



The IDAHO  
FORESTER

Vol. X,  
1928

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# THE IDAHO FORESTER

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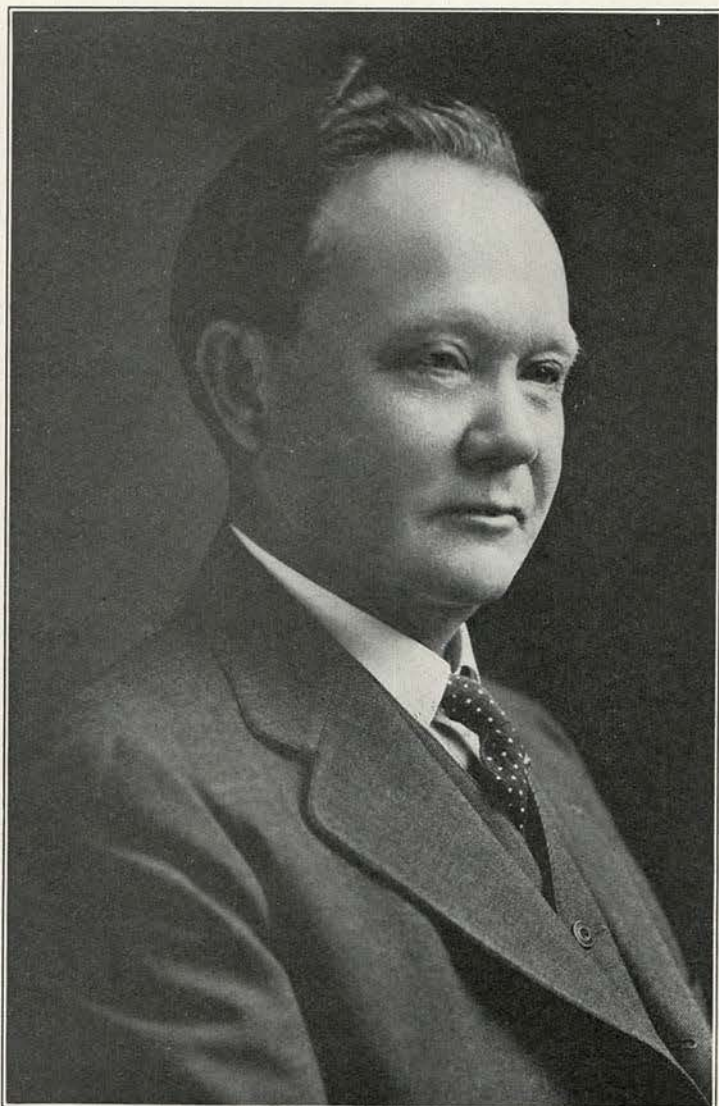
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### DEDICATION

*In grateful recognition of his services to the cause of forestry, notably in the signing of the bill which gave the State a law generally recognized as a model of state forestry legislation, the 1928 edition of the Idaho Forester is respectfully dedicated to the*

**HONORABLE CHARLES C. MOORE**  
*Formerly Governor of Idaho*



## A LAYMAN'S VIEWPOINT

By HON. C. C. MOORE

Ex-Governor of Idaho

There is very little that can be written regarding the forestry problems of Idaho with which the readers of the IDAHO FORESTER are not already familiar. Most of those who study the pages of this publication are devoting their time and their talents to the task of preserving for posterity a great national heritage. I need not cite impressive statistics for their information, nor quote the oft repeated shibboleths of conservation. Only those of us who are intimately acquainted with the timbered areas of this commonwealth, those of us who have traveled the forest trails and who are aware of the magnitude of the lumbering operations now being carried on, can appreciate the importance of the part being played by the men who make forestry a profession.

These men know there is no panacea that will prove an immediate cure for the many problems awaiting solution, particularly for the problems of fire control and reforestation. Legislation aided by definitely determined policies of continuing boards assists materially; but it is futile to hope for the complete solution of any problem by legislative enactment or the adopting of policies formulated by federal and state departments even though such policies be sanely planned and carefully executed. The economic factor is always the controlling factor.

