

SAVING THE SHAVINGS

by WILLARD G. BLEYER

OUR FORESTS will last but 25 years longer if we continue to cut them at the present rate, declares Gifford Pinchot, former general forester, and one of the best informed men on the forest problem of the country.

The increased cost of lumber, the scarcity of many kinds of woods, the high price of print paper, already bear witness to the forest famine that faces the United States.

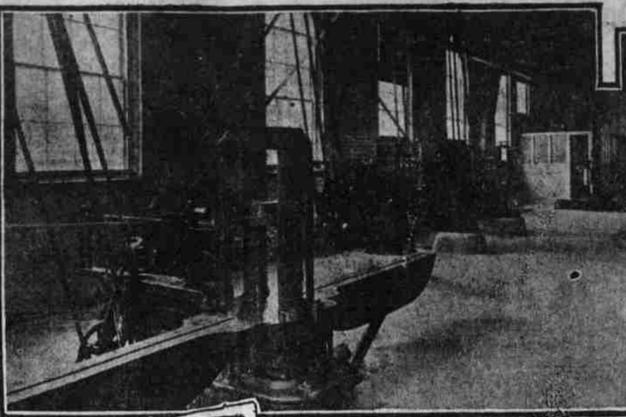
And still only one-third of every tree cut down is now being utilized.

Two-thirds of every one of the millions of trees felled annually, including the big stumps, the heaps of branches, cords and slabs and tons of sawdust are being destroyed, burned up to get rid of the so-called waste.

Incidentally burning over the slashings starts forest fires that destroy annually millions of feet of standing timber.

Now Uncle Sam is going to try to save the shavings and make cheaper print paper, wood alcohol, turpentine and other useful products out of the two-thirds of the tree that is now being thrown away.

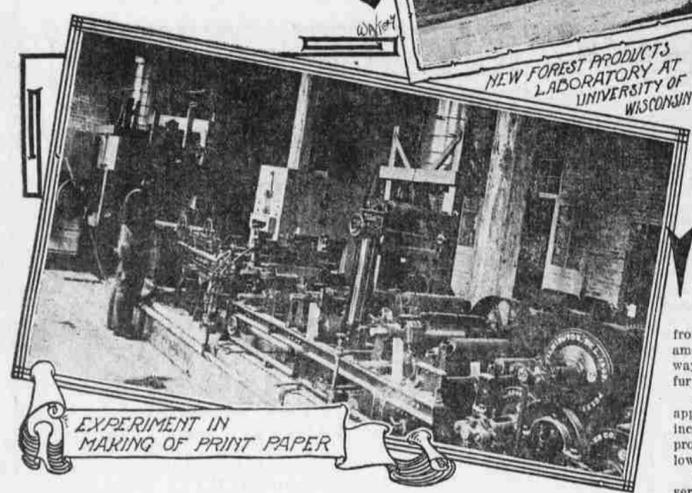
The United States forest service has just established a big experimental laboratory out in the heart of the middle west, at Madison, the capital of the state of Wisconsin, in connection with



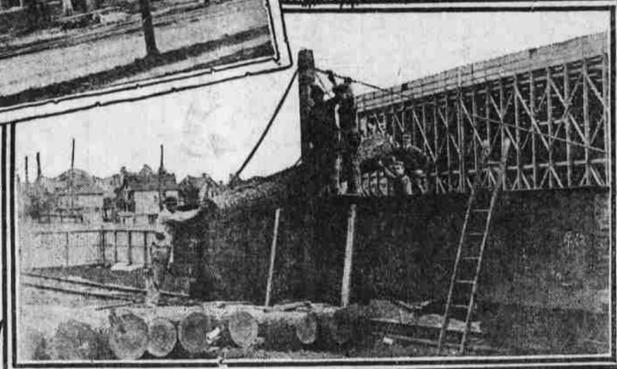
TIMBER-TESTING LABORATORY



NEW FOREST PRODUCTS LABORATORY AT UNIVERSITY OF WISCONSIN



EXPERIMENT IN MAKING OF PRINT PAPER



SAMPLE LOGS FOR THE LABORATORY

the state university, in which government experts will attack the problems of these forest products.

