardness) is for green wood. It is an average of the values for radial and tangential hardness. This strength value for air-dry wood is about 33 per cent. greater than that for the green.

(20 and 21) The ability of the wood to resist shock is a combination of strength and toughness.

(22 and 23) The strength value given (shearing strength) is for green wood. It represents an average of the values for radial and tangential shearing strength. This strength value for air-dry wood is about 50 per cent. greater than for the green. The shearing strength of kiln-dry wood is greater than for air-dry wood.

Our Front Cover

On the front cover of this issue there is pictured the prostrate trunk of a giant of the Shasta region, Northern California. He was wont to raise his needle-crowned head into the heavens and sway his spreading bows at the wind's command. But man struck the fatal blow, and he fell close to the skidway, upon which the donkey engine drags him to the narrow-gauge railway, thence to the sawmill to await the further disposition of man.



In our Advertising Department we keep an "inspiration" file. In this file are kept letters written to us by users of Disston Saws and Tools. Here are sentences from a few of the letters on my desk :

"I use a Disston Saw that my father bought in 1887 and used to build the first house in Whitewood, S. D." "I have two of your saws that I have used approximately 4500 working days. I have filed them down to less than $\frac{1}{4}$ inch at the point, but the temper is the same as when new." "I sent to Europe for the best saw they could get, and when it came back it had 'Henry Disston & Sons' on the blade. Then I laughed." "I have one of your cross-cut saws which has been in almost constant service since 1860, and it is today a perfect tool." "I have one of your saws that is older than I am—46 years. My father had it before me. It is a good tool yet." "The saws you made for us are giving great satisfaction, cutting more and better lumber than any other saw we have used."

It is indeed an inspiration to us, who are working to maintain and increase the reputation of the House of Disston for superior quality and workmanship, to know that our products are giving this unusual satisfaction to users in every part of the world.





GREAT BRITAIN

THE state is encouraging the home-grown timber trade in England by all possible means," states the American consul at London in a recent report. "Every effort is being made to develop to the fullest extent the use and consumption of home-grown timber and especially to emphasize the value of British oak, elm, beech and other native hardwoods. At the present time British oak is almost cheaper than soft woods. The chief of disposal board stated that the housing department has given an order to the timber supplies department for oak for window frames, etc., in 1000 houses, and that the Board of Trade has circularized railway companies requesting them not to use anything but English oak for certain specified purposes. The Port of London authority has purchased a large quantity of elm for covering the quays, and the city of Nottingham has recently given a large order for native wood for street-paving blocks."

This view of the value in a limited way of Great Britain's scanty forest resources is rather at variance with an article by John Y. Dunlop in "LUMBER" for April 19, 1920, which we will quote a little before taking up our subject in detail. "At one time most details of a house were carried out with English oak, ash, and yew, but these home-grown timbers have, to a very large extent, been superseded by the imported article. The reason for this is not far to seek, and is due entirely to the fact that timbers which are imported both from America and Canada, are by far superior both in quantity and quality to what we can grow in this country. The timber merchants

in England have for long recognized this fact, although we are having a few who are inclined, with the exchange against us and a world-wide demand for timber, to raise the question of the revival of home timber use again. There is no doubt but that the feature of the English landscape is its wooded country, but large trees scattered indiscriminately all over the country—owing, of course, to our system of hedge rows, in almost all of which one or more large trees are to be found—don't make a forest.

"The cutting up of these fields in larger areas to allow the change from horse-drawn tillage to the mechanical tractor would, no doubt, keep the timber merchants busy for some time, but at the most these types of trees would, at the best, only produce scraggy lots, and after all, what builder or shipbuilder is in the market at the present time for such wood?

"No doubt some of this class of home timber would be suitable for the making of furniture, toy making and the manufacture of wood specialties which this country is much in need of. But if the builders in this country are to produce, they must get timber in long lengths and which can be obtained in uniform lots. Of course, there might be a revival of the manufacturing of furniture in home-grown wood, but from what I know of the trade I don't think it can take place as long as we can receive imports of wood from the other side of the Atlantic."

We find our subject very briefly treated in "Forest Resources of the World" published by the U. S. Gov't 1910. "The forests of the United Kingdom occupy but a small proportion

the total land area. The area of woodlands is estimated at 3,030,000 acres or 4 per cent. of the total land area.

adventure of William Rufus in the New Forest, the yew-wood bows and cloth yard arrows of the English archers at of

Countries.	Acres of dry land.	Acres under crops and grass.	Acres of forest.	Acres of mountain and heath land.	Acres of other lands.
England.....	32,380,991	24,679,966	1,665,741	2,324,624	3,710,660
Wales.....	4,748,468	2,810,824	181,610	1,270,470	485,564
Scotland.....	19,068,958	4,897,169	878,765	9,289,378	4,003,646
Isle of Man & Jersey..	185,453	124,650	869	29,729	30,205
Ireland.....	19,322,798	15,230,591	303,023	2,226,867	1,562,317
	75,706,668	47,743,200	3,030,008	15,141,068	9,792,392
Percentage.....	100	63	4	20	13

The area under forest per capita is one-tenth of an acre. The area of woodland is smaller than that of any other European country except Denmark. Crown forests comprise only some 67,000 acres, or $2\frac{1}{4}$ per cent., which is smaller than in any other European State. There are no communal forests. Of the total forest area, $97\frac{3}{4}$ per cent., or 2,963,000 acres, is in the hands of large private owners.

The total cut in the United Kingdom for certain periods amounted to:

1855-9.....	125,703,600 cubic feet
1875-9.....	131,353,200 cubic feet
1895-9.....	138,062,100 cubic feet

Thus the average cut per acre may be accepted as equal to 45.5 cubic feet per year. Assuming that in England only the annual increment is cut, the annual growth would be equal to the total cut. Mulhall estimated that "the annual growth per acre is equal to 60 cubic feet, in which case the total annual growth would be 181,800,000 cubic feet. The United Kingdom not only uses all that is cut, but is impelled to import nearly five times that amount."

It is hard for most of us to think of the forests of England in a purely commercial way, a mere matter of pounds, shillings or cubic feet, they have been so intimately bound up with History and Romance for more than a thousand years. We think of the Druids, perhaps priests of a Neolithic religion, gathering mistletoe in the groves of oak. We recall the final

Poictiers, Nelson's fleet of English oak and very much more besides.

"See you our stilly woods of oak?
And the Dread ditch beside?
O that was where the Saxons broke
On the day that Harold died.

See you the ferny ride that steals
Into the oak-woods far?
O that was whence they hewed the keels
That rolled to Trafalgar."

An interesting account of the forests of Great Britain appears in "TIMBERS AND THEIR USES" by Wren Winn, published 1919, by Geo. Routledge & Sons: "Forestry in this country has always been neglected; in the care of her national forests, Britain falls far behind many of the continental countries. The area of forest land is approximately 2,695,000 acres or about 4 per cent. of the whole country, a small percentage compared with France and Germany.

"In addition to elm, beech and ash, the country was covered with large tracts of oak, which, with its successive growths through long ages furnished timber of the finest quality for shipbuilding and general construction. In the South of Scotland there were considerable forests of oak and elm and the highlands are rich in red pine. Ireland was famous for her oaks, which, during the Plantagenet régime, were exported to England for shipbuilding and church building.

"Among the smaller and less important forests and plantations are Bere, Alice Holt and Woolmer in Hampshire, Parkhurst Woods in the

Isle of Wight and Delamere, Salcey, Hazelborough and Chapwell. None of these exceed 3,000 acres in extent, and most of them have something like 1,000 acres under tree cover. Of the more important private woods in Britain may be mentioned those of the Mansfield estate near Scone, about 8,000 acres, and the Athole Larch plantations near Dunkeld, about 10,000 acres. The majority of the Private woods are maintained by a systematic planting of such trees as Northern pine and larch. A great deal of capital is sunk, and the output is used mostly for the home market, the class of timber being that required for ordinary carpenters' and joiners' work—oak, elm, ash, beech, spruce, silver fir and larch; timber for pitprops, such as Northern pine and larch, and for railway sleepers, Northern pine, spruce and larch.

"Though a small producer of timber, Great Britain is one of the largest consumers of forest produce in the world; therefore, she depends largely on her imports. A large amount of the imported timber is obtained from the Colonies, and the most extensive shipments from foreign countries are from Russia, Scandinavia and the United States."

We shall end our study of Great Britain's forest resources with an account of a Scottish forest fire from the "American Lumberman" of July 10th. This account is dated June 19th and tells us incidentally of a feature which could never accompany an Irish forest fire.

"A forest fire of enormous dimensions has been raging in Aberdeenshire and the Scottish highlands for the last five days. A tract sixteen miles long and three and one-half miles wide is now in the grip of the flames and over 2,000 acres of valuable woodland have already been devastated. The forest is one of the most valuable in the United Kingdom and despite all efforts to check them, the flames continue to spread. One thing that contributes to the anxiety felt is the serious lack of water with which to quench them.

"The fire fighters have a very dangerous task before them. Not only is the risk of asphyxiation great, but falling

trees, rendered invisible by the dense smoke clouds, cause difficulties. Furthermore, volunteers are meeting hundreds of adders fleeing from their blazing forest homes. Many of the reptiles are over five feet long and are giving considerable trouble, not infrequently attacking the fighters."

Forests, the Nation's Backbone

Continued from Page 117

American Forestry Association for a national forest policy and for better fire protection for our forests. In round numbers, 276,000 establishments are engaged in manufacturing, and of this vast number 52,000 or 10 per cent. are establishments depending solely or in part on the products of the forest for raw materials used in their varied lines of manufacture. In other words, nearly one-fifth of all the manufacturing establishments throughout the country use timber in one form or another, and they would be handicapped by decreased supplies and forced to cease working if no wood were obtainable.

By these 276,000 establishments work is given to 7,000,000 wage earners. Of this army of toilers, who keep the wheels of industry moving, 1,130,000 or 16 per cent. earn their wage in the 52,000 wood-using plants. To a man these wage earners should be interested in the proper use of our forests, for from the annual crop must come the wood which they handle to make their livelihood.

The country's manufacturing establishments pay out annually in the aggregate fourteen and a half billion dollars for raw materials, and the part of the wood-using industries in that huge expenditure amounts to more than one billion dollars, or 7 per cent. The value of the products of the 52,000 establishments amounts to nearly two and one-half billion dollars a year or ten per cent. of the total value of all manufacturers. The value of the products of the wood-using industries is slightly more than doubled by the process of refinement at the hands of the more than a million wage earners.

The capital invested in the 52,000 plants, totaling 3 billion dollars, is 13 per cent. of the aggregate investment of twenty-two and three-quarters billion dollars in manufactures. One inhabitant of every 100 forming the 100 million population of the United States is a wage earner whose earnings depend upon the uninterrupted supply of raw materials from the forest.

In Ohio, Indiana, and Illinois a billion board feet of lumber was produced by each state in 1899, but twenty years later this production had dropped to about one-quarter of that amount. What this means in increased freight charges is easily seen.

So alarming has become the situation that the newspapers have taken up the campaign of the American Forestry Association and told the wood using industries of the Middle West they will have to move or quit in thirty years. A look at three of these big states gives an idea of the situation and what it means as a business proposition. Here are the figures:

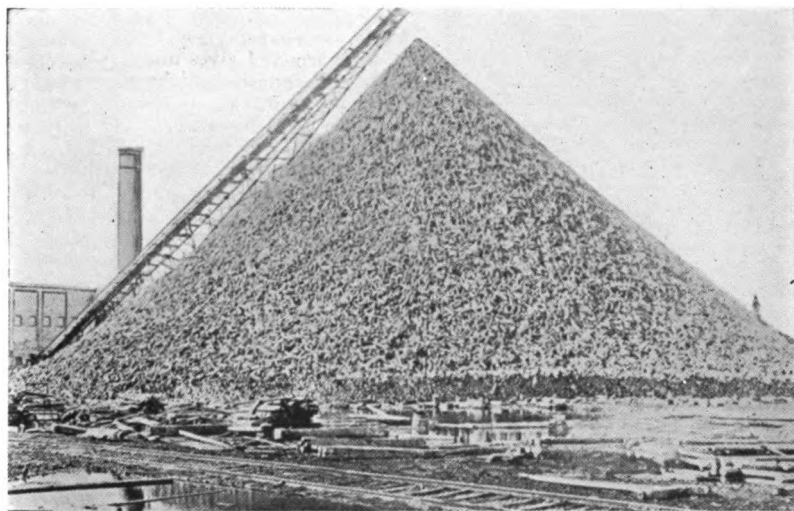
ILLINOIS: 620,000 persons are employed in industries, 100,000 of them in wood-using industries; the capital

invested in all industries \$2,000,000,000 and in wood-using industries \$40,000,000; the value of products of all industries is \$2,250,000,000, and of wood-using industries \$320,000,000.

INDIANA: 256,000 persons are employed in all industries, 70,000 in wood-using industries; capital in all industries \$675,000,000, in wood-using industries, \$175,000,000; annual products of all industries are worth \$739,000,000, of wood-using industries \$140,000,000.

OHIO: 600,000 persons are employed in industries, 90,000 in wood-using industries; capital in all industries \$1,675,000,000; in wood-using industries \$160,000,000; annual products of all industries are worth \$1,785,000,000, of wood-using industries \$175,000,000.

It is time to call a halt, and time for the interests involved to get together on a national forest policy that will provide against a situation that will surely bring to a stop the wheels of many industries throughout the land. We must perpetuate our forests and thereby secure a permanent annual crop of the forest products so necessary in our industrial life.



FIFTY THOUSAND CORD PILE OF PULP WOOD.

"Every industry in the commercial life of our nation is absolutely dependent, in one form or another, on wood."



SAWDUST

NO DIRECTIONS

Distracted brother (left in charge of the baby)—"Aw! They ought to send a book of instructions with these things."—*Life*.

MIGHTY POOR AVERAGE

Mrs. Busy—"What is your husband's average income?"

Mrs. Hank—"Oh, about midnight."

VACATION TIME

Tramp—"Any rags, paper, old iron to sell?"

Head of House (irately)—"No—go away—my wife's away for the summer."

Tramp (smiling)—"Any bottles?"

SHAKE BEFORE TAKING!

Tommy (to Aviator)—"What is the most deadly poison known?"

Aviator—"Aviation poison."

Tommy—"How much does it take to kill a person?"

Aviator—"One drop!"—*Ronald Merritt*.

POOR OLD HENPECK

"The time will come," thundered the suffragette orator, "when woman will get a man's wages!"

"Yes," sadly muttered a man on the rear seat, "next Saturday night." *Ex.*

CIRCUMSTANTIAL EVIDENCE

Willie and Jack were two youngsters pugilistically inclined.

"Aw," said Willie, "your're afraid to fight; that's all it is."

"Naw, I'm not," protested Jack, "but if I fight, my ma'll find it out and lick me."

"How'll she find it out, eh?"

"She'll see the doctor going to your house."—*Minneapolis Tribune*.

HELP! POLICE!

Jack—"Did you hear of the daring hold-up in my back yard?"

Jim—"No. What happened?"

Jack—"Two clothes-pins held up a shirt."—*Scoville Bulletin*.

LOADED

"Here's a blank form."

"What for?"

"Sort of business questionnaire. The boss wants you to tell what you do around the office."

"Gimme six blanks."

STEADY EMPLOYERS

Smith—"Who are you working for now?"

Jones—"Same people—wife and five children."—*The Passing Show*.

REASON ENOUGH

"Why did you strike the telegraph operator?" asked the magistrate of the man who was summoned for assault.

"Well, sir, I gives him a telegram to send to my gal, and he starts readin' it. So, of course, I ups and gives him one."—*London Tit-Bits*.

REALIZING THE INSULT

Manuel, a colored fellow with a record previously clean, was arraigned before the bucolic justice of the peace for assault and battery.

"Why did you beat that man up, Manuel?" questioned the squire.

"He called me sumpin', jedge."

"What did he call you?"

"He called me a rhinoceros, sah, a rhinoceros!"

"A rhinoceros! When did this occur?"

"Bout three years ago, jedge."

"Three years ago! Then how did it happen that you waited so long to resent it, Manuel?"

"Lawd, jedge, I ain't never seen no rhinoceros till dis mawnin'."

DIS

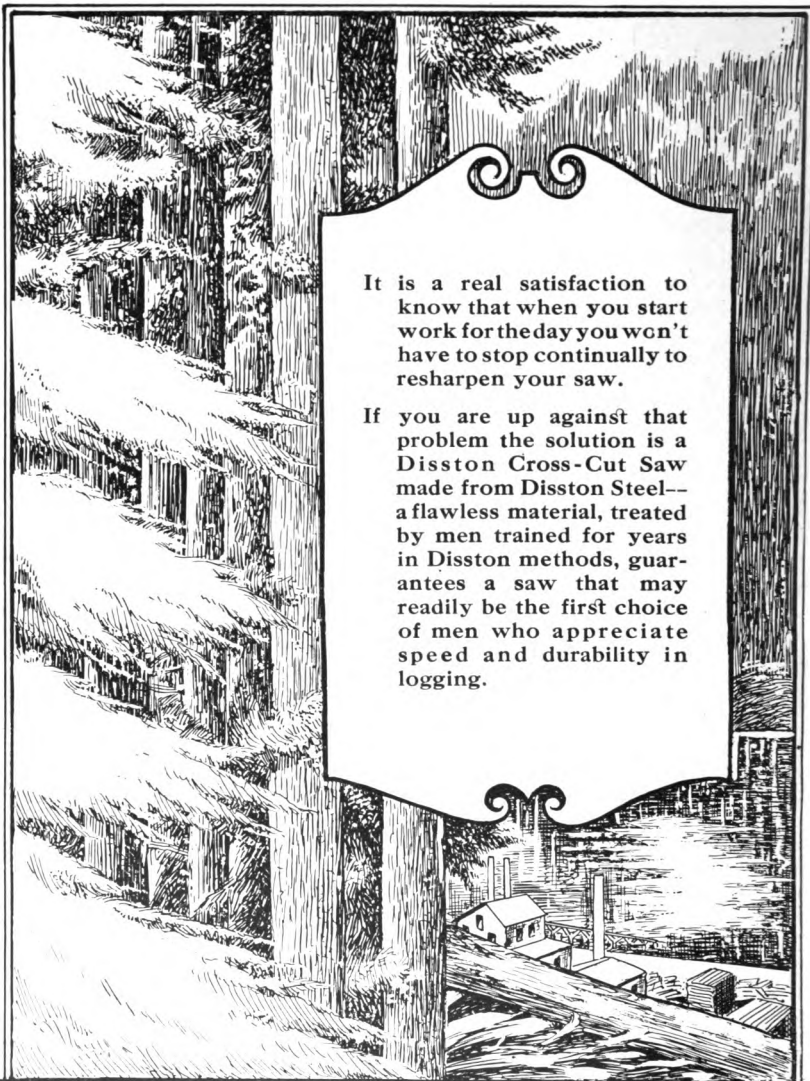
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DISSTON CRUCIBLE



OCTOBER

1920



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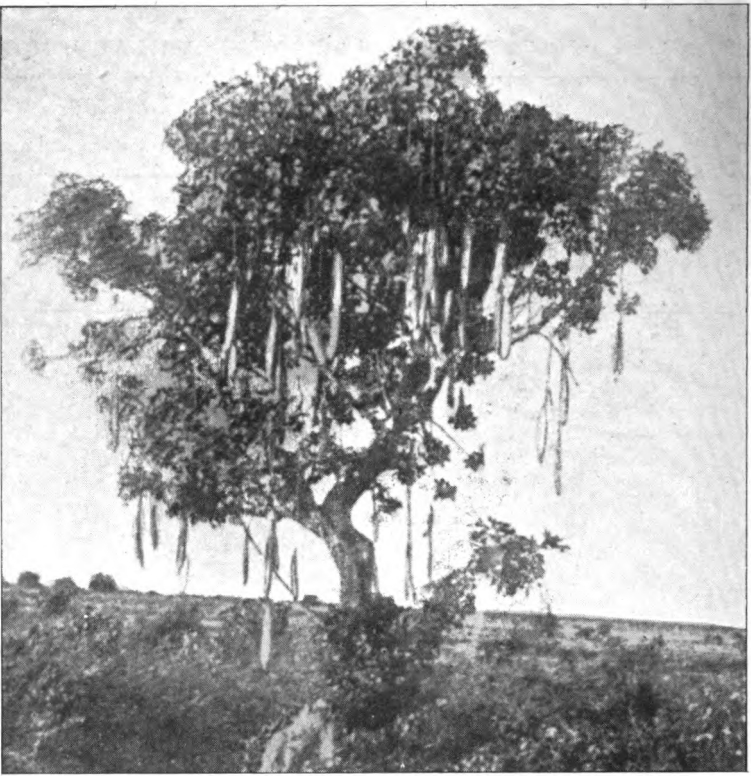
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WHERE SAUSAGES GROW ON TREES

In Rhodesia, Africa, sausages grow on trees, thus reducing the high cost of sausages in that land. The growth is a pod with a shell not unlike that of a garden pea, only it is twenty times as large. The tree is called the "sausage tree." Before there is a rush to this land of the growing sausage, it might be said that this tree "fruit" does not come up to the requirements of the pure food law for sausages.