The most promising indication of the new trend of thought is the fact that progressive lumbermen of the nation have come to consider timber land, not as a resource to be depleted and then abandoned, but as a perpetual asset to be worked as a perpetual operation. Already the results of this new economic policy are becoming apparent in the cutting of none but mature timber and the

careful piling and burning of slashings and debris.

As I have said, the economic factor is the controlling factor. The importance of the lumber industry to Idaho compels the most serious attention to the commercial aspects of the situation. Nevertheless, in anticipating future conditions, we find developing another factor which requires consideration. The state owned and government owned forests belong primarily to the American people. Now, for the first time, the American people as a whole are awakening to a sense of personal ownership.

As a nation we have been prodigal with our natural resources; more so, perhaps, with the forests than with any other national asset. Now, for the first time in our history, we are beginning to look upon the timbered areas as summer playgrounds instead of mere sources of lumber supply. It is an indication of the changing national spirit that we are beginning to combine an appreciation of natural beauty with prosaic practicality. When Joyce Kilmer wrote the poem closing with this line, "But only God can make a tree," he gave us more than just a poem. He gave us a new understanding of the enduring qualities and inherent beauty of a living plant which, in an age of commercialism, we are prone to think of in terms of board feet.

With improved methods of transportation there has come, during the vacation months, an ever increasing movement from the cities to the forests. Already the more desirable locations are being utilized for permanent camping grounds. The time is not far distant when every glade and clearing will be the site of a summer home. When that time comes the people of our state and nation will appreciate fully the splendid work now being done by educational institutions, by the Forest Service and Forestry Boards and by forward-looking private enterprises.



# OUR STATE FOREST LANDS

By BEN E. BUSH

State Forester of Idaho

The State of Idaho, next to the Federal Government, is the largest owner of forest land within its boundaries. The following tables from the "Idaho Forest and Timber Handbook" show ownership in detail. Table 1 shows acreage belonging to private, state, and federal agencies, Table 2 shows forested areas by counties, and Table 3 shows the ownership of "stumpage".

In the State of Idaho there are in the neighborhood of twenty million acres of land chiefly valuable for growing timber, the agricultural value being practically nil. The soil and climate are perfect for the growing of timber, and with proper management of this area the lumber and forest products industries may be made permanent.

For several years there has been a growing

TABLE 1—Classification and Ownership of Idaho Timberland—  
Thousand Acres

Ownership	Total Area Within <sup>2</sup> Forest Belt		Forest Land				Other Land	
			Thousand Acres	%	Area Supporting Timber of Commercial Size	Noncommercial Timber Area		
						Young Growth Including Cut-over, and Burned Lands		<sup>3</sup> Protection Forest and <sup>4</sup> Scrub Growth
North of Salmon River								
Private.....	3,683	34.0	1,424	1,496	308	455		
<sup>7</sup> State of Idaho.....	668	6.2	389	206	64	9		
National Forest.....	6,208	57.4	2,179	2,830	908	<sup>6</sup> 291		
<sup>8</sup> Other Federal.....	255	2.4	68	151	22	14		
Total North.....	1000							
of	Acres							
Salmon River	%	42.0	100.0	4,060	4,683	1,302	769	
		42.0	100.0	42.4	66.5	39.8	13.1	
South of Salmon River								
Private.....	638	4.3	239	100	33	266		
State of Idaho.....	322	2.2	114	47	36	125		
National Forest.....	12,765	85.4	4,988	2,104	1,566	<sup>6</sup> 4,107		
<sup>8</sup> Other Federal.....	1,215	8.1	182	107	330	596		
Total South.....	1000							
of	Acres							
Salmon River	%	58.0	100.0	5,523	2,358	1,965	5,094	
		58.0	100.0	57.6	33.5	60.2	86.9	
Entire State								
Private.....	4,321	16.8	1,663	1,596	341	721		
State of Idaho.....	990	3.8	503	253	100	134		
National Forest.....	18,973	73.7	7,167	4,934	2,474	<sup>6</sup> 4,398		
<sup>8</sup> Other Federal.....	1,470	5.7	250	258	352	610		
State Total.....	25,754	100.0	9,583	7,041	3,267	5,863		