The new building has just been formally dedicated and the fine equipment of machinery and testing apparatus which is to make it the most complete laboratory of its kind in the country is rapidly being installed. The staff of some twenty government investigators has already arrived and been established in the suite of offices in the new building and for some months have been delivering lectures before the students of forestry.

In the new laboratory the United States forest service and the University of Wisconsin will co-operate in the investigations which will be made to solve problems confronting the paper manufacturers, lumbermen, builders and others who deal with the products of the American forests. The building itself, which cost some \$50,000, and the site upon which it stands, south of University avenue, between Camp Randall and the Chicago, Milwaukee and St. Paul railroad tracks, were furnished by the government at a cost of about \$75,000 and the staff of investigators is also maintained by government appropriations. These men, in addition to their laboratory work, will deliver lectures in the regular forestry course of the university. The laboratories, too, although devoted chiefly to the government experiments, are open to the faculty and students for advanced research along the lines of study undertaken by the experts.

The laboratory, which faces north on University avenue, is a fine fireproof building of dark brown brick, trimmed with white Bedford stone and roofed with red tiles, with a 150-foot frontage and a depth of 80 feet. Immediately east of the building a private spur from the railroad carries the lumber into the laboratory yards. A derrick is to be erected north of the track for unloading the big logs and stumps for the experiments from the flat cars. Immediately opposite, south of the track, is to be installed a small sawmill with a saw which will cut timbers up to 20 feet in length.

Already logs of long-leaf, short-leaf and loblolly yellow pine have been sent in to the laboratories by lumbermen and paper manufacturers at Kenwood, La., Hattiesburg, Miss., Thornton, Ark., and spruce logs from the Maine woods. A number of fat pine stumps for the turpentine, rosin and alcohol tests have also been received.

Sheds for air drying the lumber line the west side of the yard, which is to be graded and covered with cinders. Immediately back of the building is a deep, cement-lined pit to hold the creosote to be used in experiments until it is pumped out into the laboratory tanks.

The problem of making a satisfactory print paper from materials other than spruce and hemlock is one which will receive particular attention, and for this purpose a complete paper making plant has been made a part of the laboratory equipment. Every process, from the breaking of the wood into chips for the first treatment by soda and sulphite solutions to the final running of the sheets of paper through the calendaring rolls to produce a finished surface, will be followed carefully, so that the results of substitution of

various woods for the usual materials will be noted at each stage of manufacture.

Both soda and sulphate processes of treatment of the chips will be used and the laboratory will make its own sulphite liquor in a vat adjacent to the digesters. In which the wood is cooked by steam until the lignin is all dissolved and only the cellulose left. A blast of high-pressure steam drives the chips against the side of the digester, further dividing the cellulose fibers, and then the whole mass is pumped out by a centrifugal pump into a tank in which it is stirred until the fiber is still further broken up. Over and over it is run through "rifler" troughs and over screens where suction draws out the fiber to be used and leaves behind the small chips, splinters and other waste.

When the liquor has been washed out of it in a washer driven by an electric motor (a contrivance much like the housewife's washing machine) it is put into a press and the water is squeezed out of it. Such of the pulp blocks from the press as are not wanted immediately are then in convenient form to store away on shelves.

After going through the heating engines the refined pulp is run on to the screens of the paper machine and taken up by felt rollers, from which it goes to wooden rollers and then between metal rollers to the steam-heated drying drums, where the wet sheet is run back and forth until it is ready for the final smooth finish of the hot steel calendaring rolls. Any grade of paper can be made on this machine, from the roughest brown paper to fine correspondence paper, in a running sheet 15 inches wide, and even a water-marking device is attached, so that the impression can be made on the wet sheet before it goes through the rollers and on to the winding drum at the end.