— Canada Lumberman

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

OCTOBER, 1920

No. 9

Will the Forest Worker Profit?

It is hard for the forest worker to see that he has any direct interest in a national forest policy; usually, he regards the entire proposition as something altogether "up to the boss."

Anyone having such a view will profit by reading the article beginning on the next page.

Prof. Bryant brings out what is probably a new thought to many of us—that the home life and happiness of the forest worker is determined by the forest policy of the country.

Think it over. If we regard lumbering as a timber mining proposition—have only a policy of cut out and move on—what does the industry hold for the forest worker?

This little-discussed angle is important. Experience may show, in some cases, that Prof. Bryant is wrong. But a consideration of the proposition should be valuable to us all.

*Quality
Sells*

FOREST WORKERS AND A NATIONAL FOREST POLICY

By R. C. BRYANT
Professor of Lumbering, Yale University

Written specially for the CRUCIBLE

THE forest worker has a dual interest in a national forest policy. First as a citizen, who seeks the highest and best development of his country from an economic viewpoint, and second as an individual whose livelihood is dependent upon the continuous exploitation of our forest wealth.

Labor cannot be prosperous unless the nation as a whole is prosperous, and since an ample supply of raw wood materials is indispensable for our very existence, it is self-evident that every worker in the forest or sawmill should be keenly alive to the necessity of taking adequate steps to insure a future supply of wood products. It is as an individual, however, who looks to the forest industries for the support of himself and his family, that the question probably will appeal with the greatest force, because of its effect upon his own personal interests.

The promise of the permanency of any institution, whether a private business or an industry, in general, brings about better conditions in that business or industry because the structure is built not alone for the present, but also for the future. The knowledge that a given forest region will be "cut-out" within a specified period of time offers but little encouragement to the operator or to the industry to do everything possible to establish a permanent

labor force housed in comfortable and attractive surroundings. It is true that the industry desires that labor shall be satisfied and contented, but the expense connected with making those provisions which will lead to the developments of these conditions, seem unwarranted to the short-time operator.

Forest exploitation has failed to measure up to the highest standards, not so much because of faults inherent in itself, but rather because economic conditions have not moulded public opinion along lines which would produce the best ultimate results to the nation or the best immediate results to the laborer. Lumbering always has been a timber-mining proposition, transitory in character, which left in its wake deserted villages and a vast area of idle, denuded lands abandoned to the mercy of forest fires and other natural destructive agencies. The waste of forest resources incident to this migratory movement was enormous, but the blame should not be laid solely at the door of lumbermen,



"The forest worker has a dual interest in a national forest policy".

because they followed the trend of public thought which gave little heed to future needs so long as there was ample provision for the present. In many cases it was not practicable for lumbermen to do otherwise than they did because lumbering proceeded at a faster rate than agricultural settlement, and the heavy cost incident to the proper protection of the cut-over lands was greater than could be justified by any arguments then put forth.

The results of this policy were not wholly destructive, however. New territory was opened up for later settlement and the vast quantity of relatively cheap lumber which was produced from the forests several decades ago was an important factor in the rapid development of the prairie regions of the Middle West, which have become one of the chief granaries, not only of this country, but of the world. The South also owes much to the lumber industry which for the last three decades has been one of the most potent forces in the development of internal transportation in that region, without which progress would have been exceedingly

slow.

The migratory character of lumbering has tended to develop a roving spirit in the forest workers and militated against permanent homes for them. This has been and is still responsible for much of the unrest which exists amongst forest labor, especially in the Far West.



"Trees are a crop which we must produce, just as we produce wheat or corn."

The consideration of the forest as a mine, from which only the standing timber could be secured, has forced lumbermen to secure large forested areas in order to be assured of a supply of relatively cheap raw material for the minimum operating period. The financial outlay which this required often proved burdensome to the investor, and his output was determined largely by his financial needs rather than by the actual requirements of the country.

This has often caused wasteful utilization of our forests with benefit to no one.

We must abandon the idea that the forest is a mine and substitute for it the idea that trees are a crop which we must produce, just as we produce wheat or corn, else we will face the same famine conditions which would confront us if we proceeded to consume

our entire wheat crop and took no measures to produce additional supplies for future years.

Let us look at the possible future of one of the great lumber producing sections of this country, the southern pine region, under the present systems of mining our forests. Of the vast acreage of land once covered with virgin timber, we are told that only a small fraction yet remains, and that within the next ten years, the lumber output will be not more than one-half of what it was a few years ago. There are now millions of acres of land in that region which have been denuded, a large per cent of which are not producing valuable crops of any sort. Many of the localities from which the timber has been and is being removed are not in demand for agriculture because of the inferior character of the soil, and it is doubtful if a large per cent of such lands will be sought for this purpose for several generations, some of it never.

The presence of these idle lands in such large quantities comprises a serious menace to the state and community because they are not revenue producing and therefore contribute, only to a very limited extent, to the support of public needs. They thus become a great economic burden to all.

Unless these lands are made productive the tax burden ultimately will fall most heavily on the local residents because the available revenue for public improvements must come largely from the small farms which comprise only a minor per cent of the area. The transient sawmill operator will probably choose to abandon his idle lands rather than pay his just proportion of taxes. Apparently there are several ways of meeting this problem—the abandonment of the area after lumbering has ceased, because of the inability of agriculture to support public improvements; the support of the region wholly or partially by state funds, an improbably course; or the utilization of the idle lands for grazing and forestry purposes, thereby creating taxable values which will be sufficient to make the territory self-supporting. The latter course is the most logical one, because it presupposes

the use of all of the land for the production of useful crops. There are many demonstrations which show that the last method is a practicable and workable scheme, and withal will yield reasonable returns to the investor, provided the business is conducted on a sound financial and silvacultural basis.

(This article will be continued in November Crucible and it will present most interestingly the present conditions of the Southern lumber man, and a possible solution for the problems confronting them.—Ed.)

Front Cover

The scene on the Front Cover of this issue is an enlarged reproduction from a "snap shot" of a section of the Grand Canyon of the Colorado.

Persons qualified to judge, after studying the canyon, and comparing it with other canyons and remarkable natural scenery, pronounce it by far the most sublime of all earthly spectacles.

The Grand Canyon is more than two hundred miles long, from five to twelve miles wide, and from five to six thousand feet deep.

The man sitting on the rocks in the Colorado River at the bottom of the canyon, is our own Mr. E. F. Cooper. When asked what impressed him most as he sat there, answered: "the magnitude, the sublimity, the grandeur, the awesomeness."

Famous word masters have tried to describe the canyon, great canvas and color masters have tried to paint it, but all alike have failed. It is one of the few things man is utterly unable to imagine until he comes in actual contact with it.

The Rathbone Elm at Marietta, Ohio, is said by its admirers to be the most beautiful elm in the United States. Its age is estimated to be 700 years, it is 27 feet in circumference three and one-half feet above the ground, and 32 feet one and one-half feet from the ground. There are five main branches, of which the smallest is ten feet in circumference.



The Building Shortage

According to the "Annalist," the building shortage in the United States now amounts to the number of houses erected in a year and a half of normal construction. To make good this deficit in a single year would require construction at two and one-half times the pre-war rate, and it would necessitate the spending of \$1,500,000,000.

It is estimated that the building done in 1917 left a shortage of 40%, in 1918 of 69%, 1919 of 25%, and the first seven months of 1920 of 17%—making an accumulated production deficit of 151%.

Disston Saws and Tools have for eighty years played an important part in the up-building of our country. We have statements from users that Disston Saws were used in the construction of World's Fair Buildings at San Francisco, Woolworth Building at New York, Union Station at Washington, D. C., Public Library Building of New York,—and so on down through the history of construction in the United States since 1840.

We are proud of the past record of Disston Saws and Tools. We know that they will again render important and vital service in overcoming the building shortage now before us.



PROPERTIES OF VARIOUS HARD

COMMON AND BOTANICAL NAME	LOCALITY WHERE GROWN	WEIGHT PER CUBIC FOOT			SPECIFIC GRAVITY OVEN DRY Based on volume when green	SHRINKAGE GREEN TO OVEN CONDITION	
		Green	Air Dry	Kiln Dry		In Volume	Radial
1	2	3	4	5	6	7	8
Oak, willow (<i>Quercus phellos</i>)	Winn Parish, La.	67	46	45	.56	Percent	Percent
" yellow (<i>Quercus velutina</i>)	Stone Co., Ark.	63	45	43	.57	18.9	6.0
" " "	Marathon Co., Wis.	62	42	40	.55	14.2	4.5
Osage orange (<i>Toxylon pomiferum</i>)	Morgan Co., Ind.	62	56	54	.76	8.9	..
Pecan (<i>Hicoria pecan</i>)	Pemiscot Co., Mo.	61	47	45	.60	13.6	4.9
Persimmon (<i>Diospyrus virginiana</i>)		63	53	51	.64	16.3	7.6
Rhododendron, great (<i>Rhododendron maximum</i>)	Sevier Co., Tenn.	62	40	39	.50	16.2	6.3
Sassafras (<i>Sassafras sassafras</i>)	" " "	44	32	31	.42	10.3	4.0
Servicberry (<i>Amelanchier canadensis</i>)	" " "	61	54	52	.66	16.7	6.7
Silverbell tree (<i>Mohrodendron carolinum</i>)	" " "	44	32	31	.42	12.6	3.8
Sourwood (<i>Oxydendrum aboreum</i>)	" " "	53	40	39	.50	15.2	6.3
Sumach, atehorn (<i>Rhus hirta</i>)	Sauk Co., Wis.	41	34	32	.45	..	..
Sugarberry (<i>Celtis mississippiensis</i>)		46	36	35	.47	12.7	5.0
Sycamore (<i>Platanus occidentalis</i>)	Hendricks Co., Ind.	51	36	34	.45	13.5	5.0
" " "	Sevier Co., Tenn.	53	36	35	.46	14.8	5.2
Umbrella, Fraser (<i>Magnolia fraseri</i>)	Sevier Co., Tenn.	47	31	30	.40	13.0	4.4
Walnut, black (<i>Juglans nigra</i>)	Ky.	58	39	37	.51	11.3	5.2
Willow, black (<i>Salix nigra</i>)	Pemiscot Co., Mo.	49	27	26	.34	14.3	2.6
" " "	Sauk Co., Wis.	51	26	25	.33	13.3	2.2
" western black (<i>Salix lasiandra</i>)	Douglas Co., Oreg.	51	31	30	.29	13.8	2.9
Witch hazel (<i>Hamamelis virginiana</i>)	Sevier Co., Tenn.	59	46	45	.56	16.8	..
Yellow poplar (<i>Liriodendron tulipifera</i>)	" " "	38	28	27	.37	11.4	4.1

Note.—The values in this table are based on tests of small, clear unseasoned green specimens 2" x 2" in cross-section-bending 28" span.

The columns of this table are numbered at the top from 1 to 23. The notes which follow are similarly numbered and refer to these columns.

- (3) Average green material.
- (4) About 12 or 15 per cent moisture—Average condition reached without artificial heating by material sheltered from precipitation—North Central States.
- (5) About 8 per cent moisture.
- (3, 4 & 5) Any individual lot of lumber in the condition specified in columns 3, 4 and 5 would probably vary 5 per cent from the figures given with a possible variation of as much as 20 per cent. For example, young thrifty pines will have a high moisture content when freshly cut, and will probably weigh 20 per cent above the average given.

- (6) This specific gravity is determined on a basis of green wood. In the case of partially dry wood there would be some shrinkage with a consequent increase in specific gravity or density. This increase for air-dry wood (12 to 15 per cent moisture) gives a specific gravity about 10 per cent higher than for green wood. For kiln-dry wood the specific gravity would be still higher.

- (7, 8 & 9) Oven dry means entirely free from water. The shrinkage from a green to a kiln-dry condition (8 per cent moisture) is generally about 75 per cent of the shrinkage of an oven-dry condition. The shrinkage from a green to an air-dry condition (12 per cent to 15 per cent moisture) is generally about 50 per cent of the shrinkage to an oven-dry condition.
- (10 & 11) The strength value given (modulus of rupture) is for green wood. This strength value for air-dry wood is about 50 per cent greater than that for the green, while for kiln-dry

3, ACTUAL AND COMPARATIVE.

STRENGTH IN BENDING		STRENGTH IN COMPRESSION PARALLEL TO GRAIN		STRENGTH IN COMPRESSION PERPENDICULAR TO GRAIN		STIFFNESS		HARDNESS		SHOCK RESISTING ABILITY		SHEARING STRENGTH PARALLEL TO GRAIN	
Modulus of rupture	Relative Strength Compared to Oak Oak=100	Maximum Crushing Strength	Relative Strength Compared to Oak Oak=100	Fibre Stress at Elastic Limit	Relative Strength Compared to Oak Oak=100	Modulus of Elasticity in bending	Relative Stiffness Compared to Oak Oak=100	Load required to embed a 0.4-inch ball one-half inch diameter	Relative Hardness Compared to Oak Oak=100	Work to Maximum Load in bending	Relative Shock resisting ability Compared to Oak Oak=100	Shearing Strength	Relative Shearing Strength Compared to Oak Oak=100
10	11	12	13	14	15	16	17	18	19	20	21	22	23
Lbs. per sq. in.		Lbs. per sq. in.		Lbs. per sq. in.		1000 Lbs. per sq. in.		Lbs.		1 inch = lbs. per cu. in.		Lbs. per sq. in.	
7,400	86	3,000	85	754	104	1,286	98	978	93	6.8	66	1,184	91
8,570	99	3,700	105	912	125	1,219	93	1,057	101	11.7	88	1,179	90
7,650	89	3,080	87	802	110	1,121	86	..	..	13.2	99	..	..
13,660	158	5,810	165	2,260	311	1,329	101	2,037	194	37.9	285	..	..
9,770	113	3,990	113	959	132	1,367	104	1,508	125	14.6	110	1,461	118
10,030	116	4,170	116	1,110	153	1,367	104	1,279	122	13.0	98	1,474	113
6,900	80	3,470	96	886	122	872	67	664	82	12.1	91	1,240	96
5,280	69	2,730	77	459	63	911	69	524	50	7.1	53	1,52	73
9,620	111	4,080	116	783	108	1,635	125	1,244	119	16.2	122	1,256	96
6,490	75	2,530	80	428	59	1,163	89	470	45	8.8	66	931	71
7,680	89	3,250	92	678	93	1,316	100	728	69	9.6	74	1,157	89
5,340	68	2,680	76	477	66	809	62	590	56	10.8	81	..	..
6,550	76	2,800	79	585	80	813	62	739	71	12.0	90	1,049	80
6,300	73	2,790	79	433	60	964	74	560	55	7.1	53	1,001	77
6,640	77	3,060	87	468	64	1,166	89	636	61	7.9	59	990	76
6,120	71	2,610	73	330	45	1,193	91	503	48	8.3	62	827	63
9,490	110	4,300	122	601	83	1,420	106	899	86	14.6	110	1,216	93
4,240	49	1,710	48	237	33	637	49	383	37	8.7	65	685	52
3,340	39	1,320	37	193	27	469	37	334	32	12.9	97	561	43
5,630	65	2,340	66	333	46	1,022	78	501	46	10.8	81	666	66
8,280	96	3,400	96	619	85	1,112	85	977	93	19.5	147	1,118	86
5,570	64	2,550	72	310	43	1,207	92	336	32	5.6	42	757	60

wood it is about double that of the green, depending on the degree of dryness. The above does not apply to structural timbers with defects which may influence the strength of the piece more than the moisture content of the wood.

- (12 & 13) The strength value given (maximum crushing strength) is for green wood. This strength value for air-dry wood is a little less than twice as great as for the green, while for kiln-dry wood it may be from 2 to 3 times that of the green, depending on the degree of dryness.

- (14 & 15) The strength value given (compression perpendicular to grain) is for green wood. This strength value for air-dry wood is about $1\frac{1}{4}$ times as great as for the green.

- (16 & 17) The strength value given (modulus of elasticity in bending) is for green wood. This strength value for air-dry wood is about 25 per cent greater than that for the green.

- (18 & 19) The strength value given (hardness) is for green wood. It is an average of the values for radial and tangential hardness. This strength value for air-dry wood is about 33 per cent greater than that for the green.

- (20 & 21) The ability of the wood to resist shock is a combination of strength and toughness.

- (22 & 23) The strength value given (shearing strength) is for green wood. It represents an average of the values for radial and tangential shearing strength. This strength value for air-dry wood is about 50 per cent greater than for the green. The shearing strength of kiln-dried wood is greater than for air-dry wood.

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
FOREST PRODUCTS LABORATORY,
MADISON, WIS., JUNE, 1918.



CENTRAL AMERICA

CENTRAL AMERICA comprises the republics of Guatemala, Honduras, Salvador, Nicaragua, Costa Rica, Panama and the Colony of British Honduras, a total area of 214,252 square miles with a population of over 5,600,000. For some time negotiations have been in progress among the republics looking to possible unification. A meeting was held in Guatemala City, October 12th with a view to advance these plans.

We will find it impossible, so little is definitely known, in regard to the forest resources of these countries, to give many figures of the area of standing timber or estimates of the possible yield of various woods. We only know that their timber wealth is immensely valuable, and contains a great variety of trees suitable for various purposes.

In a world where places are rapidly drawing closer together, owing to improved means of communication, and nations are increasingly dependent on one another, we can no longer afford to allow natural resources, wherever located, to remain uncharted and to a large extent unused; and so doubtless the time will come before long when our knowledge of Central America's forest area will be vastly more detailed.

FOREST RESOURCES OF THE WORLD (U. S. Gov't. 1910) can only tell us, "The Central American Republics possess extensive forest areas which, however, are so little explored that there is no data as to their extent or volume. The reason for the existence of large forest areas in Central America is not due in any way to the care of them by the people, but to the fact

chiefly that they are inaccessible on account of lack of roads or any other means of transportation."

We find a much more recent view in **PULP AND PAPER** for August 26th. "Tropical possibilities in lower Mexico and South and Central America are enormous, both in hardwoods and yellow pine and in most cases, contrary to the opinion of those unfamiliar with the situation, the timber is easily accessible if operated under modern methods, according to H. C. Kluge who has just returned from British Honduras, where he investigated a half million acre tract of yellow pine timber owned by an American corporation. Mr. Kluge, who has devoted about sixteen years to tropical timber cruising, spent about three months on the particular tract mentioned, his investigations being made from the standpoint of operating possibilities. On the tract he picked out, he found approximately 500,000,000 feet of merchantable yellow pine timber which was admirably located for logging and transportation. Describing the character of timber found, Mr. Kluge said it compared favorably with the Cuban pine of Southern Florida.

"With the exception of mahogany and cedar," Mr. Kluge said, "the vast forests of tropical hardwoods have scarcely been scratched and there are billions of feet of excellent merchantable hardwood timber, most of which can be profitably operated under modern methods of transportation. The hardwood forests extend through lower Mexico, Guatemala, British Honduras, Honduras, Nicaragua, Costa Rica and the Panama Republic." "In some localities," there are found large tracts of

yellow pine timber, but as a general rule, hardwoods predominate throughout the tropical region."

As to conditions in the Tropics, Mr. Kluge said, there are numerous small rivers winding through the forests but in very few cases are they suitable for logging purposes. An operation to be made successful, he pointed out, should be carried on under modern railroad methods, and in many regions the lay of the land is admirably suited to this character of operation and development.

We obtain our best view of Central American forests from **CENTRAL AMERICA AS AN EXPORT FIELD**, published by the Bureau of Foreign and Domestic Commerce—1916. We shall make some extracts from this pamphlet and from a few other resources in regard to conditions in the different countries.

GUATEMALA: "Guatemala is rich in woods and timber. The supply has hardly been touched but the principal difficulty is in getting the timber out. The cutting has heretofore been that which was most available to the waterways. The lack of roads, the mountainous country, high freight rates on railroads and steamships, and similar problems have all contributed to retard development in this line. Timbermen interviewed have agreed that the future work of getting out the timber must proceed along different lines and that the use of portable saw mills to trim and cut the heavy pieces to boards or dimension stuff will, in large measure, assist in solving the problem, for it is manifestly easier to transport the product in this less bulky form. It would therefore seem that there is a potential market for sawmill machinery of a light and comparatively inexpensive sort, and that this market should be of increasing importance. Up to the present, cedar and mahogany have been about the only woods exported to the United States but in the list below (here follows a descriptive list of about 20 species), will be seen that there are woods of exceedingly valuable properties, most of them existing in commercial quantities."

COMMERCE REPORTS of February 14th also says of the Livingston

district in Guatemala, "Mahogany is found in considerable quantities in this district in localities inaccessible under old methods of hauling logs from the forest. All mahogany along the streams or so located that it could be handled by oxen has been cleared away. But by the use of tractors adapted to the work and by increasing the hauling radius, the output of mahogany will increase. In 1917 no shipments were made from this port, but in 1918 exports amounted to 821,091 feet valued at \$74,999. It is expected that the production of mahogany in 1919 will exceed that of 1918."