## NOTES:

1. All figures rounded off to nearest 1000 acres.
2. This embraces the general timbered regions of the State, excluding agricultural or grazing areas within such region.
3. Areas of timber which because of size and accessibility are chiefly valuable for watershed protection.
4. Areas of scattered poor quality timber generally outside of the true forest type—along steep river breaks in parts of the State.
5. Areas actually cultivated or cleared for agricultural purposes.
6. This acreage includes only barren mountain and grass lands.
7. Includes Heyburn State Park.
8. Includes Public Domain, Indiana Reservations, unpatented mining claims, coal and water-power withdrawals.



FOREST RESOURCES

Table 2—Classification of Idaho Timberland by Counties—  
Thousand Acres

COUNTY	Total area Within Forest Belt	Forest Land			Other Land  Agricultural Grazing and Barren Areas Within Forest Belt
		Area Supporting Timber of Commercial Size	Area of Noncommercial Timber		
			Young Growth Including Cut-over and Burned Lands	Protection Forest and Scrub Growth	
Northern Group					
Boundary.....	759	271	275	158	55
Bonner.....	1,121	359	548	91	123
Kootenai.....	637	170	396	29	42
Shoshone.....	1,623	487	925	160	51
Benewah.....	428	176	223	5	24
Latah.....	493	187	192	22	92
Clearwater.....	1,530	763	541	165	61
Idaho (North).....	3,970	1,571	1,513	600	286
Nez Perce.....	130	33	38	41	18
Lewis.....	123	43	32	31	17
Total North of Salmon River	1000 Acres 100.0	4,060 37.6	4,683 43.3	1,302 12.0	769 7.1
Southern Group					
Ada.....	3	.....	2	.....	.....
Adams.....	554	315	60	34	145
Bannock.....	289	44	55	7	183
Bear Lake.....	232	40	60	6	126
Blaine.....	539	150	33	19	337
Boise.....	1,092	517	136	192	247
Bonneville.....	471	107	150	13	201
Butte.....	245	45	15	39	146
Camas.....	338	97	17	18	206
Caribou.....	311	55	106	3	147
Cassia.....	554	15	106	70	363
Clark.....	374	102	70	29	173
Custer.....	2,068	774	186	474	634
Elmore.....	722	196	43	216	267
Fremont.....	573	164	160	33	216
Franklin.....	97	16	19	4	58
Gem.....	173	39	6	7	121
Idaho (South).....	901	519	229	91	62
Lemhi.....	2,496	854	427	376	839
Madison.....	49	13	17	2	17
Oneida.....	88	13	18	3	54
Power.....	233	13	16	.....	204
Teton.....	105	30	31	5	39
Twin Falls.....	93	26	3	.....	64
Valley.....	2,189	1,300	378	308	203
Washington.....	151	79	15	16	41
Total South of Salmon River	1000 Acres 100.0	5,523 37.0	2,356 15.8	1,965 13.1	5,094 34.1
Entire State					
State Total	1000 Acres 100.0	25,754 37.2	9,583 27.3	7,041 12.7	3,267 22.8

NOTES:

1. All figures rounded off to nearest 1000 acres.
2. This embraces the general timbered regions of the State, excluding the larger agricultural or grazing areas within such regions.
3. Areas of timber which because of size and accessibility are chiefly valuable as watershed protection.
4. Areas of scattered poor quality timber generally outside of the true forest type.



insistence on the part of the citizens of Idaho that the timber of the State be given adequate and efficient protection from fire and that waste in the course of utilization be greatly reduced, if not entirely eliminated. Most people in Idaho seem to feel that our beautiful mountains and valleys must be kept green, instead of being left devastated wastes and a constant menace to life and property. They now recognize the importance of our forests

conservation conscientiousness" of our people, the Idaho Legislature in 1925 passed a new forestry law, which, while meeting with some opposition from certain lumbermen and owners of cut-over lands, has been very generally conceded to be one of the best, most efficient and most progressive statutes of the kind ever passed by any state.