How to make timber last longer by protecting it with preservatives from the various borers and fungous growths which attack wood will be another important problem to which considerable time and laboratory space are to be given.

Beneath the building is a great pit, heated by steam to a temperature most favorable to rot, and there, in separate glass compartments all about the walls, are to be samples of timbers with the various fungous growths and animal and insect enemies of the wood attached. The progress of their effect upon the wood will be closely watched and compared with that of the same pests upon samples of the wood treated with different preservatives, prepared and applied in the room above.

A big skylight and many windows make the preservative laboratory an excellent place to work and every facility is provided for testing the various forms of preservatives and antiseptics to protect timbers, such as those in mines and water-front piers, which are much subject to the attack of minute animals and plants.

Into two great treatment cylinders the timbers are shoved and steam pumps force the oil from tanks above at high pressure into the cylinders. When no more oil will enter the cylinder, even under 150 pounds pressure per square inch, it is drawn off and again returned to the tanks and measured. The difference between the amount drawn off and that originally forced in, deducting the oil collected

from the vapor condenser, gives the exact amount absorbed by the timber, which is always weighed before and after treatment as a further means of calculating the oil absorbed.

In a small cylinder the preservative may be applied at a pressure of 600 pounds per square inch for smaller specimens and the resulting protection can be compared with that of the lower pressure preservatives.

Open tanks are provided for tests of preservatives that do not require pressure. These are heated with steam coils and an iron cage hung above lets the railroad ties or other timbers down into the hot oil. By a trolley arrangement the cage can be lifted and run across to other tanks filled with cold oil, so that it is not necessary to pump out the hot oil and replace it with the cold, as in laboratories where there is but one set of tanks.

All about the inner walls of the preservative laboratory are ranged shelves to accommodate the samples of wood for treatment and those already submitted to the different forms of protection against rot and other attacks.

What woods will best stand various kinds of strain, in bridges, buildings and different structures will be determined in the timber testing laboratory, where two seven-horsepower motors furnish the electric current to run the machinery.

In the torsion machine timbers can be twisted until the strain reaches 30,000 inch-pounds. Five "Universal" testing machines are provided to test the strength of different woods under slow pressure, one having a capacity of 100,000 pounds, another twice that, and three other smaller ones 30,000 pounds.

To see what sudden strains oak, pine, maple and different woods will withstand a Hatt-Turner impact machine was built in the machine shop of the Purdue university and sent to the forestry laboratory for experiments. It can be so gauged that the hammers, ranging in weight from 50 to 250 pounds, can be dropped from heights up to six feet upon the beam or block of wood, exerting a sudden pressure of hundreds of pounds.

In a laboratory where so much machinery is in constant use there must be facilities for instant repairs. For this purpose one end of the laboratory is fitted up into a machine shop. Here, too, much labor is saved by use of electricity to run the engine lathe, milling machine and other necessary apparatus. Beside the anvil there is a gas forge for heating and tempering steel.

The equipment of the wood shop, where timbers and samples of wood are to be prepared for tests, is very complete.

Steam heated ovens for drying wood, in order to test the shrinkage, warping tendencies and water content of different woods are a part of the laboratory equipment, and a portion has also been set off for a seasoning room.

In this connection, in another laboratory, tests will be conducted to discover the heat conductivity of different woods, to assist in the work of the kiln drying and preserving tests.

Stumps and other resinous portions of the trees now burned as trash will be put into stills and retorts and the turpentine, tar and galls will be extracted, carried off, separated and refined into the various commercial products. If methods of doing this economically can be fixed upon, the problem of utilizing much of the big pine trees now wasted will be solved.

All of the many chemical tests made necessary by the work of the different departments will be centered in a big chemistry laboratory on the second floor, where eight large windows on the east and south furnish admirable light, and eight stone tables, besides those running all about the room beneath the win-

dows, give room for the apparatus and experiments.

As some of the tests will produce strong fumes, there are tables encased in glass with hoods and ventilators above to carry off the smells and small doors through which the experimenters will work.