BRITISH HONDURAS: "For more than 200 years after England acquired an interest in this territory, it was not regarded as an organized community at all, but merely as a settlement of logwood cutters. Even at present the amount of land held for logwood and mahogany exploitation is relatively enormous. One concern alone has 1,250,000 acres; another, 500,000; another 300,000. Altogether out of a total of about 4,500,000 acres there are cultivable, there are more than 2,500,000 in mahogany and logwood concessions. Available labor has been largely controlled by the mahogany and logwood concessionaires and has never been taught to do anything except to work in timber."

As has been said, "The principal reason for the existence of British Honduras as a distinct territory in Central America was the logwood industry and this for many years was the mainstay of the colony. In 1901, however, logwood became second to mahogany in value of exports, and in 1905 was passed by chicle."

Cedar and rosewood also play an important part in the export trade and "the forests are extremely rich in a variety of both hard and soft species, which are likely to attain commercial value and appear among the exports." Mr. S. Montgomery Smith, well-known timber land operator states in the **NEW YORK LUMBER TRADE JOURNAL** of April 15th, "the pine resources of British Honduras comprehend excellent timber in exceedingly large areas. The colony controls

Continued on Page 142

"THE OPTIMIST" PAYS TRIBUTE TO LUMBERMAN

Philadelphia "North American" Tells Interesting Story
of Life and Work of Mr. John Tennis---Master Sawyer

**Began Sawing Back in The Eighties.
Has Always Used Disston Saws**

IF Mr. John M. Tennis, who at this moment is sawing away up in Bucks County, Penna., knew that this article was going into THE CRUCIBLE, he would probably knock off work to come down here and try to "kill" it. What he will do when he sees it, is worrying us a bit even now.

The article on the opposite page, entitled "The Optimist" which was written by Mr. Hodges of the Philadelphia "North American," after a talk with Mr. Tennis, eloquently points out a big thought that too many overlook, namely, that it is not what you do but how you do it that counts.

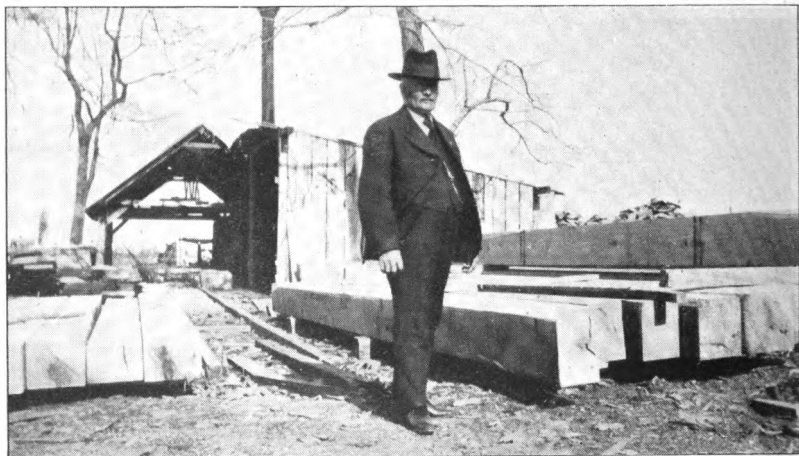
Mr. Tennis is one of the best proofs we know, of that old saying that the

only real happiness in life comes from everlastingly sticking to your job, whatever it may be—and doing it a little better each day.

Few men can tell Mr. Tennis anything about saws or sawing. The fact that as far back as we can remember, "John" has been a user and booster of Disston Saws, is one of the most sincere compliments ever paid the saw-makers of the House of Disston.

The following is taken from a letter we have received from Mr. Tennis. They give an interesting view of the career of one genuine craftsman among sawyers:

"Back in the eighties, the first thing that 'came my way' in the way of employment, was a job on the first



Mr. Tennis and some of the "Disston-Cut" Lumber from his mill

steam mill I ever saw. When I started there, I had no idea of being a sawyer, but after working there for several years, the sawyer who was running the mill quit—I took his place, and have been sawing lumber ever since.

"In those early days, we used Disston's solid tooth circular saws, and, of course, did plenty of filing, swaging, and gumming. In doing this I gained a knowledge of the sawing game that has aided me ever since in 'making her saw to the line.'

"Later in the game, Disston Chisel Point Inserted Tooth Saws were introduced. We installed these and they greatly reduced the work of keeping our saws in order. I have worked many of these saws and I *know* they will stand up to the work. I am working one now—a sixty-inch saw, shop number 29857. I do not know how long this saw has been in use, but it was on the mill when I came here eight and one-half years ago. I am safe in saying that I have had seven years sawing with it, and most of this sawing was in 'fetched' lumber where the saw is cutting the full width of the blade; in fact, we use a top saw with this one and often saw logs large enough to put any saw to the test.

"During the past winter we sawed a tract of timber that was once a picnic ground. In some of the logs, where tables, dance floors, etc., had been erected, we found staples, wire nails, hammock hooks, etc. As they were grown over, we sawed through them, but outside of occasional new saw teeth, had no expense on the saw whatever.

"A few days ago, we sawed a piece of oak lumber, 14" x 14" x 36' long. This same saw cut most of the heavy white oak timbers that were used in building the Swedenborgian Church of the New Jerusalem at Bryn Athyn, Pa., which was dedicated in the summer of 1919. One of these timbers was cut from a large tree that made a piece 18" x 24" x 30' long. Such trees are not plentiful and soon a piece of Pennsylvania White Oak of these dimensions will be out of the question."

Sincerely,
John M. Tennis.

The Optimist

Once upon a time dear old Elbert Hubbard hoaxed the whole world with an alleged Emerson quotation to the effect that if a man built a better mousetrap than ever before had been built, even though he lived in the woods, the world would make a beaten path to his door.

Which is just as true as if Emerson really had said it. For the world constantly is on the lookout for men and women who can do things better than they have been done or as well as it is possible to do them.

This, then, brings us to a pleasant consideration of a man with a saw.

The man is John M. Tennis, who came into consciousness out in Juniata County enough years ago to put snow in his hair and the kindliness of long experience with honest work in his voice and manner.

An honest, industrious workman is a gentleman in so many ways that the other ways don't count much.

Old John Tennis, who now is the grand mogul at a big saw mill up in Bucks county, began sawing his way to fame when he was a boy. He used an ordinary saw and the thought of fame never entered his head.

He just sawed wood—which is a mighty good way to get along—and kept sawing it better all the time. I suppose there is as much art in handling the tooth-edged, apple-handled, thin strip of steel as in wielding a brush or guiding a graver.

Anyhow, after John had been sawing and superintending sawing for enough years to build up a miniature Pike's Peak of sawdust, the biggest saw makers in the world, who happen to manufacture their product right here in Philadelphia, asked him for his picture.

They wanted to show people in this and other counties what a real, first-class A1 genuine saw artist looks like!

And there he stands, back of a thirty-two-inch white oak slab, calmly surveying the world and ready to

return to his job the minute the photographer has said, "that's all, thank you."

His name isn't printed with the picture, and so far as I can see there is no particularly big moral attached to this homely tale.



Every man
operating a mill wants
the best Chisel Tooth
Saw that can be made.
In the following pages
you will learn why the
Disston Saw fulfills
this qualification.

The above cut and large type is a page from our
"Blazed Tree" Booklet. Mr. Tennis is
standing behind the plank

But if you happen to think you have fallen heir to one of the picayune jobs of life—and the average man with a saw probably would take this view if he thought much about his occupation, to say nothing of the average person with the average job of any sort—just mentally masticate the foregoing for half a minute.

The biggest work in the world is the work that is best done, and the truest measure of fame that comes to any man or woman is the consciousness of having done any work as well as it can be done or a little better than it ever before was done.

Leigh Michael Angelo

Timber Resources of the World—Central America

Continued from Page 139

5,000,000 acres, of which only about 100,000 acres have to date been surveyed or utilized. It is Mr. Smith's opinion that British Honduras offers an exceptional opportunity for lumbering operations on pine, particularly because of the low cost of stumpage, cheap labor, etc. The pine runs to good dimension, although a little heavy in pitch, and is estimated to yield 10,000 to 20,000 feet to the acre."

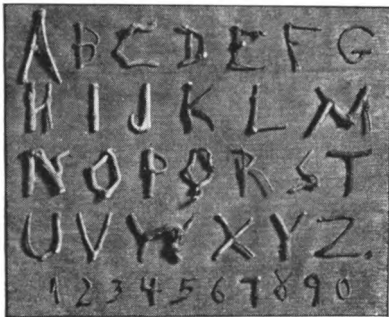
There are several tropical trees which it is believed would be valuable for pulp.

HONDURAS: "Honduras is exceptionally rich in timber resources. In the plateau region of Olancho and Mosquitia are millions of feet of pine, mahogany, cedar, ceiba, balsa and many other woods. Rosewood and other varieties of cabinet woods are fairly abundant. There is much timber also in other regions, but the territory mentioned includes the greatest continuous bodies and the most valuable tracts at present known. The difficulty of transportation is here again the reason why nothing worth-while is being done in regard to the utilization of these resources. When these tracts are opened up, the United States will probably receive a great deal of business through the purchase of sawmills, supplies, engines, boilers, belting and pulleys, rails, engines, cars and planing machinery. There are

only a few sawmills in Honduras and these are mainly simple and of small capacity. Most of the boards needed are sawed by hand.

"The immense tracts of long-leaf pine, mahogany and other timber in the Mosquitia territory will inevitably cause the rise of several ports of importance. This is likely to be eventually a good market for American saw-mill machinery. Estimates indicate that the long-leaf or pitch pine forests contain more than 90,000,000 merchantable pine trees; 45,000,000 mahogany trees and about 15,000,000 or 20,000,000 trees or other valuable timber."—*Continued in Nov. Crucible.*

Alphabet Grown on Trees



This collection of natural grown letters of the alphabet is owned by Mr. E. A. Miles, of Clifton Springs, N. Y. There is but one root in the collection. The letter A is from Oshawa, Canada; B from Bannf, Canada; C, near Summit of Mt. Tamalpais, Calif.; D, Erie Co., N. Y.; E, Marilla, N. Y.; F, Great Falls of the Potomac, near Washington, D. C.; G, near Attica, N. Y.; H, near Clifton Springs, N. Y.; I from grounds of former home of William A. Wheeler, former Vice-President of United States; J, Grand Canyon of the Colorado, Ariz.; K, near Attica, N. Y.; L, from Lunday's Lane battlefield, Ontario, Canada; M, near Attica, N. Y., N, the first one discovered, found near Clifton

Spring, N. Y.; O and P were also found here. Q found near the top of Mt. Lowe, Calif.; R, near parliament buildings, Toronto, Canada; S, near Clifton Springs, N. Y. On a visit to the tomb of Lincoln, Springfield, Ill., Mr. Miles saw a gentleman trimming a tree near Lincoln's tomb. In one of the small branches cut away Mr. Miles saw the well-formed letter T. He got it for the mere asking. U, near Clifton Springs, N. Y.; V, Plains of Abraham, Quebec, Canada, where Wold died; W, near Attica, N. Y.; X, Little Round Top, Gettysburg, Pa.; Y, vicinity of Petersburg, Va., where the well-known tunnel was exploded in the Civil War; Z, near Attica, N. Y.

The numerals, like the letters, were all cut from trees, but were found in the vicinity of Clifton Springs. This collection is all the more remarkable when it is remembered that in no instance were these letters twisted into their present shape, they growing that way by nature.

Discovers Smallest Sawmill

Portland, Ore., August 16.—Discovery of what is supposed to be the smallest saw mill in operation in the United States has been made by E. C. Erickson, attached to the local office of the United States Forestry Service.

He found the Prairie City Box Company operating in a remote part of Eastern Oregon with a total logging and mill crew of three men, supplemented by one horse. The mill owner is cutting up lodgepole pine of a variety previously regarded as almost worthless, manufacturing lumber exclusively. He is understood to be gaining a reasonable income on a total cut of 4,000 feet per day.—(LUMBER.)

Dayton, Ohio, claims to have the largest Acacia in this country. It is three feet six inches in diameter or twelve feet six inches in circumference, and the oldest inhabitant cannot remember when it was smaller than it now is. During the Dayton Flood it stood in seventeen feet of water and still lives.



SAWDUST

SHOULD BE BOYCOTTED FOR IT

Two very pretty girls met on the street and kissed each other rapturously. Two young men watched the meeting. "There's another of those things that are so unfair," said one.

"What is that?" said his friend.

He pointed to the scene: "Women doing men's work."—

Woodworker's Record.

FORCE OF HABIT

"Phwat was the last card oi dealt ye, Mike?"

"A sphade."

"Oi knew it. Oi saw ye spit on your hands before ye picked it up."

PICKLED

There was young a lady named Perkins Who had a great fondness for gherkins;

She went to a tea,

And ate twenty-three,

Which pickled her internal workin's.

—*Gilmet.*

FALSE ALARM

"I think the baby has your hair, ma'am," said the new nurse, looking pleasantly at her mistress.

"Gracious!" exclaimed the lady looking up from the novel. "Run into the nursery and take it away from her. She will ruin it."—*Blighty, London.*

THE BEARS HAD 'EM

A tourist traveling in the Rocky Mountains was introuced to an old hunter who claimed to have killed no fewer than a hundred bears.

"Bill," said the introducer, "this fellow wants to hear some narrer escapes you had from bears."

"Young man," said Bill, "if thar's been any narrer escapes, the bears had 'em."—*Bosto. Transcript.*

AS GREEN AS YOU

An old colored man was burning dead grass when a "wise guy" stopped and said: "You're foolish to do that, Uncle Eb; it will make the meadow as black as you are."

"Don't worry 'bout dat, sah," responded Uncle Eb. "Dat grass will grow out an' be as green as you is."

THE WRONG KIND

A Swede came down from the woods, and, entering a saloon, asked for a drink of good old squirrel whisky. The bartender said: "We have no squirrel whisky, but we have some good Old Crow."

"Oh, Yudas Priest!" said the Swede, "I don't want to fly; I jüst want to hop around a little."

HER CORDIAL WISH

"I'm quite a near neighbor of yours now," said Mr. Bore. "I'm living just across the river."

"Indeed," replied Miss Smart. "I hope you'll drop in some day."

AMBITIOUS

A tramp asked a gentleman for a few cents to buy some bread.

"Can't you go into any business that is more profitable than this?"

"I'd like to open a bank if I could only get the tools," answered the tramp.—*Factory Facts.*

COMING AROUND AGAIN

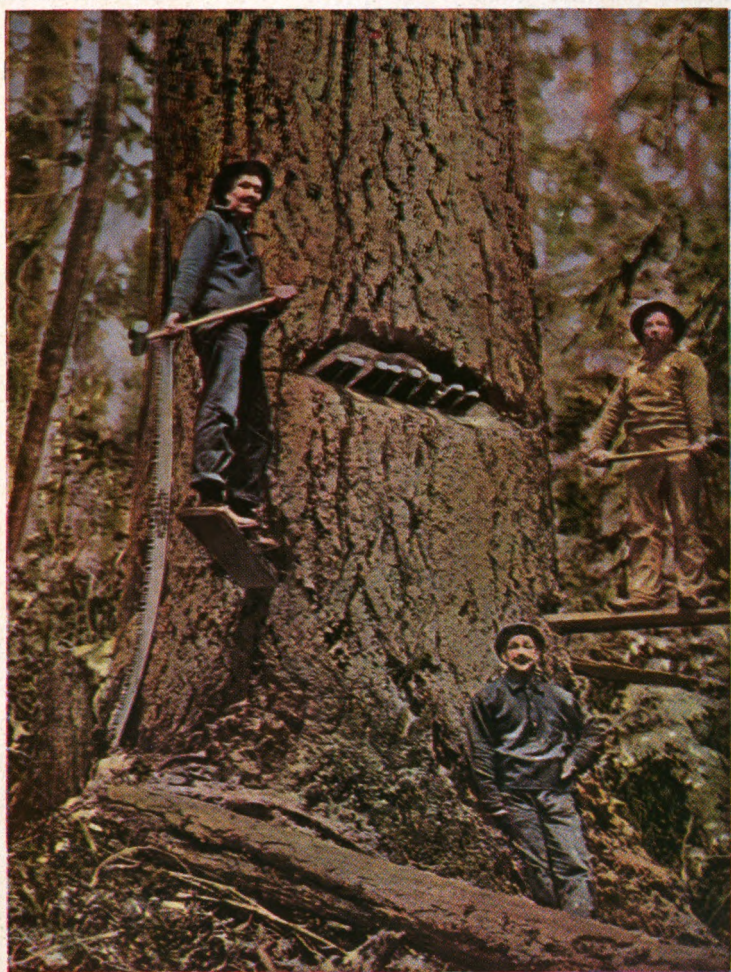
The candidate, after tiring his audience thoroughly, wound up as follows: "I want housing reform; I want land reform; I want education reform; I want——"

"Yes," shouted a bored voice from the audience, "you want chloroform."

DIS

THE

DISSTON CRUCIBLE



NOVEMBER

1920

Nine-Foot Saws Running 130 Miles an Hour

No one had ever built a saw nine feet in diameter. It took 80 years' experience and unlimited courage to do it. Men who were supposed to be saw experts said:

"You *can* make a saw as big as that, but the strain will be too great; no mandrel would hold, and 63 square feet of saw surface couldn't run straight and true at the tremendous speed demanded."

But two such saws were completed and installed in the Coats Shingle Mill at Hoquiam, Washington. Before a large gathering, many of them intensely skeptical, the saws made their initial run.

And they ran perfectly! The skeptics became enthusiasts as the gigantic saws—the biggest in the world—slashed through giant logs with a swift, clean cut.

It was the obvious thing for these saws to bear the Disston name, to be of Disston-Made Steel and made by men whose lives and whose fathers' lives have been given to making Disston Saws.

HENRY DISSTON & SONS, Inc.

General Offices:
Philadelphia, U. S. A.



DISSTON

SAWS AND TOOLS

THE DISSTON CRUCIBLE

PRICE 10c PER COPY

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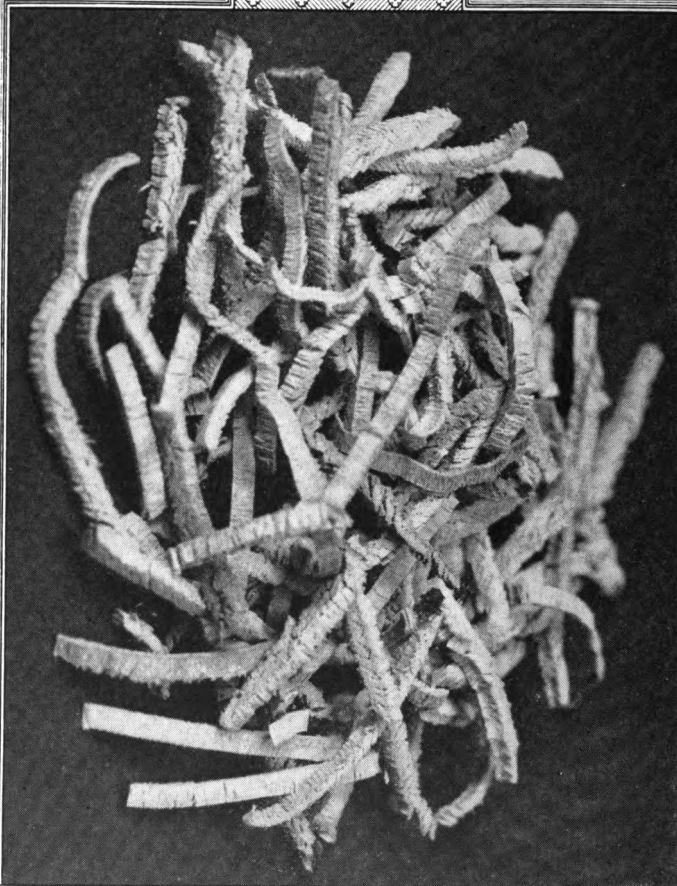
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CROSS-CUT SAW SHAVINGS

Cross-Cut Saws used to make saw dust, but the Disston High Grade Saws make shavings. The above picture shows exact size of shavings planed loose and thrown from a kerf by one of Disston's Raker Tooth Saws—the Suwanee. Write for descriptive circular of "The Raker or Planer Tooth."

THE DISTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

NOVEMBER, 1920

No. 10

*The High Cost of a Low Price**

The final aim of every man is to get as much comfort and happiness as possible in payment for the work he does.

However, payment for his work is made in a form of exchange which we call money. The comfort and happiness he gets depend, not only on the amount of money he receives for his work, but also on the wisdom with which he spends that money for the things he wants.

Having been through a period where it was necessary to pay dearly for every need and go without many wants, we are apt to spend unwisely when confronted with low prices.

There is only one way to get one hundred cents in value for each dollar spent and that is to make every purchase a sound investment. Ask yourself, not, how much does it cost, but, can I buy more and better service for what I have to spend.

The products of the House of Disston have never been made to sell at a price. The thought behind our business has always been to give the greatest possible service for each dollar of cost. And almost any Disston Saw, File, or Tool user will tell you that this is the real basis of economy.

*Quality
Sells*

*With apologies to "Talks In Ten Point."