Under the provisions of this law it is not only possible but altogether probable that

Table 3—The Timber Resources of Idaho—Million Feet B. M.

Ownership	Kind of Timber				Total All Species	
	Idaho White Pine	<sup>a</sup> Western Yellow Pine	<sup>4</sup> Larch and Douglas Fir	<sup>5</sup> Other Species	Million Feet B. M.	%
North of Salmon River						
Private.....	7,246	3,086	6,563	5,699	22,594	44.0
<sup>6</sup> State of Idaho.....	2,255	411	1,687	1,907	6,260	12.2
National Forest.....	3,868	1,909	5,953	9,995	21,725	42.3
<sup>7</sup> Other Federal.....	165	149	245	214	773	1.5
Total North of Salmon River	13,534	5,555	14,448	17,815	51,352	100
	Million Feet B.M.					
	%	100.0	33.6	62.7	63.1	63.2
South of Salmon River						
Private.....		1,633	279	164	2,076	6.9
State of Idaho.....		593	210	112	915	3.0
National Forest.....		8,067	7,779	9,666	25,512	85.2
<sup>7</sup> Other Federal.....		691	311	453	1,455	4.9
Total South of Salmon River		10,984	8,579	10,395	29,958	100.0
	Million Feet B.M.					
	%	66.4	37.3	36.9	36.8	
Entire State						
Private.....	7,246	4,719	6,842	5,863	24,670	30.2
State of Idaho.....	2,255	1,004	1,897	2,019	7,175	8.8
National Forest.....	3,868	9,976	13,732	19,661	47,237	58.1
<sup>7</sup> Other Federal.....	165	840	556	667	2,228	2.8
State Total.....	13,534	16,539	23,027	28,210	81,310	100.0

NOTES:

1. All figures rounded off to nearest million feet, B. M. No estimate is shown for areas of scrub-timber growth.
2. *Pinus monticola* (Western white pine).
3. *Pinus ponderosa* (Pondosa pine).
4. *Larix occidentalis* and *Pseudotsuga taxifolia* (western larch and Douglas fir—sold commercially as larch-fir).
5. Includes lodgepole pine, white and alpine fir, Engelmann spruce, cedar, hemlock, white bark pine, etc., in order of importance about as named.
6. Includes Heyburn State Park.
7. Includes Public Domain, Indian Reservations, unpatented mining claims, coal and water-power withdrawals.

in connection with the protection of watersheds for irrigation, power, scenic beauty, recreation and range. It has also dawned on them that under proper management, regulation of cutting and fire protection, the lumber industry, with its annual local payroll of \$22,000,000.00 may be perpetuated for many years, if not indefinitely, instead of cutting out and leaving abandoned communities, loss and utter desolation in its wake.

As a result of this newly awakened "con-

servation conscientiousness" of our people, our forests, as well as our forest industries, will be perpetuated for all time and that irrigation, power development, recreation and the livestock industry will thrive and increase and Idaho will continue to be a sportsman's paradise and a most delightful place in which to live.

When methods have been developed for utilizing what is now wasted in our woods and

(Continued on Page 36)



## UTILIZATION OF WOOD WASTE—THE NEED

By W. D. HUMISTON  
Potlatch, Idaho

The lumber industry of the Inland Empire and Intermountain Region is in a very bad condition. The trouble is chronic inanition—exhaustion from lack of nourishment.