A corner room is set apart for special work in distilling turpentine and other products and special unlighted space is provided as a chemicals storage room. Still other unlighted spaces are reserved as photographic darkrooms and record vaults for the safe keeping of the valuable reports of the work done.

One of the most interesting offices is that of the pathologist who has charge of the experiments with the fungi and other enemies of the woods. Upon his desk are large collections of glass tubes containing cultures of every sort of vegetable growth which feeds upon wood fibers, and samples of all the minute animalcules which attack timbers. Many he secured last summer in his visits to mines in different parts of the country, since one of the greatest sources of the dangerous mine cave-in is the destruction of supports by these little enemies.

A large drafting room, lighted from the north and east, a library and filing room, a lecture hall and a suite of 17 offices for the staff officials and their clerks and stenographers complete the building arrangements below and in the attic a space for storing materials which cannot be left in the open yard and which is reached by an elevator from the basement.

The government will appoint to regular work in the laboratory, as an addition to the present staff, several of the students who have been doing forestry work the past winter at the University of Wisconsin.

The forestry lecture course of the university, just closed, included this year, besides the regular work under State Forester E. M. Griffith, lectures by W. L. Hall, assistant forester at the Washington office; R. S. Kellogg, who holds a similar position; Franklin H. Smith, in charge of the wood utilization office of the government at Chicago; H. F. Weiss and H. S. Bristol, assistant directors of the new laboratory; L. F. Hawley, in charge of the wood distillation of the laboratory, and Frederick Dunlap, in charge of the kiln drying investigations.

At the time of the formal dedication of the laboratory the various departments of the government work were in full operation, that the visitors may see the actual work in progress—just how paper is made; how timbers are tested; how stumps are distilled; and how the little marine animals are prevented from boring through shipping.

The staff of the new laboratory is as follows: McGarvey Cline, Purdue '04, director; H. S. Bristol, Yale, and H. F. Weiss, Yale, assistant directors; H. D. Tiemann, Stevens Institute of Technology, in charge of technology; Ralph Thelen, University of California, mechanical engineer; W. H. Komper, University of Michigan, in charge of maintenance; Edwin Sutermeister, Massachusetts Institute of Technology, in charge of wood pulp laboratory; E. Bateman, Yale, in charge of chemistry; L. F. Hawley, Cornell, in charge of wood distillation; Frederick Dunlap, Cornell, in charge of kiln drying operations; F. W. Bond, Massachusetts Institute of Technology, in charge of wood preservation; C. T. Barnum, Cornell, and C. P. Winslow, Yale, engineers in wood preservation laboratory; J. A. Newlin, Purdue, in charge of timber tests; H. E. Surface, Ohio State university, engineer in wood chemistry; H. E. McKenzie, University of Maine, engineer in timber tests; C. J. Humphrey, University of Nebraska and Cornell, pathologist, and A. W. Schorger, Ohio State university, chemist.

NO MORE THAN HE DESERVED

Conscience's Interrupter of Suffragette Meeting Probably a Sadder and Wiser Man.

The suffragette meeting was in full blast. Enthusiasm was rampant and every remark the distinguished leader made was cheered to the echo.

"And now we come to personal courage," cried the speaker, excitedly; "our masculine enemies try to deride us with such allusions as 'frail femininity' or 'weaker vessels,' but we can show more bravery than men."

"Aye, aye, sister!" echoed a mighty chorus.

"When it comes to real danger we fear nothing."

"Aye, aye, sister!"

"Now, take sister Horn, our worthy fighter and vote getter of this district. She fears nothing. Two nights in succession sister Horn came home from one of our enthusiastic meetings and found a man under her bed."

There was a short pause. Then a little emaciated chap who had crept to the front unobserved arose and stretched his arms.

"Hi!" he ejaculated, with a deep yawn. "I'll bet a dollar agin a plug of tobacco that man was her husband seeking safety."

And when the little emaciated chap finally recovered his bearings he was on the sidewalk minus hat and collar.