FOREST WORKERS AND A NATIONAL FOREST POLICY

By R. C. BRYANT

Professor of Lumbering, Yale University

Written specially for the CRUCIBLE

(Continued from Last Issue)

In last month's CRUCIBLE, Prof. Bryant presented his views of the forest worker's interest in a national forest policy; warned against a waste of forest resources, and forecast a heavy tax burden in the Southland unless the denuded forest lands are made productive.

WHAT does the present method hold out to the forest worker in this region? Nothing, but an existence. Born and raised in the South as most of them have

been, they have seen the vast natural forests of their section converted into waste land and they in exchange have received, for the time being, a daily wage. Later they will have the privilege of paying higher taxes when the virgin timber is

gone, or else leaving the land of their birth and emigrating to a new region, there again to start anew. The latter course would be disastrous to the southern states, because they need, not only these people, but many more to rebuild the devastated forest areas and make them once more productive. Those citizens who always have been engaged in forest and mill work can be of the greatest benefit to the state by being allowed to continue in such work, since usually they do not make contented agriculturists, for once an individual has worked for a long period in a crew he usually finds life on a farm both irksome and monotonous.

It is scarcely conceivable that the

forest worker of the South, who is far more devoted to his section of the country than are forest laborers in many other sections, would move willingly to some new region when his

services were no longer needed at home, because of the great reduction in lumber output. The answer to this labor problem is the practice of forestry, the results of which will provide agreeable employment for large



"Born and raised in the South, as most of the Southern forest workers have been, they have seen the vast natural forests of their section converted into waste land."

numbers of these men and at the same time put to use vast bodies of land which otherwise will remain idle and be a liability rather than an asset to the state.

There is not opportunity to discuss here the methods and means by which forests may be reproduced in this region. There are many evidences, however, which clearly indicate that this problem is one readily capable of solution, for in no part of this country can forests be reproduced with greater ease, and more timber produced per acre, in a given time than in the southern pineries, provided reasonable efforts are made to insure the necessary conditions for reproducing the forests.

On whose shoulders should fall the responsibility for the production of wood crops? The private timber land owner is inclined to say that it is a public benefit and therefore the public should pay for it. The public in general, however, incline to the view, that while people have a responsibility in this matter, which in nowise should be evaded, the private timber land owner also has a definite responsibility not to handle his lands in such a manner that they become a public nuisance and a national menace, which, interpreted means, that the lands left in such condition that they are capable of producing, and actually do produce, forest crops, unless they are devoted to some more useful purpose.

The right to assume that the ownership of timber lands carries with it any moral or legal obligation to protect the interests of the public is questioned by many whose interests are affected, but it is believed that it is not an unjust assumption and that it soon will be regarded as a fixed policy of this Nation.

Another phase of the question about which there is a marked difference of opinion, relates to the authority which shall enforce a public forest policy, that is, whether the policy shall be national or state in character. While there are many arguments advanced on both sides, the fact remains that it is a national and not a local question and therefore the basic law should be a national one. The strength of the

Union rests on the motto, "United We Stand; Divided We Fall;" and this motto applies with special force to questions of forestry. If each state were concerned only in producing the forests products it required for its own use, then the public outside of that state would have no special interest in the forest policy of that state. But such is not the case. Certain states by reason of their geographical location or their soil conditions are best adapted to producing certain staple products required by the nation while other states must produce other products to which their climate and soil are adapted. It is this dependence of one state on another for certain staple products, that builds up our internal commerce and in so doing harmony should prevail. The forest policy of every forested state is of vital importance to the great agricultural regions in the interior which always have been forced to look to outside sources for their lumber and other wood products. Again there are many communities whose chief means of livelihood is dependent directly or indirectly upon wood-using industries, the raw materials for which are drawn from sources without the state. To say that the forest policy of other states is not a vital matter to them is an error.

State control of forest affairs to date, with some exceptions, has not been such as to lead one to believe that the interests of the nation and even of the state itself are always safeguarded, for too



A section of the natural forests of the Southland converted into waste land.

often political influences gain the ascendancy in such questions and in a short time may undo the work of years.

Federal legislation with all of its faults, has many things to commend it, in so far as a forest policy is concerned, the chief one of which is stability. It would be far more difficult to alter a federal law than a state law, since the vast army of wood consumers outside of the forested states would bitterly oppose any backward trend in the matter, and could probably successfully combat it.

A further argument for a federal forest policy lies in the fact that forest problems are not bounded by artificial state lines, but are regional in character and should be so handled. There is no indication that there would be any uniformity of action in those states within a given region, hence the operators in one state might find themselves at a disadvantage with their next door neighbors and competitors separated from them only by an arbitrary political division line.

The advocates of a federal forest policy do not propose that the National government do more than lay down the fundamentals on which the policy shall be based, leaving a large degree of latitude to the individual state in determining the manner in which these basic conditions can best be met, and also the enforcement of local regulations. In this way the execution of the policy is largely in local hands.

The forest laborer's interest in a forest policy for the Nation should be no small one for there is no one class of people whose personal interests will be more vitally affected by the absence of such a policy. They should take an active part in any movement which will lead to the adoption of legislation which will insure the perpetuation of our forest resources, and incidentally protect their own personal interests.

How to Tell Birch, Beech and Maple Apart

Birch, beech and maple are very similar in appearance, and have approximately the same weight. Hence

it is comparatively easy to mistake one of them for another. A method which anyone can use to distinguish them is suggested by the U. S. Forest Products Laboratory. The method makes use of the relative width of the pores and medullary rays in the three woods.

If the end grain of birch, beech or maple is cut smooth with a sharp knife and examined with a hand lens, the pores will be seen as tiny holes distributed fairly evenly over the surface, and the medullary rays will appear as narrow lines of a different shade running at right angles to the growth rings.

In beech some of the rays are very distinct even without a lens. The large rays are fully twice as wide as the largest pores.

In maple the rays are less distinct, and the largest are about the same width as the largest pores.

In birch the rays are very fine, invisible without a lens. The pores are several times larger than the rays, usually visible to the unaided eye as minute holes on the end grain and as fine grooves on dressed faces of the board. The pores in birch are considerably larger than the pores in beech or maple.

The appearance of the medullary rays on a "quartered" surface is also distinctive. Here they appear in beech as distinct "flakes" the largest being between 1/16 and 1/8 inch in height when measured along the grain of the wood. In maple they are considerably smaller, rarely attaining a height of 1/16 inch. In birch they are comparatively inconspicuous.

HIS NATURAL MISTAKE

Two young ladies had been to the opera, and on the way home on the train one of them burst out gushingly as the conductor was about to take their fares, "Oh, I just love Carmen."

"Sorry, miss," said the conductor. "I'm married. You might try the engineer, though. He's a single chap."—*Chemical Bulletin*.

THE CARELESS SMOKER

(With Apologies to Kipling)

Note.—The American Forestry Association calls attention to the fact that the forest fires in this country burn ten times the area of devastated France every year.

A fool there was and his pipe he lit
 (Even as you and I),
On a forest trail where the leaves were fit
To become a blaze from the smallest bit
Of spark—and the fool, he furnished it
 (Even as you and I).

The forest was burned to its very roots,
 Even beneath the ground,
With the flowers, the birds and the poor dumb brutes,
Old hoary oaks, and the tender shoots
Which might have made logs but for such galoots,
 Allowed to wander round.

The lumberjack has now passed on,
 His pay-day comes no more,
And the screech-owls haunt the camp at dawn
Where the cook's tin pan wakes the men of brawn;
But the mill is silent, the trees are gone,
 From the soil and forest floor.

A deadly sight are those hills of rocks
 Which once were beds of green;
No hope for the human, no food for the flocks;
The floods must be held by expensive locks,
While the harbor is silted to the docks—
 The ships no more are seen.

But the fool smokes on in the forest still,
 Leaves camp-fires burning too,
While the patient public pays the bill
And the nation's wealth is destroyed for nil.
If the law doesn't get him, the devil will—
 Smoker, it's up to you!

—*The Pathfinder.*

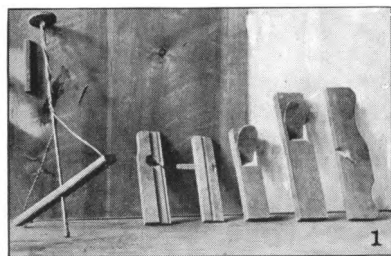
TEACHING CHINESE BOYS THE PROPER USE OF SAWS AND TOOLS

Mr. Frank A. Foster, who, until June, 1920, was in charge of Manual Arts Instruction at Chihli Higher Normal College, describes difficulties encountered in this work.

Mr. Foster lived in China for ten years. During this time he was actively interested in industrial educational work. He is a member of the Shanghai-American Chamber of Commerce.

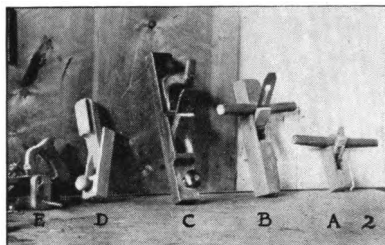
Mr. Foster is a brother of Mr. Henry Foster, who represents the House of Disston among steel users in and around Boston, Massachusetts.—ED. NOTE.

AT Paotingfu, China, not far from Peking, is a Provincial Government School. It is a general school called The Chihli Higher Normal College. The students enrolled are training to become teachers in other schools and colleges in China. A great variety of subjects is taught—among them a series of studies under the general head of Manual Arts, consisting of instruction in both woodworking and metal working.



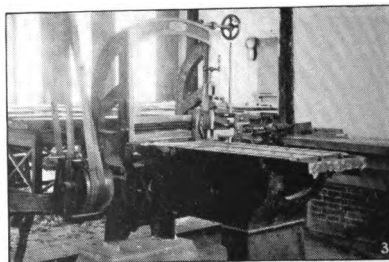
Japanese Planes and a Chinese "Pump Drill"
Paotingfu, China, 1919.

When Mr. Foster was placed in charge of the department of woodworking and metal working, he found nothing to work with excepting a very small collection of primitive Chinese hand tools. What "primitive Chinese hand tools" are, is well told by illustration No. 1 which shows some Chinese planes and a Chinese "pump" drill. Illustration No 2 shows another type of Chinese plane (a and b) and the improved types (c, d and e) that were later made and used by the students under the direction of Mr. Foster.

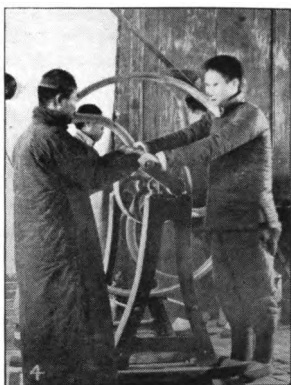


Chinese Planes—A and B. Improved Planes—
C and D. E—Combination Plane as made
by the students.

Mr. Foster's first trial was to secure suitable tools and machinery. In China this was no easy task. Finally, he went to Peking and bought, or had made, enough Chinese machinery to serve his purpose. How difficult this was is shown by the fact that the planer pictured in illustration No. 3 was made in a Chinese Machine Shop, with an illustration clipped from an advertisement in an American magazine as model and working drawings!

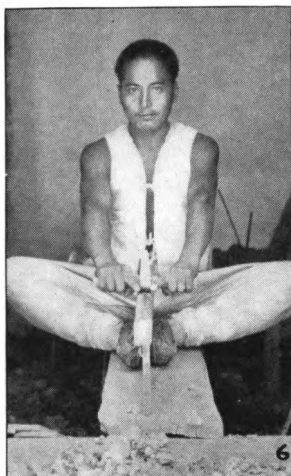


Planer made in a Chinese Machine Shop in
Peking.



Four-Man Power Engine.

Next, it was found that no motive power had been installed in the schools, and the officials refused to provide the power necessary to turn the machinery that had already been purchased! After much argument and scheming, the "four-man power engine" shown in illustration No. 4 was installed. Chinese labor can be had for practically nothing. These coolies work day after day for a few cents, just enough to exist on—but they are neither intelligent nor efficient workers. Mr. Foster says that it was much harder to keep the "engine" turning than it was to do the actual work on the machine.



A Chinese Carpenter Planing the edge of a Board, holding it with his feet. Yu Tao Ho, Shansi Prov., China, 1919.

Finally, with this primitive machinery—two Chinese lathes, the "homemade" planer, and a drill press—all driven by a "man-power" engine—the actual work of instruction was begun.

The students, seeing this unusual activity and this array of "high-grade" machinery, became greatly interested and so many of them enrolled for the



Class of Sixty Manual Arts Students at Chihli Higher Normal College, Paotingfu, China, 1919.

course that Mr. Foster soon found himself in very cramped quarters. He had two classes on his hands—one of thirty-six and another of one hundred and twenty pupils. Illustration No. 5 shows one of these classes at work.

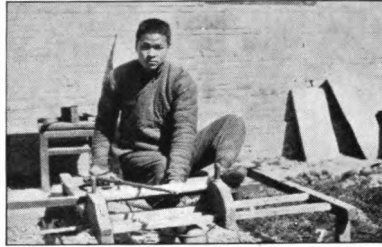
The next problem was how to instruct the pupils when they could not speak or understand the language of the teacher. It was necessary to use an interpreter. However, before he—the interpreter—could take up his duties, it was necessary to teach him manual training carefully and thoroughly so that he could convey Mr. Foster's thoughts to the students intelligently.

These were difficulties indeed. But it must be remembered that this was all preliminary. The actual work of teaching was not even started. Now came the task of showing men how to

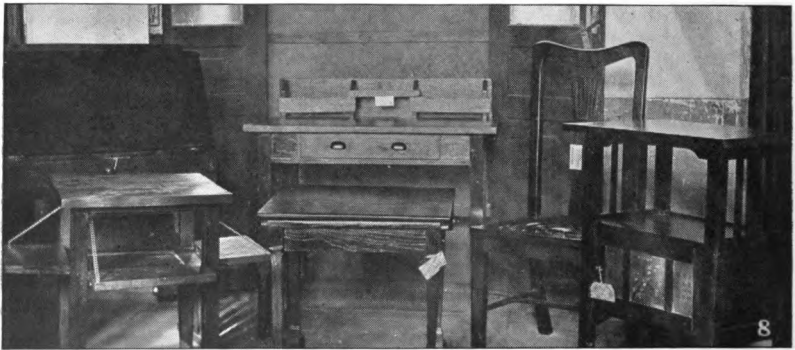
use something they had never seen—the modern tool—to the best advantage. Illustrations Nos. 6 and 7 show the Chinese at work with their primitive tools. One can readily see what a big step it is from methods of this kind to the accurate modern practices and implements as we know them.

However, the Chinese are industrious workers and are quick to learn. The exceptionally good results of Mr. Foster's work in this school are well pictured in illustration No. 8 which shows some of the finished work of his students. Moreover, it should be remembered that they were taught in groups of sixty through an interpreter who knew little or nothing about manual training work.

Mr. Foster used Disston Saws exclusively in his work at this school.



A Chinese Wood Turner and his lathe, Pao-tingfu, China, 1919.



Furniture made by students.

The Front Cover

The Front Cover of this issue illustrates how the hardy lumbermen in the Oregon forests fell the great Douglas Firs.

In this instance they have made their cut about ten feet from the ground.

The "spring boards" upon which they stand to work are securely fastened in the trunk of the tree.

The lumbermen are using sledge hammers to drive great iron wedges into the kerf made by the saw, presumably to tilt the tree in the direction they desire it to fall.



CENTRAL AMERICA

(Continued from last month.)

SALVADOR: "A great deal of the territory of Salvador has been cleared for agricultural purposes, and this means the elimination of much timber. There is still, however, some supply of mahogany, cedar, rosewood, and a few others; and there is an abundance of mangrove along parts of the coast and certain streams. The bark of this latter is of great value in tanning, and a firm is preparing to strip it from the cordwood they have contracted to furnish, and ship it to the United States. Salvador is also a source of the so-called "balsam of Peru" which is used in medicine, according to information published in the *Bulletin of the Pan American Union* by Albert Hale. The balsam tree is native in no country save the West Coast of Central America. The balsam coast of Salvador, as this article states, extends along the Western Pacific slope, between the ports of Acajutla and La Libertad, a distance of not more than 40 or 50 miles. If one takes 50 miles as the depth of this strip from the Coast, there is an area of only 750 square miles over which the tree is exploited."

The utensils in use in carpentering and cabinet-making in Salvador are, in the main, very crude and few power saws of any variety are found. The *Pan American Bulletin* also says under date of last June, "In order to encourage the reforestation of the national domain, the department of agriculture has ordered a large number of trees planted, many of which are fruit trees. These trees are to be distributed gratis for replanting throughout the Republic." The necessity to consider

the future timber supply is thus forced upon one, at least, of the Central American Republics.

NICARAGUA: "Nicaragua has a great variety of forest woods—mahogany, cedar, ceiba, rosewood, and a large expanse of good pine. The greater part of the territory containing good merchantable timber is more or less scattered over the slope of the Caribbean side of the lakes. In 1914 there was a revival of the mahogany industry, and logs to the value of \$374,723 were shipped during the last quarter of the year. The European War, however, cut off the market and there has been little business since. There are also mahogany and other woods in the western part of the country, but as the rivers here are small and shallow, there is much difficulty in getting the timber to market. The expense is such that it can hardly be done with profit.

The pine belt is a considerable area, extending from the Rio Grande north along the eighty-fourth meridian and following the coast-line into Honduras. It varies in width from 10 to 30 miles. This territory has hardly been touched. The land adjacent to the rivers and bayous is a dense jungle, containing mahogany and other hardwoods. The pine is further back, on the higher lands or ridges. There are not half a dozen sawmills in the whole Atlantic timber belt and several of those actually there are in disuse, owing to the lack of capital to build tram roads to tap the pine belt and conduct operations efficiently. There are about a dozen sawmills in the western part of the country and these produce all

the sawn and dressed lumber used in the country; not, however, a large amount. According to *Kelly's Trade Review* of October, 1919, owing to past wasteful methods of felling, "There is an enormous quantity of mahogany tree stumps in this district, (Bluefields) available for export at very reasonable prices, ranging from 10 to 12 feet in height and from 3 to 6 feet in diameter. They are stated to be specially suitable for high-class furniture."

COSTA RICA: "Costa Rica contains a great quantity of the woods common to the Tropics—mahogany, cedar, cocobolo, balsa, rosewood, palo de Mora, ceiba, and others more or less generally known. There is also logwood and fustis but these have not been exploited to any marked extent. The exportation of logs and lumber has been a considerable item in the foreign trade. This tendency (to build frame houses) has caused a number of sawmills to begin operations in Costa Rica. The consumption of the native lumber is growing and will continue to grow, yet it has not met the demand, for the United States has shipped in lumber from the Southern mills. The extension of power lines distributing electricity over a large area will undoubtedly stimulate the lumber industry, and small mills may be expected to spring up in numerous localities."

"There are listed 373 woodworking establishments of all sorts in Costa Rica. The Costa Ricans have shown great aptitude in crafts of this sort. In most of the small shops there is no machinery whatever. One hundred and three places are listed where lumber is still being sawed out by hand, in addition to 42 steam sawmills."

Several enormous concessions of furniture timber in Costa Rica have lately been taken over by American companies.

PANAMA: Rodger W. Babson, in his book *The Future of South America* quotes the President of Panama as saying, "The Republic of Panama offers to the citizens of your country the greatest opportunity imaginable; not only are your relations with our government such as should insure protection

to your investments, and even prevent revolutions, but the opportunities here are marvelous. Here we are located at the meeting of the world's two greatest oceans and two great continents. Here Nature designed should be located the world's greatest city. Here should be the market place for the peoples of the East and the West, the North and the South. Nature has been bountiful to us, giving us a wonderful climate, and abundant rainfall, and everything that goes to make an industrial nation. We have coal, iron, and other minerals, great timber forests, and immense undeveloped water power. If you would help us develop our soil, harness our water powers, open our mines, and market our lumber, great profit would accrue to you and to us also."

However this may be, it is certain that this Republic

"Away down South in the Torrid
Zone,

North latitude nearly nine,
Where the eight months' pour
once past and o'er,
The sun four months doth
shine."

has a great appeal for us because it is crossed by the Canal Zone and is associated in our minds with all the sad and inspiring history of that great enterprise; from failure

"In eighteen eighty-nine
When disaster dropped a mighty
blot
On the Frenchman's grand design"

to final success in American conquest of disease and difficulty.

"The forests of Panama contain a great variety of tropical woods, especially the lower slopes in the Darien district on the Pacific side. There the forests are more accessible than in other parts of the country and mahogany, cocobolo, cedar, rosewood, and other varieties exist in plenty. It must be understood that the whole of the Republic is rich in these and other woods—but away from water courses available for rafting and at a distance from the Coast. It is prac-

Continued on Page 159

DISSTON BAND SAW MAKES GREAT RECORD

Blade Worn from Six Inches Wide to Three and One Eighth Inches, Without a Crack or Loss of Tooth

Mr. Hugh Davis, Filer for Lieberman, Loveman & Cone Company, Nashville, Tennessee, tells of "marvelous achievement" of one of Disston's Band Saws.

A filer of long experience, Mr. Davis is well qualified to judge the quality and durability of a saw. In the following letter, he verifies the universal reputation that Disston Saws have for these characteristics.