With all the potentialities and possibilities of a wide market that might be enjoyed in supplying our rightful share of the needs of the 120 million people now within the boundaries of our own country; with a certain amount of export business to take some of the keen edge of competition of Coast and Southern mills; and with the largest and longest building boom our country has ever seen, our plants are limping along with curtailed operations, losing a lot of money on nearly all mixed lumber produced, barely breaking even on their yellow or Ponderosa pine production, and not making enough money on their white pine to absorb the losses incurred in turning out the mixed lumber. If any of our Idaho lumbermen made any worth-while net profits in 1927, I haven't heard of them. Practically all of them are literally giving away their reserves of stumpage which were, for the most part, purchased many years ago and on which they have been paying protection charges and rapidly increasing taxes ever since.

Why do these conditions obtain?

The answer is almost too obvious.

By clever advertising on a large scale; by aggressive, intelligent salesmanship; by retaining in their own control the channels of distribution of their products, thus controlling the price to the ultimate consumer; and by convincingly emphasizing the utility value of their products; the manufacturers of substitutes for lumber have been able to and have raided and usurped the markets which the lumbermen formerly enjoyed. They have been able to do this in many instances through the research work and co-operation of industrial chemists which they were keen enough to see the value of and on which they based their plans.

We hear a great deal these days from the lumberman about over-production and the standard prescription recommended for the industry seems to be "CURTAILMENT OF OPERATIONS". For many years until comparatively recently the consumption of lumber in the United States was fairly uniform at around 606 feet per capita per annum. The estimated

consumption of lumber in 1927 was 35 billion feet, or about 292 feet per capita—less than half what it used to be before our people were educated by our competitors to use almost anything and everything in preference to lumber. Of course, there is no gainsaying the fact that, for certain purposes, steel, concrete, brick, terra cotta and other substitutes are superior to lumber, and it would be unwise to advocate the use of lumber where some other material would clearly and unquestionably be better. But, it is equally true that there are so many places where substitutes are now being used where lumber would be much better—or just as good—that we are losing a lot of business that should rightfully be ours. It may not be reasonable to expect or contend that we should still be able to easily produce and market 600 feet of lumber per capita per annum, but, if we could, our output last year would have been 72 billion feet, instead of 35 billion feet. But, if we grant that the substitute manufactures are rightfully entitled to some of the business formerly enjoyed by the lumbermen, it still seems fair to assume that an annual consumption of 400 feet per capita would not be far from what could be claimed as the lumbermen's legitimate share of the business. On this basis the lumber consumption of the country would have been 48 billion feet in 1927, instead of 35 billion feet. The difference of 13 billion feet is just the difference between economical and profitable operations and the curtailed, unprofitable operations which make such a steady demand for red ink around the end of the year.

The condition of the industry within the Inland Empire or the Intermountain Region is even more acute and distressing than that prevailing over the country as a whole. Light stands of timber; a mountainous country; high logging costs; long log hauls; eight or ten species of timber, only two of which are greatly superior to those of more favored and accessible sections; high wages; short hours; and the lack of an export business which will absorb a surplus; these are some of the special handicaps which make our local problem doubly difficult.

Under all these conditions and with a full knowledge of them and of their inevitable con-



sequences, we have allowed the lumber substitute manufacturers to invade our markets and take the best of the business from us "like taking candy away from a child."

I don't know how much or whether any part of this business can be won back by the industry. Possibly our only recourse now is to increase our sales of lumber, as such, by developing new forms of or uses for it. Certainly overproduction is not the crime for which we should be indicted. Ours have been sins of omission—not doing enough modern, effective advertising; lack of aggressive salesmanship; ignorance or disregard of economic laws; need of modern merchandising methods; and deficiency of industrial and chemical research. Our successful substitute competitors have effectively used all of the business aids and weapons we have passed up.

But all is not lost. We still own immense reserves of raw material, rich in possibilities of profits. If we can't make as many boards as we would like to and sell them at a profit, perhaps we can make something else out of this raw material. If we find that we can ultimately win back our markets and run our sawmills to capacity, we have still another source of possible profits which we have ignored heretofore, namely, woods and mill waste, which can be turned into by-products and innumerable chemical derivatives. At present only 35% of our standing tree goes into lumber and 65% is pretty largely wasted.

