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Woods Waste and Re-logging in the Douglas Fir Region

By A. H. Hodgson, D. 6.

It is common knowledge that the logging companies in the Douglas fir belt are leaving great quantities of wood material on the ground. Some say that this is unavoidable, while others claim that the amount is excessive. To learn the truth regarding the quantity and quality of this so-called "woods waste" is one of the objects of a survey, now being conducted by the Office of Products, District 6.

This survey has recently covered the logging operations of the Crown-Willamette Paper Company near Cathlamet, Washington, where a venture in re-logging the slash fields to save much of this material is being conducted. The work, which is being done with caterpillar tractors, light gasoline-driven donkey engines, and locomotive cranes, has been under way for two seasons. It is no longer an experiment but is being run on a large scale and at a profit.

Sample plots, for comparative purposes, were laid out on the area before and after re-logging. They were located on ground and within types as nearly identical as it was possible to judge, and the contents of the wood found on the ground in both cases were carefully measured and tallied. The resulting figures, which are presented below, in summarized form, are of interest in that they show what can be done at a profit, in the way of better utilization, under favor-

able conditions, by a pulp company.

All figures in this summary are worked out on the basis of one acre.

Summary of Waste Survey on Lands Before and After Re-logging.

Headings	Plot A	Plot B
	Not Re-logged	Re-logged
Net Volume of Original Stand Before Logging		
Western hemlock.....	78,140 B.F.	72,612 B.F.
Silver fir	7,778 "	594 "
Total volume	85,918 "	73,206 "
Number of Trees in Original Stand		
Before Logging.....	86 trees	70 trees
Volume of Average Tree in Original Stand	987 B.F.	1,045 B.F.
Amount of Wood Found on the Ground as Slash:		
Class 1 Sawlogs*	7,080 B.F.	0 B.F.
Class 2 Sawlogs*	1,660 "	0 "
Class 3 Sawlogs*	1,480 "	200 "
Total Sawlogs	10,220 "	200 "
Pulpwood (too small for logs)..	1,704 "	1,368 "
Total Slash	11,924 "	1,568 "
Wood left in Excessively high Stumps	830 "	702 "
Tot. Amt. of Wood Left on Ground ..	12,754 "	2,270 "
Tot. Amt. of Wood Left, Based on Net Volume of Original Stand ..	14 .8%	3.1%

*Working plan classification, not commercial log grades. Most of these logs are so small that they cannot profitably be taken out by the heavy steam-driven machinery.

These figures show that more than 10,000 B. M. to the acre, or 11.7 per cent of the volume of the original forest is being saved.

At the present time the company is using similar light equipment to log small and medium-sized green timber, as an initial and final major logging operation. This new development seems to be giving satisfaction both as to cost and utilization, as well as production.

BIOLOGICAL SECTION FOR FOREST PRODUCTS LABORATORY

The Forester has approved the establishment of a new Section at the Forest Products Laboratory to work on biological problems, and to be known as the "Biological Section." Carlos G. Bates, recently Director of the Rocky Mountain Forest Experiment Station, was offered and has accepted the direction of this section, and reported to the Laboratory at the beginning of the current fiscal year.

The field of the new section will cover the activities of the Laboratory which lie nearest to the work of the Forest and Range Experiment Stations. For these stations it will serve also as a central laboratory, its work to lie particularly in the overlapping fields of the Laboratory and the Stations.

The field to be covered by the new Section will include, specifically, wood structure; relation of wood structure and wood properties in general to tree physiology and to growing conditions; forest tree morphology, physiology, and bio-chemistry; forest soils; light and atmospheric factors; genetics; and the development of special instruments for research. A similar field of study will be adopted for forest range plants.

The program of the Biological Section will be considered and decided upon annually as a part of that of the Forest Products Laboratory. Where silvicultural or range research problems are involved, the Chief of the Office concerned will be given an opportunity to consider them before final approval.

WHEN TO BEGIN

By Carl Ewing, Malheur.

The unusually late spring has set our alleged minds on the Malheur working on ways and means of selling to cattle men the idea of a later date for beginning their grazing season. If such a move is desirable from an economic standpoint there surely must be some avenue of approach whereby the Forest Service and the stockmen can arrive on common ground and without conflict.

Are we making full use of the means at hand for displaying the advantages of such a change? For example, should any range, with too early an opening date, be considered fully stocked so that beginners are barred from participation in its use?