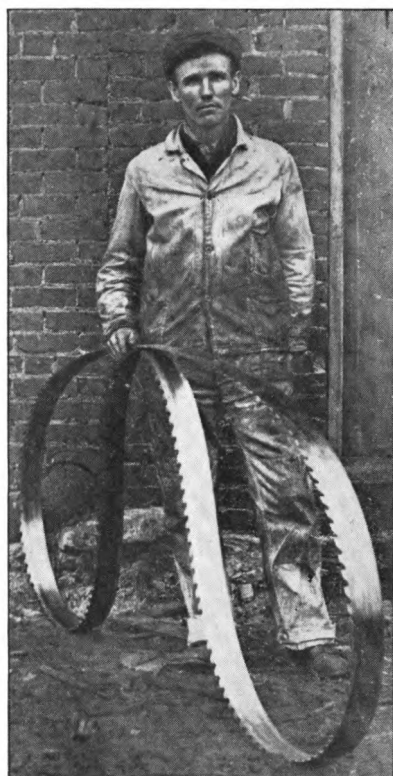
August 31, 1920

"Henry Disston & Sons,

Cincinnati, O.

"Gentlemen: Enclosed you will find picture of the writer with one of your saws which was purchased by the Lieberman, Loveman & Cone Co. of Nashville, Tenn., some years ago.

"When this saw was received, a six-inch blade, it was placed in service on the Resaw Machine of the above mentioned concern where it gave exceptional service, having been operated approximately two years in the capacity of resaw, where it encountered all types of lumber, having come in contact mostly with knotty, gnarled oak, and various other hardwood culls, such as used in making box shooks.



Mr. Hugh Davis, Filer,
and a Disston Band Saw.

"It is, of course, known that this resawing of box lumber is endowed with its due portion of grit and other obstacles which saws frequently encounter; nevertheless, considering these facts the saw was worn down from its original width to $4\frac{1}{8}$ " without a crack or losing a tooth.

"We, however, thought that there was still some good service in the saw, therefore, reduced the length to suit our Rip Saw. Since having done so, we have operated the saw approximately two years reducing the width from $4\frac{1}{8}$ " to $3\frac{1}{8}$ ". However, since reducing the length and forcing the blade to readjust itself to the smaller wheel we have not had a crack or lost a tooth.

"The above mentioned blade had no special care, having taken its turn and in many instances run out of its turn. We consider the achievements of this blade marvelous. From the writer's experience, approximately twenty-one years in saw filing, I have never before been able to accomplish such results from any Band Saws."

HUGH DAVIS (Signed)

Filer for Lieberman, Loveman & Cone.



I have a letter from an old and valued customer of the House of Disston. For many years this man has sawed lumber, and, according to his own statement, has used only Disston Saws. Now he thinks he has a complaint to make. He says the last saw we sent him will not *cut iron* as well as his other Disston Saws!

Hardly a day passes but we receive a letter telling how one of our saws—designed, made, and intended to cut wood—slashed through a piece of metal with little or no damage to the saw. We have in the office now a Disston Circular Saw that cut through a steel shaft $2\frac{3}{8}$ inches in diameter with no apparent damage to the blade or teeth. The saw was sent to us as a testimonial by the Greenleaf-Johnson Lumber Company, in whose mill the cutting was done.

Naturally we are very proud when a Disston Saw stands up to such an exceptional test as this. We have always regarded this as a kind of “supersaw-service”, but you see, here is a man who has come to expect from all Disston Saws in his mill the ability to cut iron—and cut it well.

Truly the place of leadership carries with it a responsibility as well as a reward; a responsibility that is almost an obligation to develop a product that will not only lead in ordinary work but will successfully pass the unthought-of and abnormal test. I wonder if it was not some such incident as the above that lead Henry Disston, the founder of our business to say, “If you want a saw or tool it is best to get one with a name on it which has a reputation. A man who has made a reputation for his goods knows its value, as well as the cost, and will maintain it.”



Memorial Trees

An editorial by a student of the University of Illinois on the memorial tree planting at the University.

There is no one thing in the world that adds more to man's comfort than the silent tree that stands above him. During the hot summer months he revels in its shade and in winter he is warmed by the fire which consumes it. We think of the desert and the plain as dreary and uninhabitable because of the lack of plant life, particularly the lack of trees. Although we may have come to take the trees for granted, we miss them sorely as soon as we are away from them.

There is something wonderfully impressive about a great tree. It is silent; but as it sways with the wind and its leaves shine forth a cheery welcome to the sun, it is wonderfully expressive. Its dignity is supreme and its silent evidence of power is kindly. It is extended to the animals and plants which live beneath it or hide in its branches. It is a protector of the weaker elements of nature which depend so much upon it for their existence.

Could anything be a more fitting memorial? Does not the tree in its very life express the ideals that the men who died to protect their fellow men have actively carried out? Nature is the only avenue through which we can adequately express our thanks to those who have gone beyond where our word can be heard. It is a co-operation with a Higher Power to erect a permanent memorial, symbolic of the lives of those to whom we wish to do honor.

The University of Illinois has set a worthy precedent by planting trees as permanent memorials for its one hundred and seventy-three Gold Star men.

HIS OFFENSIVE

Visitor (at disciplinary barracks): "And you are here for taking French leave?"

Prisoner: "No, ma'am. Swiss watches."—*The Home Sector*.

Timber Resources of the World—Central America

Continued from Page 156

tically impossible, in the present undeveloped condition of the country as regards railroads and highways, to get the woods to market over the mountains and across the gulch-like valleys. They are a storehouse to be drawn upon in the future."

A report on the hardwoods of Panama compiled by James C. Kellogg estimates the value of trees of timber size (aside from the cost of getting timber out) as follows:

Cacique.....	\$7,000,000
Caoba (mahogany).....	180,000,000
Espave.....	130,000,000
Guayacan.....	40,000,000
Laurel.....	60,000,000
Santa Maria.....	70,000,000

"There are more than 50 species of timber of from fair to excellent commercial value growing within the Canal Zone and Republic of Panama, which also occur in greater or less abundance throughout all Central America" declares T. W. Brady, lumber inspector of the Panama Canal, in the *West Coast Lumberman* of February 15th. From this unusually large field, the Panama Canal has been able to develop but 14 different kinds of useful lumber, for the reason that only the timber growing in the marginal lands of Gatun Lake has been accessible with the logging equipment in use and the fact that several of the most valuable species appear confined entirely to the lower coastal country where logging operations have not been carried on. While some of the timbers show an inclination to grow in pure stands, such tendency appears never to be thoroughly accomplished; perhaps because of interference during early life by the non-lumber producing trees of more rapid growth. So far as is known, all the timbers of this country grow in mixed stands, the slight separation incident to elevation and soil being the only notable exception to the rule."

There is a collection of Central American woods in the Field Museum, Chicago, and there are a few other collections elsewhere.



SAWDUST

HISTORY

Year 1610—Indians sell Manhattan Island for case of whiskey.

Year 1920—Citizens offer to swap back.—*Ex.*

NO INSINUATION

"And will one collar be sufficient, madam?" asked the haberdasher, politely.

"Young man," replied his untidy customer sternly, "do you insinuate as 'ow I 'ave more than one 'usbin?"

NOT ALWAYS

"Mother," asked Tommy, "do fairy tales always begin with 'Once upon a time?'"

"No, dear, not always; they sometimes begin with 'My love, I missed my train again.'"—*The Salt Seller.*

"DID Y' CUT 'IM DOWN?"

Pat Hogan that used t' drive a team for me come runnin' out of th' barn one mornin' yellin' like an Indian. "Whaddy' think!" he howls, "McCarthy's hung hisself t' a harness hook!" "Shut up!" sez I, "did y' cut 'im down?" "Oi did not," sez he, "he ain't dead yit!"—*Ex.*

OBVIOUSLY

The sweet young thing was being shown through the locomotive works.

"What is that thing?" she asked, pointing with a dainty parasol.

"That," answered the guide, "is an engine boiler."

She was an up-to-date young lady and at once became interested. "And why do they boil engines?" she inquired again.

"To make the engine tender," politely replied the resourceful guide.

HER ERROR

"What do you suppose has come over my husband this morning, Sophia?" exclaimed a conscientious little bride to the new servant. "I never saw him start downtown so happy. He's whistling like a bird."

"I'm to blame, mum; I got the packages mixed this morning, and instead of giving him oatmeal I cooked the bird seed."

A SURE THING

The workman was digging. The wayfarer of the inquisitive turn of mind stopped for a moment to look on.

"My man," said the wayfarer at length, "what are you digging for?"

The workman looked up. "Money," he replied.

"Money!" ejaculated the amazed wayfarer. "And when do you expect to strike it?"

"On Saturday," replied the workman, as he resumed operations.

—*Tit-Bits.*

MISTAKES

When a PLUMBER makes a mistake, he charges twice for it.

When a LAWYER makes a mistake, it is just what he wanted, because he has a chance to try the case all over again.

When a CARPENTER makes a mistake, it's just what he expected.

When a DOCTOR makes a mistake, he buries it.

When a JUDGE makes a mistake, it becomes the law of the land.

When a PREACHER makes a mistake, nobody knows the difference.

When an ELECTRICIAN makes a mistake, he blames it on induction; nobody knows what that means.

But when an EDITOR makes a mistake— GOOD-NIGHT! ! !

—*Exc.*

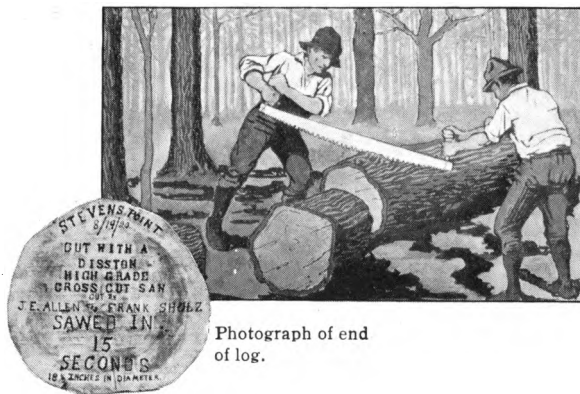
D/S

THE DISSTON CRUCIBLE



DECEMBER

1920



Photograph of end
of log.

Cutting an 18 $\frac{1}{2}$ " Grey Elm Log In 15 Seconds!

Near Stevens Point, Wisconsin, on September 19th, 1920, two men using a Disston High-Grade Cross-Cut Saw cut through a Grey Elm log, 18 $\frac{1}{2}$ " in diameter in 15 seconds.

Is this a record for fast cutting? We do not know. It does demonstrate the fast cutting and easy running qualities that are making friends for Disston Cross-Cut Saws in every part of the world.

DISSTON

CROSS-CUT SAWS

THE DISSTON CRUCIBLE

PRICE 10c PER COPY

\$1.00 YEARLY IN ADVANCE

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This Magazine is Published for the Advancement of the Interests of
Millmen by

HENRY DISSTON & SONS
INCORPORATED

Keystone Saw, Tool, Steel and File Works

PHILADELPHIA

BRANCH HOUSES

Chicago, Ill.; New York; Boston, Mass.; Cincinnati, Ohio; Seattle, Wash.;
Portland, Ore.; New Orleans, La.; Memphis, Tenn.; San Francisco, Cal.;
Bangor, Me.; Sydney, Aus.; Vancouver, B. C.
Canadian Works: - Toronto, Canada

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AN EGYPTIAN SAWYER

AMHERST-17

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

DECEMBER, 1920

No. 11

A Merry Christmas and a Happy New Year

We know of nothing more appropriate for our editorial page, at this season of the year, than to wish all friends of the House of Disston who are readers of THE DISSTON CRUCIBLE a very Merry Christmas, and a Happy New Year.

During the holiday season, may the spirit of peace, good will, and happiness be yours. May you stand on the threshold of the New Year confident and determined to make the year a successful one.

May you never forget that the United States is the greatest, the sanest, and the most secure nation in the world, and that the man who backs the United States to win can never lose!

*Quality
Sells*

THE SEATTLE CEDAR MANUFACTURING COMPANY

**Manufacturers of Lumber, Lath and Shingles
in Large Quantities.**

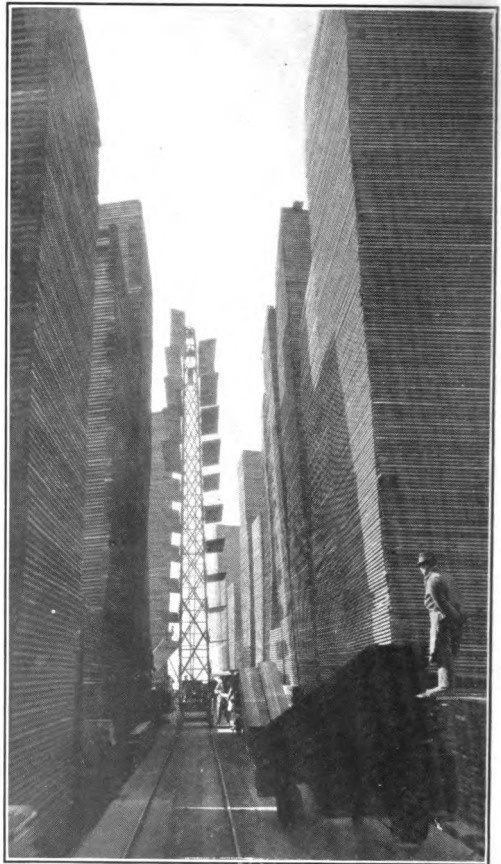
An Up-to-date Manufacturing Plant on the West Coast

Written specially for THE CRUCIBLE by T. H. C.

A PLACE where they make lumber, lath and shingles, naturally suggests wide open places, or at least that is the first thought one has of such a manufacturing plant.

One's thoughts naturally revert to out-of-doors, to wide stretches of unoccupied ground, with lumber piles sprawled all over the immediate vicinity, and then some,—a sort of orderly disorder pervading the entire institution. But the first glance over the plant of the Seattle Cedar Lumber Company will disabuse the mind of all the preconceived ideas of disorder one may have held in connection with a saw mill plant, and at once he begins to think of it as an industrial enterprise, and not a saw mill. The more thorough he makes his explorations, the more convinced he becomes that his conclusion is the correct one, and that he has under his view, a modern, up-to-date industrial plant for manufacturing cedar logs into a prolific quantity of products that cedar lumber is best calculated to provide.

The plant itself, like many of our Pacific Coast plants, is the result of



Lumber piles fifty-four feet high. Hilke's Stacker at work.

gradual growth, beginning in a rather small way and taking on its growth as conditions warranted.

The McEwen Brothers, the present owners, bought the original mill from the then Receiver, appointed by the Court, as, previous to this, the property had been through a rather checkered career, and had not been a success



A Patent Truck used by the Seattle Cedar Mfg. Co., which facilitates transportation of lumber.

financially, and was at that time, I am told, the only really combination cedar mill on the Coast.

The McEwen Brothers nursed it along tenderly from the sickly infant it was until today, it is in its fine lusty manhood, a real industrial power, and has a self-sustaining sufficiency that is a source of pride to its owners and operators.

A descriptive word or two will not be out of place. The mill proper is a ten-foot band, built by Clark Brothers at Belmont, N. Y., made for double cut mill, but although saws are made as double cuts, they are used only as single, and back side of saw carries no set. The saws used are sixty feet long, eighteen inches wide, twelve gauge, and three inch space.

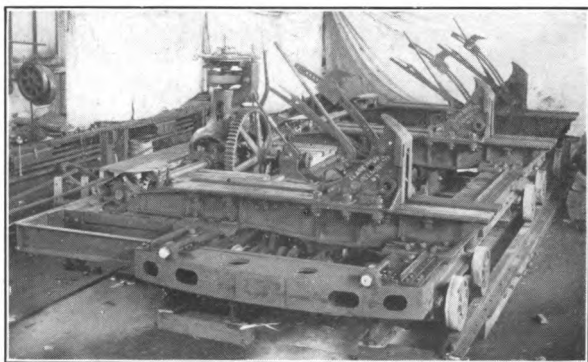
The carriage is an all steel rig, as

shown in picture, with a fourteen inch shot gun, combination Hill and Simondson feed. The Pony mill is an Allis-Chalmers double cut, run however, as a single cut, same as the big one, only with fourteen inch double cut saws on a nine and one-half inch feed, which mill is used principally for sawing cants, prepared for it on the big mill.

Another stunt the big mill has to perform, is to furnish a supply of the right size cants to keep a Wicks Gang supplied with its capacity. The Wicks Gang is fourteen by forty-eight inches, and is driven by a Wicks No. 18 Engine, so you can imagine its appetite for Cants is quite keen.

Then they have arranged at a convenient point in the mill for its purpose, an eight inch Horizontal Band Resaw, which seems to be rather busy itself, when the rest of its kin are on the job.

While arranged conveniently for its purpose, is an insignificant ten-inch Edger, so well employed that it has no time, and pays no attention to a little relative some distance away who has only two small saws to amuse herself with. Not very far from the scene of all this mechanical disturbance is a somewhat squat, unimposing structure they call the Shingle Mill, built of concrete, even to the floors thereof, so they can turn the hose on most any old time and wash out the dust and anything else that's loose.



An all-steel carriage with fourteen inch shot gun, combination Hill & Simondson feed.

You may know that this is really a shingle mill, when I tell you the daily output of shingles is nine hundred and fifty thousand. I was going to say round a million, but Mr. H. C. Hilke, the superintendent, wouldn't stand for it—he says they do not make so many.

For sawing these blocks they use Inserted Cut-Off Saws, three in number, of two sizes, one sixty-eight inch and two seventy-eight inch. The number of shingle saws, I leave to your imagination.

A scene in the Lumber Yard of the mill, herewith reproduced, will give you some idea of how the lumber is piled, and also shows the Hilke Stacker at work. These lumber piles are fifty-four feet high, so most of the lumber is in the air. The stacker is Mr. H. C. Hilke's invention, and he is finding a ready market for it, particularly in the South.

In about the center of the plant is a brick-lined refuse burner, one hundred and fifty feet high, with thirty-five foot screen, fifty-four feet in diameter, with seven foot high air spaces. Along side of this burner is built a chimney of burnt steel brick, two hundred and fifty-four feet high, ten feet, six inches inside measurement at the top. Some chimney for a saw mill!

This entire equipment covers about twelve acres of ground, including lumber piles. The plant is one of the finest and most complete to be found, I think, in the whole world. It is known to the Lumber World and the rest of mankind as "The Seattle Cedar Manufacturing Company" and is owned and operated by the McEwen Brothers of Seattle, Washington, known to their intimates as, "Bill" and "Aleck," but generally recognized by the trade and all others as W. H. and A. F. McEwen. T. H. C.

He—"Miss Willing, I'm going to propose to you—"

She—"Really, Mr. Phoxy, this is so sudden."

He—"That we have some ice cream—"

She—"Oh, I shall be delighted."

He—"Some evening when the weather gets warmer."—*Team Work.*

A Wooden Wedding.

From a recent issue of the *American Lumberman*, we quote the following:—

As an advertising campaign for "Wood Where Wood is Good," you'll have to hand the first prize to the parties mentioned below as demonstrating that there is a place and a use for most every kind of wood and that in this case, it seems, substitutes would not have answered the purpose A-TALL. The following dispatch was recently received from Washington, N. C., in the heart of the North Carolina pine district:

"What was unquestionably one of the most unusual marriages that has ever taken place in this section occurred Friday night when Miss Ada Oakes, daughter of Mr. and Mrs. J. C. Oakes, became the bride of Walter Pine, formerly of Salisbury, now engaged in the tobacco business here.

When Mr. Pine won Miss Oakes' consent to be his bride, they decided to have a "wooden wedding" at the very beginning of their married life. That they succeeded is evident from the following list of persons who participated in the ceremony:

The groom—Walter Pine.

The bride—Miss Ada Oakes.

The best man—Robert L. Birch.

The bridesmaid—Anna Lee Laurel.

The ceremony was performed by Rev. Oscar T. Wood, of Columbia, N. C. The bride and groom left on the midnight train for Hickory, N. C. to spend a week with the groom's aunt, Mrs. E. W. Shingle.

Mrs. Gottawad was showing Hilda, the new Swedish maid, over the house, and explaining her duties. "This," she said, "is my son's room. But he is not at home now. He is in Yale."

"Yah?" Hilda's stolid face lit up with sympathetic understanding. "My brudder ban there, too."

"Is that so? What year?"

"Ach, he not ban there year. Da yudge yust say, 'You, Axel, 50 days in yail.'"

DISSTON BAND SAW CUTS THROUGH DOG

Not Even a Tooth Nicked in Freak Cut.

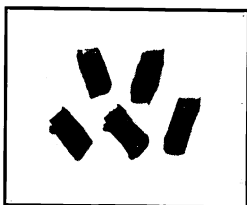
Mengel Box Company, Jersey City, N. J.,
Scene of Test.

We recently received a letter from Mr. M. E. Simpson, filer for the Jersey City, N. J., branch of the Mengel Box Company, affirming a report of a remarkable achievement of a Disston Band Saw.

While cutting a cedar log on an eight inch band mill, the saw cut in twain a chain dog approximately one and a fourth inches wide and three eighths of an inch thick.