Probably not one lumberman in a hundred remembers enough of the chemistry he learned in school to be qualified to arrive at a sound conclusion as to what products should be made, what processes should be used and what the operating costs and net profits are likely to be as a result of launching a program of manufacturing by-products and chemical derivatives from low-grade material and from what is now largely wasted in the woods and plant.

This is a difficult and complex scientific problem. In fact, many problems are involved in connection with each and every product to be considered. To solve these problems correctly, we must have the assistance and cooperation of industrial chemists, research engineers, cost accountants, market analysts and, ultimately, of advertising experts.

We know now that there are many products and derivatives which can be made from such raw material and waste as we have and produce in the Inland Empire. Probably no forested region in the country of equal area

has as many possibilities. Our eight or ten timber species widen our field immeasurably and give us an enormous advantage over other regions. But we also know that not all possible products and derivatives from eight or ten species of timber are likely to be profitable or commercially feasible; and, if they were, that some would certainly be more profitable, or command a wider market, or offer more attractive future possibilities than others.

What the lumber industry needs most at this time is a Moses to lead it out of the wilderness of waste, inefficiency and staggering losses. It needs some authority, in which it has confidence, to say that all indications point to the probability of the commercial feasibility of manufacturing some few specific products and to support this statement with a simple, non-technical exposition of methods, processes, present prices and such other data as are available.

This, it would seem, is the duty of—as well as the greatest opportunity ever offered to the forestry schools of our state universities and to our state and Federal forest experiment stations.

In conclusion, I want to sound a note of warning. By reason of the nature of your work, you scientists and technicians move very carefully and consume a great deal of valuable time in checking, cross-checking and re-checking your work, conclusions, findings and recommendations. Then it takes you a long time after a study is completed to get out a preliminary draft of a report. This is checked, edited, rewritten, re-edited, cussed and discussed ad infinitum before the final report is turned loose. This may be the one and only way to handle scientific or highly technical problems, but, as in the case under discussion, those who should be the beneficiaries of your work may have died or gone to the poor house while you are doing all this.

If you, the chemists, technicians and foresters of the Intermountain Region, decide to come to the rescue of the lumber industry at a time when it sorely needs your assistance and co-operation, I earnestly urge that you do so quickly; that you prosecute your work as rapidly as possible and as **reasonable** accuracy warrants; and that, as often as may be, you issue progress reports for the purpose of sustaining the hope and bolstering up the courage and determination of your patient to fight and



# SUGGESTIONS FOR FOREST RESEARCH IN IDAHO

By J. A. LARSEN

Formerly Director, Northern Rocky Mountain Forest Experiment Station

In this article an effort will be made to answer two seemingly simple questions: First—What is forest research? Secondly—What steps should be taken to further forest research in Idaho? The first of these will be dealt with very briefly, the answer to the second will occupy the greater part of this paper.

Forest research follows three distinct but parallel lines; that of forest production, that of forest utilization, and that of forest economics. In the first of these classes are studies leading to the discovery of suitable conditions for restocking of the forest after logging or fire, the factors affecting success or failure in planting of forest trees, the rate of growth, yield, and the perfection of protection from insects, fire and fungi, etc.

In the second class, that of utilization, forest research is aimed at the identification and evaluation of various trees in the industries. There are problems of logging, manufacture, seasoning and marketing. New uses must be developed for poor sellers—and Idaho has many such—There are questions of wood preservation from fungous and insect injuries, the elimination of waste and many other useful and profitable avenues for research.

Lastly, in the third class are problems in forest economics—taxation, land and crop valuation, forestry land values compared to agricultural values, regulation of the cut to provide a steady income or to fit actual growth to industrial demands.

The second question—What steps should be taken to encourage forest research in Idaho, may not be so easily answered. At the present time however, not a few forest problems rather peculiar to Idaho are clearly defined. These will be discussed later in this paper.