HIS HOPES.



Jinks—Do you expect to move this spring?

Fiekle—I expect to, yes; but hope my wife may decide to grant me a reprieve.

Try This, This Summer.

The very next time you're hot, tired or thirsty, step up to a soda fountain and get a glass of Coca-Cola. It will cool you off, relieve your bodily and mental fatigue and quench your thirst delightfully. At soda fountains or carbonated in bottles—5c everywhere. Delicious, refreshing and wholesome. Send to the Coca-Cola Co., Atlanta, Ga., for their free booklet "The Truth About Coca-Cola." Tells what Coca-Cola is and why it is so delicious, refreshing and thirst-quenching. And send 2c stamp for the Coca-Cola Baseball Record Book for 1910—contains the famous poem "Casey at the Bat," records, schedules for both leagues and other valuable baseball information compiled by authorities.

Authority on Soup.

A little boy, promoted to company dinner at the family table, enjoyed his oyster cream hugely until he came to an unrecognized object at the bottom of the plate.

"What is it?" Oh, just an oyster, dear," responded the child's mother, sharply appealed to.

"Why did Doris put it in?"

"Oh, to make the soup good."

"She can leave it out next time," the tiny epicure decided. "The soup's good enough without."—Exchange.

There's a Reason.

"Paul, if I were to die, should you marry Widow Muller?"

"Good heavens, no!"

"Why not? Every one says how like me she is."

"Yes, that's just the reason."

In New York.

Up-to-Date Gladys—Is it really such an improper party?

Up-to-Date Doris—Oh, it isn't just or to see, but it's all right for us girls.

—Puck.

The Secret.

"Miss Bright," whispered Miss Gausp, "can you keep a secret?"

"Yes," replied Miss Bright, also whispering, "I can keep one as well as you can."

Penalized for Holding.

Maud—Do you believe in palmistry? Ethel—in a way. I've known it to work splendid as a starter when the young man was shy.

Decidedly So.

Hewitt—Are you sweet on that girl?

Jewett—Sweet on her? The sugar trust isn't in it.

Diplomacy is the art of making others believe you are interested in them, when in reality they make you weary.

Mrs. Winslow's Soothing Syrup.

For children teething, softens the gums, reduces inflammation, allays pain, cures wind colic. See bottle.

Don't throw kisses, my boy; deliver them in person.

Remedies are Needed

Were we perfect, which we are not, medicines would not often be needed. But since our systems have become weakened, impaired and broken down through indiscretions which have gone on from the early ages, through countless generations, remedies are needed to aid Nature in correcting our inherited and otherwise acquired weaknesses. To reach the seat of stomach weakness and consequent digestive troubles, there is nothing so good as Dr. Pierce's Golden Medical Discovery, a glyceric compound, extracted from native medicinal roots—sold for over forty years with great satisfaction to all users. For Weak Stomach, Biliousness, Liver Complaint, Pain in the Stomach after eating, Heartburn, Bad Breath, Belching of food, Chronic Diarrhea and other Intestinal Derangements, the "Discovery" is a time-proven and most efficient remedy.

The genuine has its outside wrapper the Signature

You can't afford to accept a secret nostrum as a substitute for this non-alcoholic, medicine of known composition; not even though the urgent dealer may thereby make a little bigger profit. Dr. Pierce's Pleasant Pellets regulate and invigorate stomach, liver and bowels. Sugar-coated, they granulate, easy to take as candy.

Get After the Flies.

With the warm days flies multiply amazingly. Now is the time to attack them and prevent the breeding of millions from the few hundreds that already exist.

Perhaps the most effective method of destroying flies is by burning pyrethrum in each room. This stuns the flies and they can be swept up and burned.

Flies are dangerous carriers of disease and an enemy of humankind. Do your part toward keeping down the pest and improving the health of your community.

A Serious Blunder.

"Yes," said the drug clerk, "I am called up occasionally to compound prescriptions at night."

"Isn't a man apt to make mistakes working in semi-darkness?"