This unusual and temper-testing experience had no perceptible effect on the saw, and the cut was made without interruption, after which saw was carefully examined.

To the surprise of several persons



Chips made by Saw in cutting
through dog

who were present, it was found that the saw was uninjured; not even a corner of any of the teeth was knocked off.

Several of the iron chips made by the saw in cutting through the dog, were sent us and we are pleased to reproduce them on this page.

While we do not expect a saw, which has been designed, tempered, and fitted for cutting wood, to cut through iron and steel, yet we have records of many such instances. They all testify to the splendid quality of steel and efficient workmanship which are put into Disston Saws, and are a source of satisfaction.



Filing room of Mengel Box Company, Jersey City, N. J.
Mr. M. E. Simpson, the Co.'s filer, swaging a Disston Saw.

SMELTING IRON IN CHINA

Chinese Smelting Plant Centuries Old Gives Interesting Comparison of Ancient and Modern Methods.

Information and Photographs from Mr. Frank A. Foster, who spent many years in vocational educational work in China. Mr. Foster is a brother of Henry Foster, Disston Steel Representative in Boston.

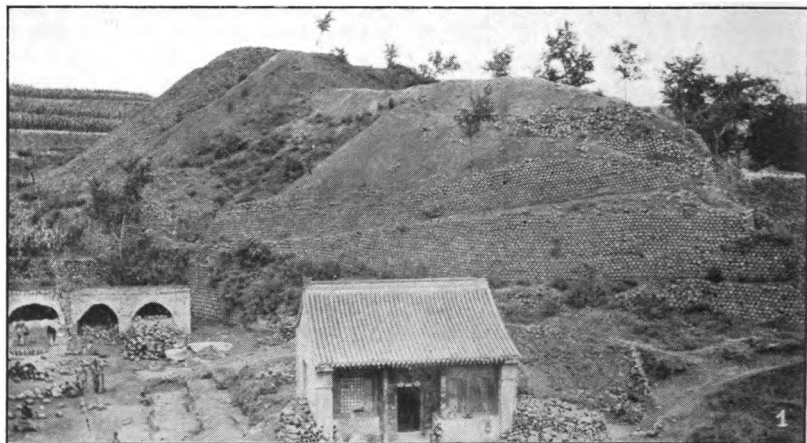


Fig. 1. A Chinese Iron Smelting Plant in Shansi Province. Giant Hills of Discarded Crucibles Showing the Antiquity of the Operations.

Someone once sarcastically remarked, "As old as the world is, China is older." That is rather an extravagant statement to say the least. But sometimes one does wonder just how many generations old that far eastern country really is.

It is to laugh when one compares the size and efficiency of some of our industries with those in China. Or rather it would be humorous if it were not so pathetic. For it certainly is almost heartbreaking to realize that the country which was once the most powerful in the world, which is the oldest in the world, which has had the

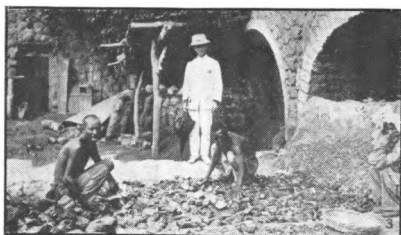


Fig. 2. Laying the Bed of the Furnace.

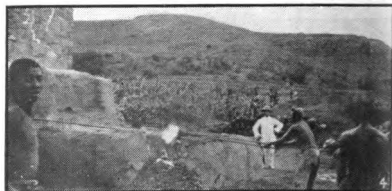


Fig. 3. Shaking out the Dross at the Furnace.

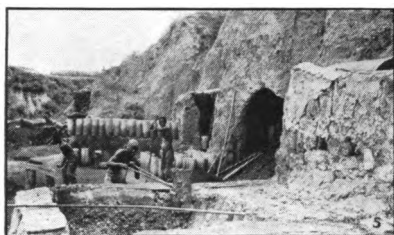


Fig. 4. Taking out a Crucible.

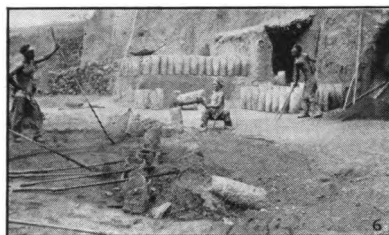


Fig. 5. Concentrating the contents of several crucibles into one before pouring the pigs.

greatest opportunities, is now perhaps the weakest and certainly the least developed.

And yet for years and thousands of years, in China, they have been using almost what we choose to call modern methods, in connection with iron smelting. At Pingtingchow, some 250 miles southwest of Peking, is an iron smelting plant that is hundreds of years old. Illustration No. 1 gives some indication of that age. The hills shown are composed entirely of discarded crucibles in which iron has been smelted. One can readily see that many centuries were necessary to accumulate such a pile. This plant,

generations ago, however, was perhaps more progressive than many American organizations. They made their own crucibles.

The ore is of inferior grade. So poor, in fact, that it is necessary to heat twice. The first heat is low, the purpose being to drive off the sulphur and phosphorus, the two things most harmful to either steel or iron. The second heating is to reduce the ore to metal. Illustration No. 6 shows the operation of filling the crucibles.

This Chinese smelting furnace which has not been changed in hundreds of years was wisely built. It is operated on the same general principles as our

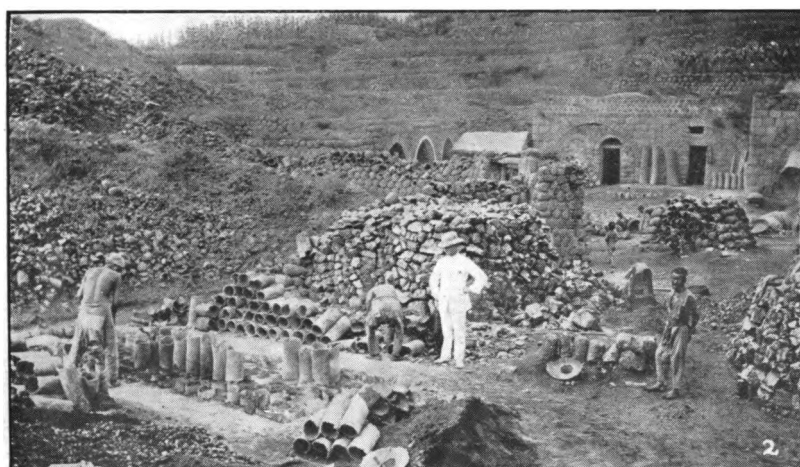


Fig. 6. Filling the Crucibles.



Fig. 7. Pouring the Pigs.

most improved plants. The floor base composed of broken refractory pottery is porous so that air may be forced through. Illustration No. 2 shows the floor in the process of being laid. Over this is a layer of coke on which the crucibles rest. About one hundred and fifty crucibles are set at one smelting. Around this formation of crucibles an earth bank is built, the top of which comes to the level of the tops of the crucibles.

The smelting blast is furnished in a rather ingenious though primitive manner. A large wooden door is



Fig. 8. The Coal Mine at the Furnace.

swung on the arc of a circle in such a manner as to drive air under the floor and so up through the porous base.

When the ore has been melted the earth is dug away from the first row of crucibles. A skilled workman runs in a pair of long tongs and rocks each successive pot. This is to throw out the dross. Illustration No. 3 shows this operation. Illustration No. 4 shows the crucible pot partly full of reduced ore being lifted from the so-called furnace.

Though a crucible is set filled with ore, the ore reduces to a comparatively small quantity of metal. Therefore,

the contents of three or four crucibles are poured into one pot before pouring the pig, in order to get a more uniform quality of metal in the pig. Illustration No. 5 shows emptying one crucible into another. Illustration No. 7 is the operation of pouring the pig. The reader will notice that these pigs are much smaller than ours. The reason for this is that, when ready for sale, they must be carried out of the mountains on the backs of donkeys. In China they do away with one transportation charge by having the furnace at the mines.

Another reduction in the overhead of this plant at Pingtingchow is brought about by the easy accessibility of fuel. As a matter of fact, that was one of the reasons for the original location of the plant. A coal mine adjoins the iron mines. This means no freight charges for fuel. Coal production is slow, however. Illustration

Continued on page 175



A good sample of Chinese Cast Iron Work.
A cast iron statue at the Temple of Chin Ssu,
Shansi Province.



Kindness to your tools is an ounce of prevention that beats a pound of cure!

I recently received a letter from a carpenter who referred to his saw as "Old Faithful," and entreated the person to whom the saw was about to be entrusted to "Treat him kindly for he has served me well."

Why these affectionate terms?

Did a bond of sympathy exist between the saw and its owner? Scientists claim there is a bond of sympathy between humans and minerals, and that would probably include a steel blade with teeth in it. Be that as it may, it is quite evident that the owner of the saw felt very kindly toward it.

Here was a man who appreciated his saw for the work it helped him to accomplish, and no doubt he always gave it the best of care.

This is in line with a thought I advanced several years ago and which is always applicable, namely: "*Kindness to your tools is an ounce of prevention that beats a pound of cure.*"

Artisans in all lines of work will readily agree that if tools are expected to render their best service, they, like man or beast, must be kept in the best of condition, and treated kindly.





AUSTRALIA AND NEW ZEALAND

ONE'S first impression that the forest resources of Australia and New Zealand are rather negligible is dispelled by a closer examination of the authorities on the subject. Nature's gifts of merchantable timber to Australasia have not been lavish, perhaps, and much has been wasted by spend-thrift ways in the past. Nevertheless, wiser practices are gaining ground and we may hope that the island continent will always possess a useful forest reserve.

AUSTRALIA: "The Last Great West," an article in the "WORLD'S MARKETS" for September, says, "The states of Australia do not lack timber except pine and spruce, which are mainly imported from the west coast of the United States. Of hardwoods there is an abundance, especially in Queensland and New South Wales. The eucalyptus is a prevailing tree in Australia, there being several varieties of eucalypti. The valuable oil distilled from the leaves of certain varieties of the eucalyptus is extensively exported."

Quoting from "AUSTRALIAN OFFICIAL STATISTICS," "AUSTRALIA: ITS RESOURCES, INDUSTRIES AND TRADE," published by U. S. Gov't, 1911, gives the forest area of New South Wales as 15,000,000 acres; Victoria, 11,797,000 acres; Queensland, 40,000,000 acres; South Australia, 3,840,000 acres; Western Australia, 20,400,000 acres; and Tasmania, 11,000,000 acres; Total 102,037,000 acres. The State forest reserves of New South Wales are 7,690,771 acres; Victoria, 3,989,791 acres; Queensland, 3,817,353 acres; South Australia, 155,231 acres; West-

ern Australia, 52,900 acres; Tasmania, 997,454; Total 16,703,500 acres. State forest nurseries total 166 acres and Plantation trial stations, 11,232 acres." This pamphlet further says, "The actual area of wooded land is probably in all cases much greater than shown in the preceding table. For example, that of Western Australia is estimated at 97,900,000 acres; Queensland has probably 143,000,000 and Victoria has a considerable extent of "Mallee" country not included in the above estimate. Considerable areas not included as forest lands possess timber of local value. It is estimated that the Commonwealth has a total forest area of 159,433 sq. miles or 5.36 per cent of its total area. The more conspicuous timber regions of Australia, as a whole, are the eastern and southern portions, including Tasmania, and the southwestern portion, northward and eastward from Cape Leeuwin." In continuation, **AUSTRALASIAN MARKETS FOR AMERICAN TIMBER** of 1915, says, "The largest amount of timber in the eastern part of the country is found on the crests and coastal slopes of the mountain ranges; but in the southwest, in addition to the belt between the mountains and the sea, a large area of forest stretches inland from the coastal ranges. The hills encircling Adelaide and Yorke and Eyre Peninsulas also bear timber. The Kimberley district is timbered, and in the Northern Territory, and around the shores of the Gulf of Carpentaria are considerable forest areas. In the coastal regions of parts of western and northwestern Australia, and along the shores of the Great Australian Bight and Encounter

Bay, not much timber is found. The areas in the center of the country contain little or no timber."

A very graphic general view of the Australian continent by Bernhard R. Wise is quoted in **AUSTRALASIAN MARKETS FOR AMERICAN HARDWARE**, 1916. "Roughly speaking, the continent is divided into three distinct kinds of country—the forest lands of the coastal rim, the upland plains of the descending downs, and the central basin of the desert. The coastal districts rich in alluvial soil, well watered by rivers, and with ample rainfall, grow a profusion of trees and vegetation. As the ground rises toward the mountain range, the timber becomes bigger and the forest more dense. On the footslopes, creepers, palms and ferns form a screen of luxuriant foliage, which disappears on the uplands, where the eucalyptus grows in open grassy glades giving the landscape the appearance of a park. Great rolling downs, with frequent clumps of timber, form the beginning of the inland slope of the dividing range. Gradually these give place to an expanse of treeless plain, which, at one time carrying only a sheep to 10 acres, promises now to rival the wheat fields of Canada. Trees are still found by the river banks. As the region becomes more arid, bushes, scrubs, and dwarf eucalyptus, with belts of pine at intervals, give place to a scant and inferior vegetation. The belt of good land is naturally widest toward the north where the rivers running into the Indian Ocean, drain extensive areas, and narrowest on the southern coast. On the southwest corner of the continent are extensive forests of Jarrah; and Western Australia has another great forest belt, some 350 miles in length by from 50 to 100 in breadth, which is not on the coastal side of the range, but extends eastward toward the interior. The north-western and northern districts, which are not yet much known, have the characteristic scenery of the Tropics, with the peculiarity that, behind the coast line, at no greater distance than 100 miles, runs a plateau of dry and healthy pastures, which is said to be also capable of growing wheat. The

eastern portion of Tasmania recalls England as much by its climate as by the hedgerows that divide its fields. The western portion of the island, on the contrary, is a land of perpetual rain, where the forest is so dense that walls can be built on a tangle of creepers and fallen trees 30 feet or more above the ground."

Some interesting particulars regarding the composition of Australia's forests are found in **TIMBER IMPORT TRADE OF AUSTRALIA**, published by the Canadian Gov't, 1917: "Limited in quantity the Australian forest is further restricted in its use in the domestic market by the character of the timber and the high cost of logging and manufacture. The forests of Australia are almost wholly mixed hardwoods belonging chiefly to the eucalyptus or gum and acacia or locust families. The forests of Australia in districts rival Pacific Coast forests in size and clear length of trees and amount of timber per acre. The karri trees reach a height of three hundred feet with a clear length of one hundred and eighty feet. Both the Karri of Western Australia, the messmate of Victoria and New South Wales and the blue gum of Tasmania frequently produce one hundred and fifty to two hundred thousand feet per acre. Exceptional instances are recorded where karri has scaled three hundred and sixty thousand feet per acre. Sixty or seventy species exist in commercial quantities, and all excepting jarrah and karri grow in mixed forests and all are rather local or limited in range. Jarrah and karri are the two chief export timbers. Jarrah because of its strength, durability, hardness and resistance to white ants has reached every market of the world for sleepers, paving and public works. Karri possessing the same qualities, excepting durability has been extensively exported for railway, carriage building and industrial purposes. Other gums, ironbark and turpentine, toredo resistant and durable, find an active export demand for piling and marine works.

The numerous species, while uniting in the common qualities of heavy weight and hardness, present a tre-

mendous range of color and natural working properties. None of them are so suitable as conifers for building and structural purposes. The chief factors tending to limit the use of native timber for building purposes, in a country where popular sentiment is greatly in favor of the domestic product, are the great weight of nearly all Australian timbers, the expense and difficulty of securing them and handling them in long lengths and large sizes, the tendency of all Australia woods to warp and check seriously, the difficulty of working Australian hardwoods as compared with imported softwoods and the large number of species and the extremely mixed character of the forests. The large number of species in the forest, each requiring different seasoning treatment, has rendered it impossible for the small country mills, which produce almost all the domestic timber cut, to properly market the timber. Although a few important species appear in several regions, each of the many lumber producing regions possesses a distinct group of species, all of which have been in the past put on the local markets unsorted, unseasoned and roughly manufactured. The consumer has not become familiar with any one species as a standard article. The methods of marketing have forced him to look upon the domestic lumber as less reliable and less standardized than the imported soft woods. The native woods, though close-at-hand, and produced regularly in large quantities are unsuitable for many uses, too hard, too heavy, unkind to work, likely to warp or check. The softwoods of Australia available for exploitation which would afford the keenest competition to imported softwoods are very few in species, and limited in range and quantity. Aside from a few square miles of Huon pine in Tasmania, Australian softwoods are limited commercially to comparatively small quantities of hoop pine, brown pipe, Bunya Bunya Pine, and kauri pine. These pines are found chiefly in New South Wales and Queensland so scattered over in accessible areas of country as to render their exploitation slow and costly. The total stand is estimated

between three and four billion feet and the annual cut at two hundred million feet board measure. The cost of producing timber is so great in Australia that in normal times both Douglas fir and Baltic spruce sell for less than the native woods.

The first element in the cost is the inaccessibility of the forests. The most accessible and the richest forest areas in Eastern Australia have been destroyed by fires and the ring-barking of the trees to improve grazing. The most important remaining forest areas are those of Western Australia, which are one hundred miles by rail from the Coast and an additional three thousand miles by ocean transport from the important market of Eastern Australia, the seat of nine-twentieths of the population. The units both of logging and manufacture have been small. There are very few driveable streams, and none of the hardwoods will float without assistance. The waste in manufacturing hardwood lumber in Australia is terrific. Few mills appear to realize on over fifty percent of the log scale, and in many instances, the waste on logs reaching the mills is sixty percent.

Pine Lasts 100 Years

Four old tanning vats were recently disclosed in excavating in the old tanning district of New York City, which effectually proves all claims for southern pine as a lasting building material.

These vats were built of Georgia (long leaf) yellow pine, and the contractors estimate that they had been in place ten feet below grade for just about 100 years. In spite of this all the timber is in excellent condition.

The history of the old tanning district states that from 1780 to about 1800 this particular spot had been used by tanners, and the purpose of the vats was to hold the lime solution used in the process. The steam shovel of today brought the big square vats into the light of day again exactly as they were put down one hundred years ago.—(*Mississippi Lumberman*).

New Disston Branch House at San Francisco, Calif.

The House of Disston has been enjoying constantly increasing trade on the Pacific Coast, until it has reached such proportions as to necessitate the establishment of another branch house. This branch has been located at 144 Second Street, San Francisco, California, where a full line of saw mill products will be always kept in stock.

The proximity of the Branch to the saw mills in California will greatly facilitate business transactions in the mill saw line.

The many friends of Henry Disston & Sons, Inc., are cordially invited to call at its new quarters and talk over their mill problems with Manager D. W. Jenkins, and his able corps of assistants.

The opening of the branch at San Francisco, in connection with the Portland and Seattle branches, gives the House of Disston three strategic points from which to supply the various needs of their Pacific Coast patrons; and all business, whether transacted in person or by mail, will receive careful and prompt attention from any one of these branch houses.

Smelting Iron in China

Continued from page 170

No. 8 shows the mouth of the mine from which the fuel for this plant comes. Often only one man works in the mine. He fills a bucket which is drawn up by the windlass.

Though slow, it is a staple industry, well founded. The fuel and ore mines are side by side. They might become a "gold mine" with progressive American methods. Yet despite our criticism, this organization has survived for centuries.

And though we may not admire the style of art, though we may not approve of the mining or smelting methods, or casting methods, who will say that the cast iron statue pictured in Illustration No. 9 is not a good sample of the craft.

PHYSIOLOGY

Teacher—"What are the five senses?"

Ikey—"Nickels."—*Ex.*

Color of Cypress Heartwood No Indication of Durability

Southern bald cypress is about the most variable in color of any of our native woods, and in different localities is known as red cypress, yellow cypress, white cypress, and black cypress. There is a rather prevalent belief that cypress with dark colored heartwood is the most durable, but the opinion of the U. S. Forest Products Laboratory is that as far as durability is concerned the color of the wood makes very little difference. In service records obtained by the laboratory, any difference in the length of service of red cypress and yellow cypress appears to be due entirely to a difference in the amount of sapwood in the timbers. Cypress trees with light colored heartwood usually have more sapwood than those with dark colored heartwood, and sapwood is not resistant to decay.

The important thing if durability is desired appears to be to select the heartwood of cypress regardless of its shade.—Forest Products Laboratory
Madison, Wis.



SAWDUST

FISHERMAN'S WIT

Owner—"Here, what are you doing? Don't you know you're not allowed to take fish out of this water?"

Angler (three hours without a catch)—"I'm not taking them out. I'm feeding them."—*New Era*.

MEETING EXPENSES

"Do you have any trouble meeting expenses now?"

"Lord, no! I meet 'em everywhere I turn."—*Life*.

NECESSARY TO SELF-PRESERVATION

"Do you know, Henry," asked Mrs. Figgus, newspaper in hand, "that every time you draw your breath somebody dies?" "Well, I'm sorry," returned Mr. Figgus, "but if I stop drawing it I'll die myself."—*New York Globe*.

QUITE OBVIOUS

The fire-eating colonel had received a letter which consumed him with rage, but this was his noble reply:

"Sir, my stenographer, being a lady, cannot transcribe what I think of you. I, being a gentleman, cannot think it. But you, being neither, will understand what I mean."—*Life*.