Idaho is a timber exporting state; Idaho has vast areas of mountainous land which are exclusively suited for the production of forest crops; the Idaho climate and soil are eminently suited for the production of wood in large quantities. Lumbering is Idaho's chief industry; in this business the annual payroll is \$22,000,000.00; the income from the state and government timber combined equals \$200,-

000.00 per year and the taxes accruing from all privately owned timber holdings amount to \$1,500,000.00 per annum.

However, over and above these industrial and monetary values, the Idaho forests supply game, fish and recreation grounds, steady flow of pure water over spillways and through irrigation ditches, and transportation for logs and water to the stamping mills. But Idaho's timber wealth is rapidly yielding to the axe and fire. Hitherto much thought and scientific research have been devoted to development of agriculture in the state. Is it not equally important to give some consideration to the forests? In order to reap from the forests perpetually and to insure the permanency of industries dependent thereon we must have more intimate knowledge of the forest. The only way to acquire this knowledge is through forest research.

Research in forestry to be productive of the best results must have proper organization and direction, adequate support, competent personnel and facilities for study.

Proper direction is of great importance. It is the solemn duty of those who direct that they lead forest investigators along the most useful, the most urgent, and the most productive channels; that they supervise the accumulation and dissemination of the knowledge obtained, avoid needless duplication and provide funds and facilities for study.

The mainspring and the "governor" of the works should be a non-salaried board composed of men from the various industries and activities throughout the state. This board might well be composed of the State Land Commissioner, the director of the state experiment station, the dean of the school of forestry, representatives from the departments of botany, zoology, agronomy and soils of the state university; a stock owner, a lumber manufacturer and timber owner, an influential banker, an orchard man and the state forester.

This board could meet once each year to review progress made in research, to suggest or approve new studies or such as are most urgently needed, recommend appointments, appropriations and salary increases, etc. It would also be desirable to have this board



make contacts and secure co-operations and support for research throughout the state.

This board should likewise indicate what should be the acceptable standards in forest research, and the standards of personnel, training and experience needed for the carrying on of this important work. It might also be of great service in pointing out what legislation would be desirable in the furtherance of forest research in the state.

There is no gainsaying the fact that much valuable information may be gathered through the co-operation of university professors who desire to pursue research. This co-operation could easily be extended to several lumber companies, timber owners, mine owners, stockmen and farmers. In this way the Idaho forest research program would ramify to every cranny of the state and all studies which bear on the forest crop directly or indirectly would have the attention and assistance of specialists in their several lines such as soil, ecology, game, agronomy, etc.

This co-operation would naturally extend to the U. S. Forest Service, to the Madison Forest Products Laboratory and to the more centralized and richly endowed research institutes in the country.

Idaho foresters might well strive to bring scientific forestry into research organizations on the university campus, especially into Sigma Xi meetings. As the field develops there will be abundant material for many interesting discoveries and discussions. Graduate students particularly in the natural science departments, should be encouraged to major in studies which touch on forestry, forest products or forest relations. A general quickening of interest among the scientific men of the state, and their active support in this field will surely be productive of many valuable results.

One of the very finest things for forestry that could come about in Idaho would be the organization of a permanent Forest and Conservation Association. Something of the kind is needed to bring people together who are concerned about Idaho's natural wealth. The American Forestry Association and the Society of American Foresters will never be able to fill this need in this state. Such an association will provide a means for rounding up the best and most practical ideas and crystalize these into definite resolutions which would carry weight in the moulding of popular sentiment and in bringing about favorable legislation. It must be said of a truth that in respect to

such organizations the West in general and Idaho in particular lags far behind central and eastern states.

It is highly recommended that the state set aside representative areas for the study of forest and grazing problems. In any line of field investigation the installation of permanent plots and repeated observation and records become indispensable.

It would be preferable that such areas belong to the state and be adequately protected from stock and fire. One of these research areas would be the Idaho School Forest. These sample areas would carry experiments many of which will eventually become demonstration areas in methods of cutting, natural reproduction, planting, slash disposal, fire protection, and grazing management.