"You bet he is. I took a plugged quarter once."

Few of us use to the full the resources of happiness that are available. Happiness depends upon the treatment of what we have, and not of what we have not.—E. J. Hardy.

Girls don't take much interest in pugilism, but they will continue to train for the engagement ring.

Many who used to smoke 10c cigars now buy Lewis' Single Binder straight 5c.

Ennui is the price we pay for knowledge.

DODD'S KIDNEY PILLS

FOR ALL KIDNEY DISEASES

FOR RHEUMATISM, BRIGHT'S DISEASE, DIABETES, BACKACHE

Price 375 "Guaranteed"

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What Prof. Shaw, the Well-Known Agriculturist, Says About It:

"I would sooner raise cattle in Western Canada than any other part of the United States. Feed is cheaper and climate better for the purpose. Your market will improve faster than any other. Your market will improve faster than any other. Your market will improve faster than any other."

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will enter and make their homes in Western Canada. The best of the land is available. The climate is ideal. The soil is fertile. The water is pure. The people are friendly. The cost of living is low. The opportunities are great. The future is bright. The present is good. The past is better. The future is brighter. The present is better. The past is better.

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Better and more economical than liquid antiseptics FOR ALL TOILET USES.

PAXTINE TOILET ANTISEPTIC

Gives one a sweet breath, clean, white, germ-free teeth—antiseptically clean mouth and throat—purifies the breath after smoking—dispels all disagreeable perspiration and body odors—much appreciated by dainty women. A quick remedy for sore eyes and catarrh.

A little Paxtine powder dissolved in a glass of hot water makes a delicious antiseptic solution, possessing extraordinary cleansing, germicidal and healing power, and absolutely harmless. Try a Sample. 50c a large box at drugists or by mail.

THE PAXTON TOILET CO., Boston, Mass.

Try Gillette Shaving

NO STROPPING NO HONING



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Cleanses and restores the hair. Promotes a luxuriant growth. Stops itching scalp. Gray hair to its youthful color. Cures any dandruff. Hair regrows. 50c and \$1.00 at Druggists.

ASKED you will find a county seat and commercial center of Rio Grande. Write for booklet G. Chapin Toronto Co., Chapin, Tex.

All Interested in Toucan

One of the Birds That People Are Sure to Stop to Look at in the Bird Store.

Always people looking in at the bird store window, men, women and children; there's something about birds that attracts them all, though they may not all be attracted by the same thing. Some like the gentle birds, some the savage; some like

those that are lovely in color and graceful in form and sweet in song, some like those that are voiceless but in some manner odd or grotesque. These last find satisfaction in contemplating the toucan, which comes from Brazil.

The toucan has a body about as big as that of a good sized parrot, but its beak is very different and easily its dominant feature, though this bird is

by no means lacking in bright and striking colors. The toucan's beak is half as long as it is broad and thin, and set on edge vertically, shaped something like a blunted scythe, with the slightly curving, rounded edge on top and ending with a hook point turned downward. A remarkable beak in size and shape, and this beak is fitted with a remarkable assortment of colors, purple and red and green and yellow, while around the beak at the head runs a line of black.

The eyes of the toucan are surrounded by circles of a light blue and on its breast, regularly outlined, is a broad and deep expanse of bright yellow in size and shape in proportion to the bird about the same as the generous expanse of shirt front shown by a man in evening dress with the waistcoat cut low and well rounded out at the bottom; this show of yellow being edged with a red line. The toucan's body for the bulk of it is black or a very deep blue black, but around at the base of the tall run two bands of color, one red and one white.

It is not a song bird; it is sold as a pet; not for children, but for adults, and it is more often fancied by men than by women. It takes \$25 to \$50 to buy a toucan.

Conductivity of Waves.

A map to show the ether conductivity for Hertzian waves in different latitudes is a new German idea. Sunshine lessens the conductivity, and a wireless telegraph station of large range in the north would cover only a much smaller radius in the tropics.