NEVER BUT ONCE

As the stage coach careened toward the edge of the cliff the timid tourist gazed anxiously down at the brawling stream 300 feet below.

"Do people fall over this precipice often?" she asked.

The driver clucked to his horses. "No, madam," he returned placidly, "never but once."—*Chicago Herald*.

Wife—"I always sleep with gloves on. That is what makes my hands so soft."

Husband—"H'm! Do you sleep with your hat on, also?"

THE CLASSES

"Who is the young man over yonder, so well dressed, whom all the girls seem to be admiring?"

"Why, he's the pink of perfection."

"And who is the ordinary-looking man near him, with a baby in his arms?"

"Oh, he's just a plain poppy."—

Baltimore American.

GOT IT THAT TIME

He was very keen on his newly-purchased farm, was young Chubson, and wanted to increase his stock. So he bought some pigs before his new sty was quite ready.

He went to a neighbor, and asked him to let the pigs be put in the latter's sty.

"I've bought two thowth and pigth," he explained.

The neighbor wasn't used to Chubson's lisp and scratched his head.

"Two thousand pigs!" he muttered.

"Why, my sty will only hold half a dozen!"

"You don't understand!" said Chubson shortly. "I didn't thay two thousand pigth, but two thowth and pigth."

"I understand all right," replied the other; "but you must be crazy."

"I'll thay it again!" yelled Chubson, in a rage. "I didn't thay two thousand pigth, but two thows and two pigth!"—*Exchange*.

"I put an ad in the paper asking for a wife."

"Any answers?"

"Any? The first day I got 400, and two from men asking me to take theirs."

"Moike was drowned last night."

"Is that true? Couldn't he swim?"

"Yes, but he's a union man; he swam for eight hours and quit."

DIS

THE

DISSTON CRUCIBLE



JANUARY

1921

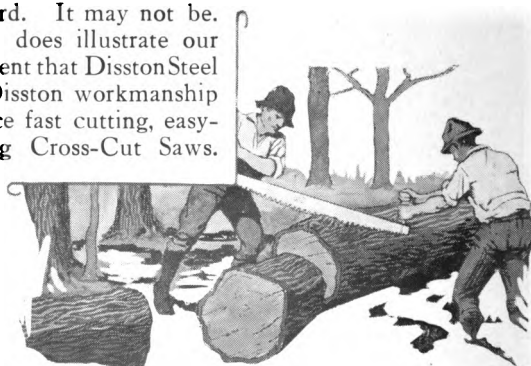


End of 14" Hard Black Ash Log cut with
Disston 6 foot Cross-Cut Saw in 12 Seconds!

Fast Cutting

On September 8th, in
Herkimer County, New
York, two men using a
Disston 6 foot High-Grade
Cross-Cut Saw cut through
a Hard Black Ash log 14" in
diameter in just 12 seconds!

We do not hold this up as
a record. It may not be.
But it does illustrate our
statement that Disston Steel
and Disston workmanship
produce fast cutting, easy-
running Cross-Cut Saws.



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INCORPORATED

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A MIGHTY MONARCH

**A few original White Pines are left in
Center County, Pennsylvania**

THE DISSTON CRUCIBLE

A MAGAZINE FOR THE MILLMAN

VOL. IX

JANUARY, 1921

No. 12

"Lincoln-Brand Courage"

You who are discouraged and think it no longer worth while to fight defeat, read these experiences of Abraham Lincoln:

When very young, Abraham Lincoln was a candidate for the Illinois Legislature, and was badly beaten.

He then went into business, and failed. For the next 15 years he worked to pay the debts of a no-good partner.

Again in politics, he ran for Congress, and again was badly beaten.

He tried for an appointment in the U. S. Land Office, and was unable to get it.

He was a candidate for the U. S. Senate, and was beaten.

He tried for the Vice-Presidency of the U. S., and was beaten.

One failure after another—"knock-outs", mostly—but determination and courage carried him over all of them until we speak of him today as one of the greatest men this country ever knew.

There is small chance in this world for a "quitter".

*Quality
Sells*

FOREST DEPARTMENT OF PENNSYLVANIA HAS BEEN OPERATING NURSERIES SINCE 1903

These Nurseries Will Have a Capacity of 20,000,000 Trees Within Four Years

The Department Provides Trees Free of Cost to Individuals, Municipalities, Institutions, and Schools

By CHARLES N. CHRISTMAN—*The North American*

(Written specially for THE CRUCIBLE)

WITHIN four years the nurseries operated under the direction of the Forest Department of Pennsylvania will have a capacity of 20,000,000 trees a year, through an arrangement which has just been completed, and which will be put into operation next spring.

Twelve state reformatories, insane hospitals and tubercular sanatoria have agreed to establish nurseries on their own land, and furnish the labor and teams and equipment necessary to operate them.

The state will furnish the seeds and will also supervise the nurseries.

The twelve new centers for tree raising will be in addition to three which will continue to be operated by the Forest Department itself. This year the state operated six nurseries, but three of them are to be abandoned.

The department estimates, through the increasing interest of individuals in tree planting, that the entire output of the greatly enlarged nursery equipment will be in demand. In addition, shade trees to the number of 15,000 a year, will also be needed.

The department provides the trees free of cost, both forest products for

private planting, and shade trees for municipalities, state institutions, and public schools. The only obligation on the part of the individual, or the municipality, institution, or school, is that the tree will be planted and cared

for. Those receiving the trees must, of course, pay the cost of transportation and packing. Spring is the best planting season and the department is extending its efforts to limit the planting to that time of the year as much as possible. The extent to which

the department has been enabled to confine the planting to the early months is shown by the record for 1920, when 2,755,422 trees were privately planted and 232,425 set out in state forests during the spring, while the fall planting, all-told, amounted to only 19,058. Oftentimes farmers who want to plant trees have some local condition which prevents their setting out trees in the springtime. In those cases the department makes no objection to fall planting. But the percentage of loss from spring planting is so much less than that from fall planting that the economy of the thing is apparent.



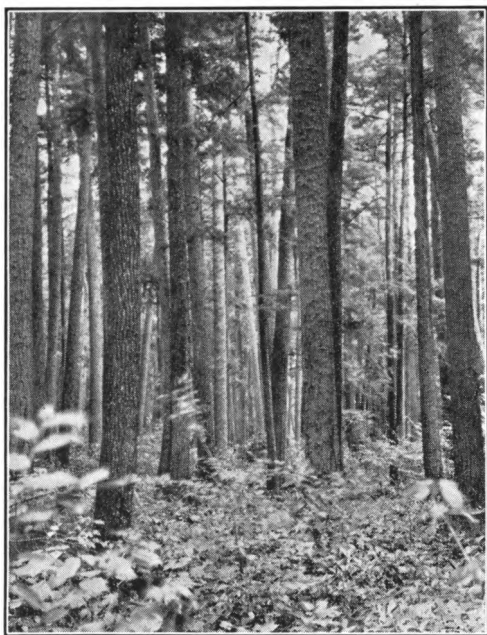
Sign placed at Pennsylvania State Nurseries

Because of the assistance of private planters, who took virtually the whole output of the state nurseries, the Department has been able to expend more time in fire prevention work. The success of that movement was shown by the fact that only 100 acres of state forest were burned over during the 1920 fall season, a record which is considered remarkable.

Reforestation, latest practice has it, is not the work of the Forest Department so much as is fire prevention and forest supervision. Nature will reforest, providing fire is kept out and that is one of the reasons why a request will be made to the Pennsylvania legislature, which meets this month, for a greatly increased appropriation for the Forest Department. Also, it was found early last year that the force of foresters then in the employ of the state could not be continued if the men were to receive living wages. The result was a reduction in the force, men voluntarily submitting to temporary dismissal in order that their mates, who had greater calls upon them, could support their dependents comfortably. The nobility of this sacrifice has brought comment all over the state and it is expected that the men who were dropped will be restored to the rolls this year under an increased

appropriation.

The state nurseries were started in 1903 and since that time their output has been 45,909,309 trees. The state began its planting of trees in 1899, since which time 34,038,763 trees have been set out on state lands. Private planting, in the last eleven years, when the state started distributing trees, has accounted for 11,504,696.



Primeval White Pine Forest.
Warren County, Pa.
Watson Township.

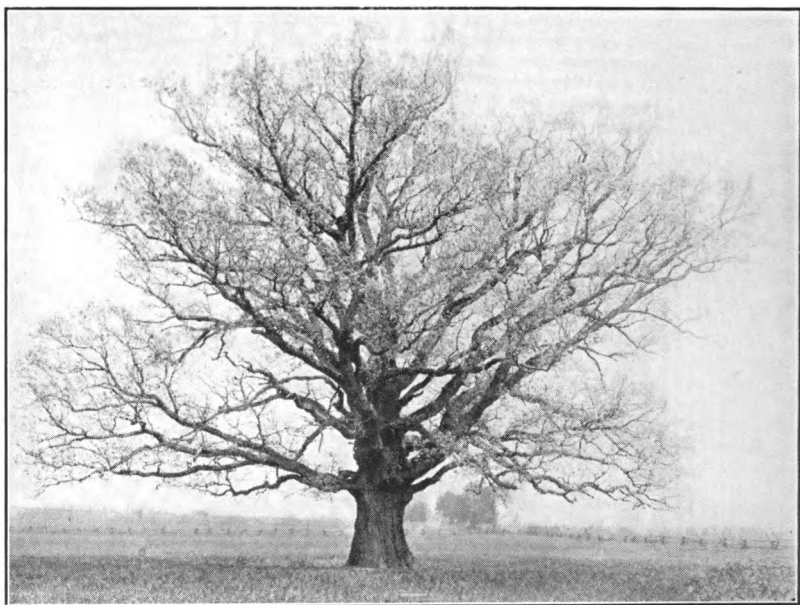
Lackawanna County led the state last year in private planting. Seven operations in the county provided for 198,700 trees. The largest number of private plantings was in Columbia County, where 57 individuals planted 135,760.

Rod and gun clubs, hospitals and homes, churches, educational institutions and water companies all took part in the movement.

Water companies became inter-

ested in forestry work in 1915, and since that time they have set out 1,731,975 trees. In 1919 the Scranton Gas & Water Company, for the second time, headed the list of private plantings. In 1918 the company was first on the list with 161,500, and in 1919 set out 180,000. The company also leads in the greatest number of trees planted by water companies, with 344,500. The Johnstown Water Company is third on the

Continued on Page 190



One of the Largest White Oaks in Pennsylvania

This tree, one of the most beautiful in the state, is the property of Dr. U. S. G. Bleber, of Kutztown, Pa., and is located on a farm near the town. The delicate tracery of the young leaves on the tree, the picture having been taken in the springtime, throws a lace-like effect over the branches, which show plainly. The tree is 31 feet in circumference at the base, has a spread of 104 feet and is 74 feet high. Professor J. S. Illick, chief of the office of research in the State Forest Department and an expert in dendrology, says it is one of the finest specimens he has ever seen.

Penna. Forest Fires Burn 14,310 Acres—June 1 to Dec. 1, 1920

FOREST fires burned over an area estimated at 14,310 acres in Pennsylvania during the fall fire season, extending from June 1 to December 1. The average area burned over by each fire this year is far below the average of preceding years, due to the fire prevention educational campaign conducted by Chief State Forester Gifford Pinchot.

Reports of 231 fires thruout the state, on state-owned and private-owned timber lands, were received by the forestry department during the

fall fire season. Of the 14,310 acres burned over, only 100 were state forests. The remainder were private forest lands.

The average area of each fire reported was sixty-two acres. In the fall of 1919 the average area was 105 acres. It cost the state \$4321.19 to extinguish forest fires during the fall fire season, and the direct damage is estimated at \$48,634.45. This does not include the indirect loss suffered by deteriorated soil, removal of forest floor and the retarded production of young forest seedlings.

BROWN'S JOB

Something To Think About For Every Man Who Has A "Job"

BROWN is gone, and many men in the trade are wondering who is going to get Brown's job.

There has been considerable speculation about this. Brown's job was reputed to be a good job. Brown's former employers, wise, grey-eyed men, have had to sit still and repress amazement as they listened to bright, ambitious young men and dignified old ones seriously apply for Brown's job.

Brown had a big chair and a wide, flat-topped desk covered with a sheet of glass. Under the glass was a map of the United States. Brown had a salary of thirty thousand dollars a year. And twice a year Brown made a "trip to the coast" and called on everyone of the firm's distributors.

He never tried to sell anything. Brown wasn't exactly in the sales department. He visited with the distributors, called on a few dealers, once in a while and made a little talk to a bunch of salesmen. Back at the office he answered most of the important complaints, although Brown's job wasn't to handle complaints.

Brown wasn't in the Credit Department either, but vital questions of credit usually got to Brown, somehow or other, and Brown would smoke and talk and tell a joke, and untwist his telephone cord and tell the credit manager what to do.

Whenever Mr. Wythe, the impulsive little president, working like a beaver, would pick up a bunch of papers and peer into a particularly troublesome and messy subject, he had a way of saying, "What does Brown say? What does Brown say? What the hell does Brown say?—well, why don't you do it, then?"

And that was disposed.

Or when there was a difficulty that required quick action and lots of it, together with tact and lots of that, Mr.

Wythe would say, "Brown, you handle that."

And one day the directors met unofficially and decided to fire the superintendent of No. 2 Mill. Brown didn't hear of this until the day after the letter had gone. "What do you think of it, Brown?" asked Mr. Wythe. Brown said, "That's all right. The letter won't be delivered until tomorrow morning, and I'll get him on the wire and have him start East tonight. Then I'll have his stenographer send the letter back here and I'll destroy it before he sees it."

The others agreed, "That's the thing to do."

Brown knew the business he was in. He knew the men he worked with. He had a whole lot of sense, which he apparently used without consciously summoning his judgment to his assistance. He seemed to think good sense.

Brown is gone and men are now applying for Brown's job. Others are asking who is going to get Brown's job—bright, ambitious young men, dignified older men.

Men who are not the son of Brown's mother, nor the husband of Brown's wife, nor the product of Brown's childhood—men who never suffered Brown's sorrows nor felt his joys, men who never loved the things that Brown's loved nor feared the things he feared—are asking for Brown's job.

Don't they know that Brown's chair and his desk, with the map under the glass top, and his pay envelope are not Brown's job? Don't they know that they might as well apply to the Methodist Church for John Wesley's job?

Brown's former employers know it. Brown's job is where Brown is.

—Batten Wedge.

A VISIT TO A CANADIAN LUMBER CAMP

From "Westward With the Prince of Wales"

By W. DOUGLAS NEWTON—*D. Appleton & Co.*

Written specially for the CRUCIBLE

ANOTHER drive was over the Malahat Pass, through superb country, to a big lumber camp on Shawnigan Lake. Here we saw the whole of the operations of lumbering from the point where a logger notches a likely tree for cutting to the final moment when Chinese workmen feed the great trunks to the steam saw that hews them into beams and planks.

Having selected a tree, the first logger cuts into it a deep notch which is to give it direction in its fall. These men show an almost uncanny skill. They get the line of a great tree with the handle of their axes, as an artist uses a pencil, and they can cut their notches so accurately that they can "fall" a tree on a pocket-handkerchief.

Two men follow this expert. They cut smaller notches in the tree, and insert their "boards" into it. These "boards" have a steel claw which bites into the tree when the men stand on them, the idea being both to raise the cutters above the sprawling roots, and to give their swing on the saw an elasticity. It is because they cut so high that Canada is covered with tall stumps that make clearing a problem. The stumps are generally dynamited, or torn up by the roots by cables that pass through a block on the top of a tree to the winding-drum of a donkey-engine.

When the men at the saw have cut nearly through the tree, they sing out a drawling, musical "Stand away," gauging the moment with the skill of

woodsmen, for there is no sign to the lay eye. In a few moments the giant tree begins to fall stiffly. It moves slowly, and then with its curious rigidity tears swiftly through the branches of neighbouring trees, coming to the ground with a thump very much like the sound of an H.E. shell, and throwing up a red cloud of torn bark. The sight of a tree falling is a moving thing; it seems almost cruel to bring it down.

A donkey-engine mounted on big logs, that has pulled itself into place

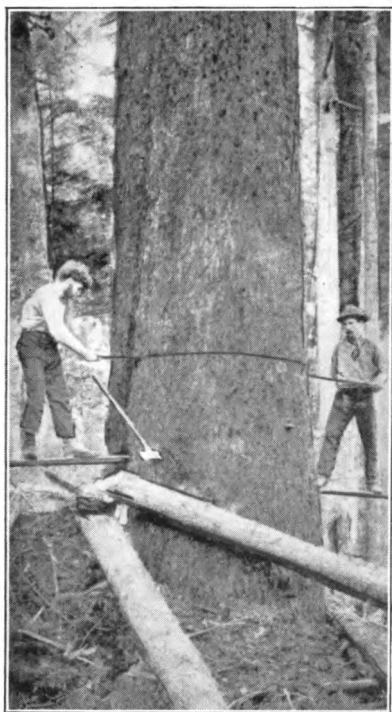
by the simple method of anchoring its steel rope to a distant tree—and pulling, jerks the great trunks out of the heart of the forest. A

"The sight of a tree falling is a moving thing; it is almost cruel to bring it down."

block and tackle are hitched to the top of a tall tree that has been left standing in a clearing, and the steel ropes are placed round the fallen trunks. As this lifting line pulls them from their resting-place, they come leaping and jerking forward, charging down bushes, rising over stumps, dropping and hurdling over mounds until it seems that they are actually living things struggling to escape. The ubiquitous donkey-engine loads the great logs on trucks, and an engine, not very much bigger than a donkey-engine, tows the long cars of timber down over a sketchy track to the waterside.

Here the loads are tipped, with enormous splashes, into the water to wait in the "booms" until they are wanted at the mill. Then they are towed across. Sure-footed men jump on to them and steer them to the big chute, where grappling teeth catch

them and pull them up until they reach the sawing platform. They are jerked on to a movable truck, that grips them, and turns them about with mechanical arms into the required position for cutting. Then log and truck are driven at the saw blade, which slices beams or planks out of the primitive trunk with an almost sinister ease.



"It is because they cut so high that Canada is covered with tall stumps that make clearing a problem."

Uncanny machines are everywhere in this mill. They carve shingles and battens or billets with an almost human accuracy. A conveyor removes all sawdust from the danger of lights with mechanical intelligence. Another carries off all the scrapwood and takes it away to a safe place in the mill yard where a big, wire-hooded furnace, something

like a straight hop oast-house, burns every scrap of it.

The life in the lumber camp is a hard life, but it is well paid. It is independent, and the food is a revelation. The loggers' lunch we were given, was a meal fit for gourmets. It was in a rough pitch-pine hut at rough tables. Clam-soup was served to us in cylindrical preserved meat cans on which the maker's labels still clung—but it lost none of its delightful flavour for that. Beef was served out in strips in a great bowl, and we all reached out for the vegetables. There were mammoth bowls of mixed salad possessing an astonishing (to British eyes) lavishness of hard-boiled egg, lemon pie (lemon curd pie) with a whipped-egg crown; deep apple pie (the logger eats pie—which many people will know better as "tart"—three times a day), a marvellous fruit salad in jelly, and the finest selection of plums, peaches, apples, and oranges I had seen for a long day.

I was told that this was the regular meal of the loggers, and I know it was cooked by a chef (there is a French or Belgian or Canadian chef in most logging camps), for I talked with him. To live in a lonely forest, in a shack and to work tremendously hard, may not be all the life a man wants, but it has compensations.

The Waste in Discarded Cigar Boxes

When cedar boxes were first made use of as containers for cigars, their cost was inconsiderable, and the fact that they were banned from a second period of usefulness was not much of a consideration. These boxes now represent a cost of about thirty cents each and the ban is a burden. The cigar manufacturers of this country are spending nearly \$55,000,000 for boxes. The revenue laws prohibit these boxes from being used more than once.

Many a person has lost out for no other reason than that he wasn't looking ahead.



AUSTRALIA AND NEW ZEALAND

Continued from last month.

MANUFACTURING and marketing methods as applied to native woods, are, however, improving in Australia. The many small mills, only to be classed with Canadian portable or bush mills, which characterized the operations throughout the country are now being gathered up into larger amalgamations, handling lumber in such volume as to justify the sorting out of each important species for the manufacturing and seasoning to which it is best adapted, the installation of better machinery and dry kilns under the systematic marketing of a standard article. This increasing efficiency of the industry originated in the jarrah and karri forests of Western Australia where pure stands of these species extending over large areas simplified the problem. Success in this region is leading to improved manufacturing, seasoning and marketing facilities in Tasmania and Eastern Australia where the problem is rendered more difficult by the large range of species, each requiring different treatment."

The number of saw mills in Australia is given as 1072 in 1913. The production of sawn and hewn timber was 683,092,000 in 1913 and 444,955,000 feet B.M. in 1917.

An Australian made piano has gained some celebrity for its special construction to avoid deterioration from heat in hot climates and also from the beautiful effect produced by its veneering of various Australian woods.