Would it not be better to allow the pressure of unsatisfied demand to squeeze the cattle men themselves than for the Service to be too ready in erecting the barrier of closed ranges around the fortunate few who have established preferences and who enjoy a season which we feel cannot be justified?

Would it not be well to lay aside for the time any thought of damage to our ranges and dwell rather on the problem of best serving the needs of our communities and of the cattle industry? First we might try to limit the stocking of our ranges on an annual basis to a load that can be carried even in an off year, so that fat cattle will be the rule. This can often be done by restricting temporary permits. Then the thought might easily be implanted that there exists the choice of running fewer cattle for fewer months.

The full value of this option can be established only in the presence of an insistent demand and in the absence of too much artificial protection around the established user.

In the absence of a demand for our ranges in excess of their capacity on the basis of existing seasons it would seem that there is no valid reason for shortening the season. Having once demonstrated the fact that the range has a certain quite definite

capacity in animal months, and that this capacity can not be further increased by better management, it appears to me that our advantage would lie in putting the question entirely up to the stockmen for decision.

The point is, are we not sometimes overlooking the value of system in handling grazing problems and are we not entirely ignoring the trade or swap value of our authority to close a range to new owners when we allow this to be done before the correct season has been accepted?

FLOOD CONTROL SURVEY

Further study of the original outline prepared by the Forester's Committee on the Mississippi Flood Control survey has developed a detailed working plan and outline, prepared in the Office of Forest Experiment Stations, copies of which were distributed to the field on July 13.

Instead of five major basins - as outlined in the original plan and as described in the July 11 issue of the Bulletin - there will be six, the Red River-Ouachita basin being considered as a separate major basin and not as a part of the Lower Mississippi. The six major drainage areas of the Mississippi have been divided into 73 smaller areas, for each of which a report is to be prepared. The plan contemplates the building up of the reports on small areas into six reports upon the major divisions of the Mississippi drainage. The latter will then form the basis of the final report for the whole Mississippi.

The agencies responsible for the major reports are also being supplied with suitable base maps and information from the Weather Bureau, Geological Survey, and the Bureau of Soils for compilation of the basic reports. Tables are being compiled from planimetric measurements of the watersheds giving areas in Square miles, and also the areas occupied by various forest types and by classified altitudes as shown by the Contours.

FOREIGN RESEARCH MEN AT WORK IN THE LABORATORY

There has assembled at the Forest Products Laboratory within recent months the largest group of foreign research men ever gathered at the Laboratory at one time. Foresters and chemists from England, Australia, Sweden, Finland, and Mexico have been detailed to the Laboratory by their various governments and employers for periods ranging from 30 days to 2 years.

Mr. Wilhelm Rosen, a graduate of the Technological Institute of Stockholm, Sweden, and fellow of the Scandinavian-American Foundation, has just finished nine months of research on the distillation of softwoods in the Laboratory's chemical utilization section. Mr. Eric Ostlin, also a fellow of the Scandinavian-American Foundation, will conclude observations of Forest Products Laboratory methods within a few weeks. In his native country, Mr. Ostlin, who is an expert on forest mensuration, has been directing a general forest survey which the Swedish government started ten years ago.

Messrs. J. E. Cummins and H. S. Dadswell are on detail from the Australian Council for Scientific and Industrial Research to engage in general forest products research at the Laboratory for a period of two years.

Mr. W. G. Campbell, who is a fellow of the Commonwealth (British) Foundation, has concluded a two years' stay at the Laboratory. During his sojourn Mr. Campbell has been engaged in research on the fundamental chemistry of wood. He expects to accept an appointment with the Forest Products Research Laboratory of England on his return to that country.

Sr. Hermenegildo Barrios, a member of the first class to graduate from Mexico's new forestry school, has spent a year in studying the methods of various Forest Products Laboratory sections.

Mr. Uno W. Lehtinen of the Finnish State Forest Service has just concluded a month of study at the Forest Products Laboratory. Mr. Lehtinen, who is a graduate of the

Yale Forest School, has spent three years in this country and is to return to Finland soon. He is expected to take an important position in the forest products research laboratory which his government is to organize.

POINTS DEVELOPED AT INTERNATIONAL SOIL
CONFERENCE

"Effect of Forest Fires upon the Composition and Productivity of the Soil," by F. J. Alway. From experiments and measurements made in Minnesota Dr. Alway pointed out that the losses due to fire were confined to the top three inches of litter or forest floor. No loss to the soil proper or loss of organic matter within the mineral soil was noted. In the discussion it was brought out that the loss of valuable soil by erosion often occurs after an area has been devastated by fire.