The NATIONAL GEOGRAPHIC MAGAZINE says, "Eucalyptus trees grow about seven times more rapidly than oak or hickory, and they re-

produce themselves even more rapidly than these popular American trees. Their strength is twice that of the English oak. Australian hardwoods rival mahogany in beauty and susceptibility of polish, and are unsurpassed among the world's timbers in strength, durability, and resistance to fungous and insect attacks. In view of the present and prospective value of Australia's national tree, it is a little surprising to find that cutting and burning is proceeding with scant scientific supervision. California and South America are planting eucalyptus; Australia is cutting them down." "However," says the Australian correspondent of the *TIMBERMAN*, "there are signs everywhere in Australia that a new era in the administration of the country's forests has arrived. For years in every state of the Commonwealth, forestry experts have denounced past wastefulness in forest exploitation and have insistently demanded better methods. Public attention was not fully attracted to their appeals. Indifference to forestry matters had become a habit in Australia. Everywhere the belief of an earlier generation, that the forests were inexhaustible, held sway. But war and post-war conditions have carried an appeal to the public. The public conscience was quick to respond to increased prices, and an anxiety has been expressed to so administer the national forest heritage that it will be available not only to the present, but to future generations."

An Interstate Forestry Conference was held in Hobart, Tasmania, in May.

NEW ZEALAND: The Dominion

of New Zealand of which Kipling enthusiastically wrote,

"Last, loneliest, loveliest, exquisite, apart—

On us, on us the unswerving season smiles,

Who wonder 'mid our fern why men depart

To seek the Happy Isles,"

consists of three main islands and several groups of smaller islands separated from Australia by the Tasman sea about 1200 miles across. The main islands are North, South, and Stewart Islands.

"*Australasian Markets for American Timber*" tells us, "in the number of men to whom employment is given, and in the amount of money expended in wages, the timber industry in New Zealand probably ranks first among the industries, though

the value of the product is not so great as that of some other lines. The amount of standing timber in the country can be stated with no degree of accuracy, though

an official estimate made in 1909 gave the figures as 33,000,000,000 feet. This is being cut at the rate of 500,000,000 feet a year.

New Zealand forests are generally of a mixed type, since few large areas of a single species are to be found. Several fair-sized areas of mountain beech are found to the exclusion of other species; some large areas also are found of tawa, a few uniform areas of kahikatea are noticeable in swampy districts, and smaller areas of pure Kauri stands are reported. On the whole, however, the timber is mixed. The so-called Kauri district may be defined as that part of the North Island lying north of a line drawn from Tauranga to Port Waikato. In the extensive swamps of the Northern Wairoa and other rivers the kahikatea is found in heavy stands. Although the totara is found distri-

buted throughout the country, it occurs principally in the central portions of the North Island, more especially on the eastern side. Large areas in which it is the prevailing species are found in many parts of the lower Waikato, more especially in the southern part of the Hawkes Bay district, the northern portion of the Wellington district, and the "70 mile bush". In a large portion of the area the totara is sparse and scattered, and even when it is most dense, it is usually intermixed with rimu, kahikatea, and other minor species. The red-pine district practically comprises all the timbered areas in the South Island below a level of 1,000 feet. The red-pine predominates with a mixture of kahikatea, matai, totara and other species. Some of the rimu, or red pine, and kahikatea stands in the Nelson and

Western districts will run 80,000 feet to the acre."

To sum up, "The kauri is unquestionably the finest timber tree in New Zealand. It varies from 80 to 100 feet in height, with a trunk

3 to 12 feet in diameter. Some specimens 22 feet in diameter have been found. It is used for joinery, furniture, general construction, boat building, wharves, bridges, and to some extent for interior fittings and carvings. Totara is a wood of reddish-brown color, straight-grained and easily worked. It is a general utility wood and of considerable durability. Rimu or red pine is fairly abundant and with its lower price in comparison with kauri or totara, is widely used for construction purposes generally. Kahikatea, or white pine, is a wood in considerable demand in New Zealand and much of it is also exported to Australia. It is the chief wood used for box-making. Matai, or black pine, is a heavy but short grained wood and is used extensively for flooring and weather boards or siding. Puriri and rata are the only other

**"When the whole blamed works seems
gone to pot
And business is on the bum
A little grin
And a lifted chin
Helps some — my boy — helps some!"**

New Zealand woods of commercial importance; both are hard, dense, durable woods."

"While the saw-milling industry of the country is not confined to any one district, it is nowhere conducted on such a large individual scale as in the United States. For instance, the census of 1911 showed a total of 534 mills employing 6,877 hands, while the product of the preceding year amounted to less than 300,000,000 feet, board measure. Most of the sawmills (the forest is referred to as bush and sawmills as bush mills) are of a small type; a mill with a capacity of 40,000 feet a day is considered a large mill. Logging operations are on about the same scale as the mills."

In the **TIMBERMAN** for May appears an interesting interview with Mr. James A. Gorrie, Mgr. New Zealand Powell Wood Process, Ltd., covering very fully "Logging and Lumbering in New Zealand". Mr. Gorrie says, "the sawmills are generally circular, with only an occasional band mill. The saws come almost entirely from the United States. American gasoline Wade drag saws are used to cut wood for the engines."

Kauri gum is a well-known New Zealand product; it is a resin or gum, produced by tapping in a way similar to the turpentine process in southern pine forests, but the digging of fossil gum, a product of prehistoric forests, is a considerable industry in New Zealand. This gum is used by varnish manufacturers."

The Guaranty Trust Company of New York, through its Australian representative tells of an interesting recent discovery of Kauri gum. "The remarkable part of the present discovery consists in the fact that the gum is found in loose particles in the peaty soil which makes up the great stretches of swamp in North Island. Excavations in the swamp have established the fact that there is, submerged under its water-soaked surface a great forest of kauri trees. The Maoris of the regions have no tradition of a forest of this kind having existed in this part of the Island, and so it must have grown many thousands of years ago, and have been submerged as a result of

some severe seismic disturbance. Yet the timbers taken out by the prospectors proved to be in perfect condition, and were sent to a local sawmill and worked into lumber. One of the logs so recovered, according to photographs, was at least thirteen feet in diameter."

Crude oil can also be obtained from the peaty soil.

The American Consul General reports, "During the year (1919) steps were taken to put into operation a new method of extracting kauri gum by means of machinery instead of by the old hand method. The production of kauri gum during the seven years previous to the beginning of the war averaged about 8,000 tons per annum; while since that time, it has averaged scarcely 4,000 tons. During the year, the New Zealand Peat Oils (Ltd.) further developed their process for extracting oil from kauri peat swamps with good results."

Hall of Fame for Trees

The American Forestry Association has inaugurated for the perpetuation of its records a "Hall of Fame for Trees." This list is expected to assure the recognition of famous trees and to locate the largest shade tree in the United States. An elm at Huntington, Ind., has long been recognized as the largest shade tree in the country, excluding, of course, the giant redwoods of California. But now, Dumont Kennedy, of Crawfordsville, Ind., has recently come forward with a picture of a tree on his property and the suggestion that it is larger than the one at Huntington. The Crawfordsville tree has a spread of ninety-nine feet, while the Huntington tree has a spread of only seventy-five feet. A tree at Framingham, Mass., also is claimed to be the largest. Concerning the permanent recording of famous trees, Charles Lathrop Pack, President of the American Forestry Association, says, "The American Forestry Association has listed many famous trees, but it wants the list complete. If there is a famous tree in your town the Association wants to know about it."—*Southern Lumberman*.

Drying Lumber With Superheated Steam

A kiln-drying process which will dry 1-inch softwood lumber green from the saw to 10 per cent moisture content in 24 hours or less has been developed at the U. S. Forest Products Laboratory, Madison, Wis. The novel feature of the process consists in forcing superheated steam at high velocity first in one direction and then in the opposite through the pile of lumber in the kiln. This treatment dries the lumber very uniformly and rapidly with a minimum of checking and warping.

The superheated steam process has been found applicable to Douglas fir, firs of all kinds, western hemlock (not eastern), white cedars (not western red), sugar pine, western yellow pine, and southern yellow pine. It is entirely unsuited for some softwoods on account of collapse.

Drying lumber by this process consumes more steam per thousand feet of lumber than ordinary kiln-drying processes, and is recommended only where economy in fuel is not essential. As it is deleterious for lumber to be exposed for more than 2 or 3 days to the temperatures used, the superheated steam kiln is not adapted to the drying of lumber in thicknesses of more than 2 or possibly $2\frac{1}{2}$ inches. It should be stated, furthermore, that the treatment somewhat reduces the toughness of the lumber, so that where this quality is of prime consideration, as in airplanes and wagons, a low temperature process of drying should be used. On the other hand, the superheated steam method reduces the "working" of the board and the hygroscopicity of the wood and also "fixes" the resin and gum. The effect upon knots as compared with low temperature drying has not been fully determined, but apparently there is not much difference. A slight darkening of the sapwood occurs, increasing with the length of time of exposure, and in periods much over 24 hours heartwood may darken also.

I believe in peace, national and international, but let me tell you that I stand for it only as the handmaiden of justice.—*Theodore Roosevelt.*

Indian Tree Marker



Several miles outside the city of Chicago, along Lake Michigan, are to be seen a number of trees of the general shape of the one shown in the illustration. Old residents who are acquainted with Indian customs say that in the days when Indians were numerous in the vicinity of Chicago, and when they wished to convey certain information, such as location of routes through forests, etc., they would bend a sappling over to the ground and weight it down or slightly break it. When other Indians came along they knew at once what information was to be conveyed.

—*Courtesy of American Boy.*

MORE THAN TWO

"Gladys," said her mother, "you stood on the porch quite a while with that young man last night."

"Why, mother," replied Gladys, "I only stood there for a second."

"Yes," said mother, "but I am sure I heard the third and the fourth."

College Students Work in Kentucky Forests The Relation of Machinery to Wages

Pupils of Berea College Earn Education in Preserve

Berea College, at the foot of the Cumberland mountains, in Kentucky, has the unique distinction of owning two mountains, 4000 acres of forests, its own sawmill, but never cutting a sound tree. Waste wood is used for the college, for power, for heat and in the many cozy fire-places in the dormitories and in the great open fire-places which delights every traveler who stops at Boone tavern.

The sawmill as well as the 4000 acres of forest reserve provides, says *American Forestry Magazine*, not only ample practical experience for the students, but also actual labor for those students who work for their education. The sawmill is operated by steam and, like every other industry at Berea College, is run by students who work at least two consecutive hours each day under the supervision of a superintendent of labor, who, in turn, is responsible to the dean of labor.

Students at Berea are given the opportunity to earn their expenses and they may select the work, which is paid for at the regular rates according to the student's ability and efficiency. As every student in the college must work the minimum of two hours a day, suitable occupation must be provided by the dean of labor and in the forestry department the students are very happy patrolling the forest, marking the dead timber, hauling the fallen timber to the sawmill, cutting it there for the required lengths and then hauling the logs to wherever needed on the campus. No sound timber is cut, as there is enough of the other to supply all needs.

You can't tell what's in a man's head by looking at its shape any more than you can tell what's in a barn by looking at the angle of its roof.

The United States is the greatest tool-using nation in the world.

The way we know this is by comparing the number of horse-power used in each country with the number of wage earners.

On the basis of such a comparison, England is our only rival, and we use three times as many horse-power per worker as does England.

Because we use three times the horse-power, our production per man is 2.64 times as great, while the value of our output per wage earner is 2.1 times as great.

Much can be read into or out of these figures.

In the first place, tools are capital.

The American business man has been the most generous investor in machinery in the world.

Machinery makes men dear and goods cheap.

That is why we can pay higher wages than any other country, and at the same time compete with the rest of the world on price.

Certain men lay all the blame for their troubles on capital, and yet these figures indicate that whether the capitalist intends it or not, the benefits from his investments in the tools of production are passed on to the wage earner and consumer by a natural law which operates as surely and irresistibly as the rising and setting of the sun.

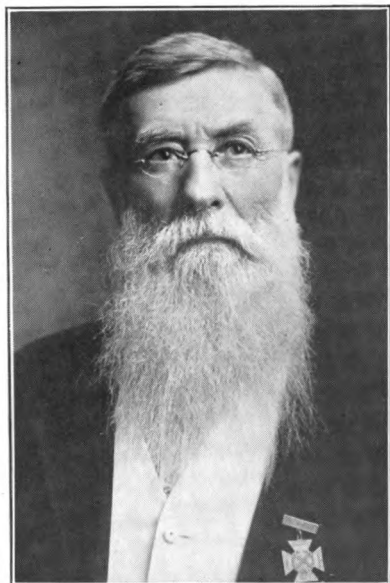
—*Thru the Meshes.*

Forest Department of Pennsylvania Has Been Operating Nurseries Since 1903

Continued from Page 181

list with 161,000. It started planting in 1916 and was first that year with 96,000. The Spring Brook Water Supply Company is second, with 195,000 trees set out in two years.

Octogenarian is Disston Saw Enthusiast Has Used Disston Saws More Than Fifty Years



Mr. T. B. Newton, Sr.

Above is a picture of Mr. T. B. Newton, Sr., of Route No. 3, Alpharetta, Ga., one of the South's stalwart sons. Born more than 84 years ago, he has quite a unique history. He has lived in the same house for the past 82 years; is the father of nine children, has 49 grandchildren, 39 great grandchildren, and 5 great great grandchildren. He enjoys robust health, and can still do a good day's work.

For more than fifty years Mr. Newton has used Disston Cross-cut saws, in the same locality, and is partial to them. Mr. Newton recently wrote the House of Disston as follows:

"Any man that is wide awake and up to date can't afford to fool with any saw but the Henry Disston Saw. I have used it many days, and now, in

my 185th year, can use it all day, and then some, because it cuts smooth, fast and is easy to handle. Too much can't be said about your valuable saw."

Thus we add to our long list another testimony of the merits of Disston Saws, from a practical sawyer of long experience. Thank you, Mr. Newton.

Things Made of Wood

An elaborate exhibit of the unique uses of forest products is a part of the display of the New York State College of Forestry at Syracuse, in its campaign to educate the people of the state to the necessity of preventing waste of the forest areas of New York.

Here are some of the strange uses made of wood and its by-products seen in this exhibit:

"Silk" socks, made from wood fibre, which look like silk, feel like silk, but are far cheaper than the real thing.

Sawdust sausage casings, in which wood, converted by chemical processes into viscose, is used instead of the old type of sausage casings, produced from the by-product of the slaughter house.

Wood flour phonograph records, compressed under enormous power, to help make music from sawdust.

Tan bark shingles, made from the waste hemlock bark, after it has been through the tannery.

Paper milk bottles to help fight the high cost of living, by saving the breakage of enormous quantities of glass bottles in the kitchen and by the dairyman.

All of these unusual commercial articles are made from what was once waste of the sawmill, and their display is part of the campaign of the New York College of Forestry, to show how close utilization of wood will help to cheapen articles of commerce and at the same time end the enormous waste that has accompanied practically all the operations of lumbering.

Trust a poor common dub who knows that he's not over-intelligent in preference to a really intelligent sap-head who's fully aware of his brilliancy.



SAWDUST

SHE'S TOO MODEST

Ebb: "Why don't you wear calico any more?"

Flo: "Oh, I just hate to see myself in print."—*The Cornell Widow.*

MAYBE HE NEEDED A CLEANING

"Mrs. Gadlots is terribly upset over the loss of her pet poodle."

"Yes, it was very sad. After they had hunted for him all day, they found that one of the maids had accidentally picked him up with the vacuum cleaner."—*C. Z. Butterworth.*

A COAXER

The latest American church device for raising the wind is what a religious paper describes as some collection box. The inventor hails from Oklahoma. If a member of the congregation drops in a 25-cent piece, or a coin of larger value, there is silence. If it is a ten-cent piece, a bell rings; a five-cent piece sounds a whistle, and a one-cent fires a blank cartridge. If any one pretends to be asleep when the box passes, it awakens him with a watchman's rattle, and a kodak takes his portrait.—*From the London Christian World.*

JUST BLOWING OFF STEAM

Picking her way daintily through the locomotive plant, a young woman visitor viewed the huge operations with awe. Finally, she turned to a young man who was showing her through, and asked:

"What is that big thing over there?"

"That's a locomotive boiler," he replied.

She puckered her brows. "And what do they boil locomotives for?"

"To make the locomotive tender," and the young man from the office never smiled.

WELL, HE SAW MOST OF IT

"Tell me," said the prosecuting attorney, "were you present at the inception of the altercation?"

"No sir," replied the witness, "but I was there when the fight started."

HE NEEDED LIGHT

An English jockey, having lost his wife, had for an inscription on the tombstone the words: "The light of my life has gone out."

About to be married again, he did not care to see this, so wrote underneath: "But I have struck another match."—*Ex.*

SELF PROTECTION

"You admit, then," said an Alabama judge, "that you stole the hog?"

"Ah sure has to, Jedge," said the colored prisoner.

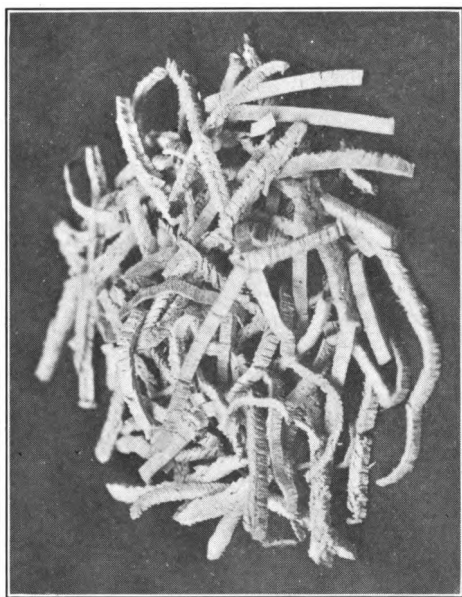
"Well, nigger, there's been a lot of hog stealing going on around here lately, and I'm just going to make an example of you or none of us will be safe."—*The Lawyer and Banker (New Orleans).*

A GREAT PRODUCER

Loton Horton, the milk king, said at a dinner in New York: "The milk trade has many enemies, but the worst of them have to admit that milk is purer than it used to be.

"A dairyman of old Si Haskins' pattern would land in jail today. Si, you know, said to his hired man one morning: 'Pete, go around among the cows and give them each a nice fresh cabbage. Give one to each, but mind you be sure and give the largest cabbage to the cow that gives the most milk.'

"On Pete's return, old Si asked him if he had obeyed orders: 'Sure Mike,' said Pete with a grin. 'I gave the cows a cabbage apiece and I hung the biggest cabbage on the pump handle.'"

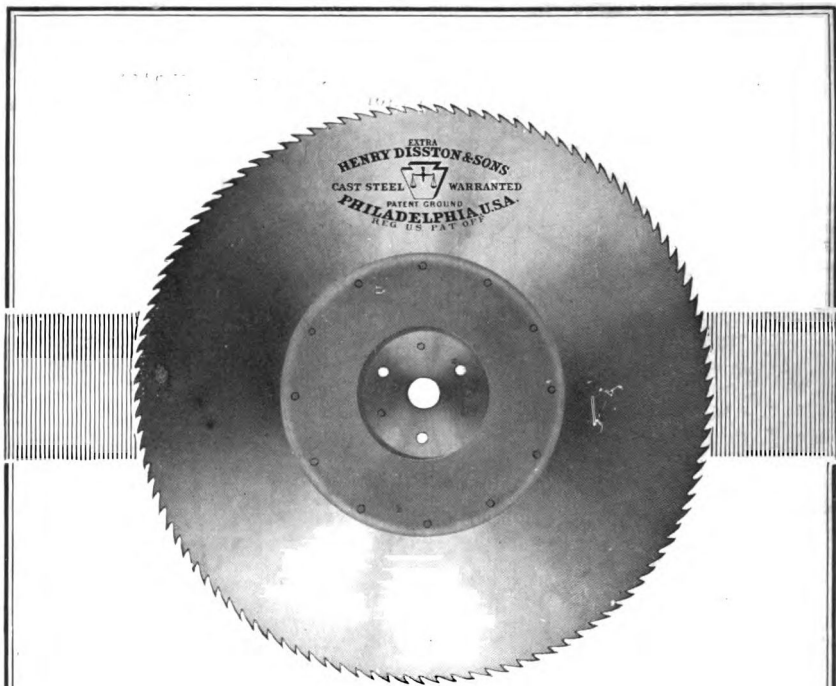


Saw Dust made with Disston Cross-Cut Saw—
One-third Reduction

Disston-Made Steel, Disston tempering process, and Disston workmanship are main reasons why so many woodsmen say Disston High-Grade Cross-Cut Saws are the easiest running, fastest cutting Cross-Cuts made.

DISSTON

HIGH-GRADE
CROSS-CUT SAWS



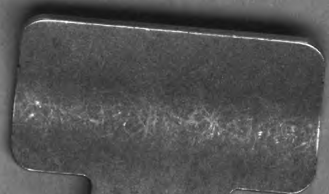
The **DISSTON** *Brand*

upon a saw is a guarantee of its superiority. Especially is this so with our

Shingle and Heading Saws

the steel for which is of an extra fine grade, made expressly for the purpose.

We warrant them to be made of this Disston Steel. Patent taper ground, and unexcelled for toughness, temper and cutting qualities.



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