"The Mycorrhiza Fungi of Trees and Their Role in Nutrition," by E. Melin. Experiments in Sweden carried on by Dr. Melin show that mycorrhiza are very weak or entirely absent in neutral humus. These fungi are found to live in perfect symbiosis with trees. By experiments he has found the benefits to be mutual. The fungi particularly help the tree in the assimilation of nitrogen. However, it was found that in some cases in experiments carried on with pure cultures there was an indication that the fungi are not always beneficial but sometimes damage weaker plants. These fungi are necessary for good development of trees in soils having a high raw humus content. In the discussion it was brought out that mycorrhiza developed better in mixed hardwood-coniferous-forests of Sweden than in the pure coniferous type.

"The Use of Soil Surveys in Forest Classification," by Joseph Kittredge, Jr. It was pointed out that there is a definite correlation between forest regions and soil regions. This was graphically shown by a comparison of maps. Mr. Kittredge advocated the mapping of forest types at the same time that soil types are mapped. He predicted that as a more perfect correlation between soil types and forest types is worked out,

a prediction of the producing power of land in terms of forest material may be determined.

"The Relation of Forest and Humus Cover," by H. Hesselman. Professor Hesselman pointed out the close connection between nitrification and rapid decomposition of vegetable matter and illustrated the close correlation between the rate of nitrification and the rate of growth of trees. Natural regeneration in Sweden was found to be most difficult with a large accumulation of raw humus. It is therefore necessary to change this condition by encouraging a mixed hardwood and coniferous stand in which raw humus does not accumulate in large quantities or by clear cutting and plowing or burning.

"The Mechanical Composition of Dune Sand and its Significance for the Productivity of These Soils for Forests," by P. Albert. Dr. Albert found great usefulness of mechanical soil analyses in judging the value of sand dunes for forest purposes. This value was found to vary directly with the proportion of fine sand particles under .2 mn. in diameter. Dr. Albert also displayed a penetrometer, which instrument is used for determining the mechanical resistance of the soil. A graphic record is traced on a cylinder when the instrument is pushed into the soil. Different forest covers are reflected in different characteristic graphs.

"Silviculture as a Factor in Maintaining the Fertility of the Forest Soil," by R. Zon. Dr. Zon summed up the progress of soil science in relation to the growing timber crops. He showed how foresters were dependent on soil science to guide and direct them in the handling of forest properties. In order to manage forests and get the desired results dependence must be placed not on trial and error, but on rather the knowledge of soil relationships, which are so fundamentally important. Dr. Zon made a plea for closer cooperation between the soil scientists and foresters. The discussion brought out the fact that courses in soil science are required of all forestry students in European schools.

LIGHTNING CONTROL

By L. R. Lessel, Gila.

The larger the problem the longer it will take to solve it; so it is with our largest unsolved fire problem - lightning. How many actual field experiments has the Forest Service made in an attempt to solve this hard problem? Suppose we just stop and think what science and invention have done in the last twenty-five years. Can anyone conscientiously say that we cannot find some economical means to control lightning? To me at least it seems that the control of lightning, through actual field experiments, should be one of the main objectives of research, along with the studies of fire weather and moisture content of soil, and the many other fire problems.

For several years, after observing the methods used in controlling lightning in telephone work, radios, on lookout towers, cabins, and dwellings I have wondered whether the same drain static principle cannot be applied in the Forest. It is barley possible that experiments along these lines have been tried, but if so, I have failed to hear of them. Not being an electrical engineer I admit that my suggested experiments may seem foolish, but I only offer them in the hope that others may give some thought to the solving of this problem. As mere suggestions to the cause - why not try:

1. ACTUAL FIELD EXPERIMENTS - using at least a township of valuable timber land, located in one of the many lightning hot spot zones. Place a #2 cooper wire conductor on trees spaced 10 chains apart. This spacing may be too far apart. However, in three to five years the occurence record of lightning fires in this experimental plot will bring this out. The estimated cost would be approximately \$500.00 per section or \$18,000.00 for the full township experiment. (A similar experiment could be made on a ridge say 12 miles long by 3 miles wide.)

2. COOPERATION: Interest the large electrical firms and secure their assistance

in providing a lightning filter or some sort of apparatus that will drain lightning a given distance to discharge conductors.

Just a glance at our fire fighting bill caused by lightning fires alone makes one wonder if at the end of the next twenty-five years we will be traveling in the same old circular trail. Someone will no doubt say that lightning never strikes twice in the same place, but I maintain that lightning can be handled to a large extent by proper drainage, using, of course, the sort of conductors which further experiments will show to be best.

If without well tried out field experiments, we drop our heads and say that lightning cannot be controlled, we will not be doing our duty as foresters.

UPTON NATIONAL FOREST ABOLISHED

The Executive Order of April 10, 1925, creating the Upton National Forest of 6,154 acres on the area of the Camp Upton, New York, was rescinded by Executive Order dated June 29, 1927. The action was taken since the War Department had classified Camp Upton as surplus property and has obtained authority from Congress to sell the area. In view of the immense real estate value involved, the Forest Service has not opposed the War Department in the action taken. - C. G. S.

On January 1, 1926, the Bureau of Public Roads estimated 3,001,825 miles of roads in the United States of which 521,915 miles were surfaced. The greatest road mileages were in Texas and Oklahoma and the smallest in Delaware and Rhode Island. Texas and New York had the greatest mileage of State Highways and Delaware and Rhode Island the smallest. Texas and Oklahoma had the greatest mileage of local roads and Delaware and Rhode Island the smallest. Indiana substantially led all other states in the mileage of surfaced roads. Rhode Island was at the bottom. Approximately 54% of the State Highways were surfaced but only about 14% of the local roads. T. W. N.

THE PROBLEM IN ARKANSAS

_____, Arkansas.
March 26, 1926.

"I have been receiving lititure from you for a long time your last envelope is stamped prevent forest fires which very much oonserns me and lots of my neighbors, while it seems to earetate more of them.

"I have 40 acres of rocky hill side land 10 of it cleared and in cultivation but all fenced I have just come in after burning leaves in side and out to Protect my fence which cost me 300 dollars of hard earned money, 4 years of my earnings, if I dont burn the leaves and destroy my timber the other fellow will do it for me, they burn around there fence and then go through the woods throwing matches in all directions, we dare not leave home from the 1st of March to April first in less we burn inside and out and destroy what little timber we have left

"all my trees have holes in them at the top of the ground from fire and they soon fall over not even good for fence Posts this is a free range country and they clame burning the leaves makes the wild grass grow better but it dont it only destroys the leaves and vetation that god has giving us to be left on the ground as a fertilizer for the land. I have seen places in other states whare they had a fire warden and the leaf mold 3 feet deep and the land as black and rich as cream the same kind of land as ours, if it were not for this range burning we could a ford to insure our homes and build-ings, but the conditions here makes insurance be come to high, every one must burn his place whether they have one acre or a hundred cleared and fenced to Protect there Self.

"Now I could appeal to my repre-sentiver who goes from this district to washington and ask him to use his good offices in geting a law to abolish the range burning, but my home Paper would publish my letter and an editorial of what an ungrate-ful black harted scoundral I was, yes he would even tell them I was worse then Judas the trator in the scripture who sold crist

for his sexton masters gold there would be a mass meeting and every one would be invit-ed to see me stretch himp, now cant you People use your influence with the Powers to be or the representevers at washington to abolish the burning of the woods every spring by giving us a fire warden there is only 2 states now that has no fire warden and Arkan-sas is one of them we have some fine timber here but it wont be so long, I would of had 30 acres of good timber if it was not for the fires, half the People here is against setting fires But they are like me they can do nothing about it only lose there home if they make kick.

Yours Respectfully

""

SANTA FE RAILROAD TO COOPERATE

By John D. Jones, D. 3.

During a conference held at Flagstaff in February by Supervisor Miller, the office of Operation and Public Relations with refer-ence to the extent of fire hazard near Flagstaff, it was determined that a large number of fires occurred from lighted cigars or cigarettes thrown out of car windows, or from observation coaches of Santa Fe trains.

A letter was written the Santa Fe Railroad and their General Counsel, Mr. S. T. Blodsoe, advises that they carry a dis-play in their time folders, that they will continue the notice this year, and propose to carry it throughout the entire year in-stead of just the summer season as hereto-fore. It is believed that this cooperation on the part of the railroad in directing the danger from fire to the attention of passen-gers will help to solve the right-of-way fires.

The Southern Pacific last year carried a placard on each observation coach warning passengers against throwing lighted matches, cigars, or cigarettes from the train. This cooperation of the two main railroad systems in the Southwest should greatly lessen this source of fire danger.

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