Obviously the possibilities for experiments are too numerous to mention here. Some of these investigations would parallel those conducted by the federal research bureau, but in this there is no harm, inasmuch as the policy and practice of the latter will not in every respect coincide with those of the state nor with those of private owners.

Scientific conduct of research hinges upon several factors and conditions. Perhaps more than anything else upon the individual investigator himself—his education, training and personality. He should have a thorough grounding in the physical and natural sciences, training in scientific methods, outstanding mental capacity and ability to form accurate judgment. He must have patience, perseverance and a high regard for professional ethics and the opinions of his contemporaries in the same field.

The investigator must have freedom of action to go and come from and to the field as he shall see fit, to visit conventions and take part in meetings in or out of the state where forestry or allied problems are discussed. He must keep abreast of all new ideas and developments in the state in this country and abroad, and he should be encouraged to visit other forest experiment stations and attend national conventions.

When it comes to the problems to be studied it is only possible to hit the high spots. The policy would naturally be to further the development of industries and to encourage new industries for unusual or little used native raw material. New uses should be discovered for hemlock and grand fir. There are possibilities in the line of box and crate material,



excelsior, tannin products, balsam wool, pulp, paper and ethyl alcohol, etc. It is a great pity that these splendid trees which nature has produced should be a drag on the market and be logged at a loss. Much of the land laid waste in logging by private companies should be reforested. This land will never be used for agriculture. Rather than allow it to lie unproductive and become a burden, the state should lead the way toward a speedy reforestation. Besides there must be a new crop to fill the gap after the virgin stands have disappeared. But the planting methods now in use are too slow and too expensive to warrant extensive reforestation. There is here a field for the development of stock and methods which will materially reduce the cost per acre and increase the survival. Michigan plants for \$3.00 to \$4.00 per acre. The planting problems are peculiar to Idaho logged-over and burned-over white pine lands and the methods must be worked out here and here only.

Another promising line of investigations would be aimed at extension of the white and yellow pine forests in Idaho inasmuch as these species produce the bulk of the export lumber and bring very good prices. This would mean a very close study of the soil and climate requirements of these species and experimental plantings wherever it is considered probable that white pine or yellow pine will grow to timber size. It might be found upon trial that Norway spruce or silver fir would produce a more valuable timber crop than either larch, Douglas fir or lodgepole pine.

There is, no doubt, need for a thorough investigation and classification of species most desirable for mine timber in various parts of Idaho.

There is urgent need for experiments which will reduce the cost of slash disposal in various types of timber or methods which will make it possible to remove virgin timber and have it followed immediately by a new crop of the most valuable species which will grow on that site. The solution might lie in seeding previous to logging, partial cutting with natural reproduction and a final cut after the remaining timber has been removed or in a more efficient system of slash disposal.

In the development of the farm woodlot, shelterbelt and windbreak in southern Idaho lies a new and important field for research. There is need of greater protection to the

crops from drying and scorching winds and more comfort to people and stock. These studies would embrace a complete study of all plantings hitherto made for such purposes and the installation of new experimental and demonstrational plantings under the direction of the state extension forester. Each county agent should learn to appreciate the farm forestry needs and become a booster for them.

To this end and for the encouragement of reforestation on cut-over land it would be well to increase greatly the output of planting stock from the state nursery at Moscow and to establish another distributing nursery somewhere in the southern part of the state.

Another very important line of forest investigation is in protection of the forests from fire. It is stated that Idaho loses each year 20 million board feet of timber. Naturally the efforts along this line would be to reduce the hazard at such points where the fire might be expected to start, to perfect fire protection methods and to bring fire protection into the public schools. This can hardly be called forest research, but there is need for some hard thinking in the development of methods and systems of education which will reduce the present high percentage of man-caused fires in Idaho.

Several ways suggest themselves for the raising of funds for adequate and efficient forest research. It will be sufficient to mention two only. The first would be by direct appropriation; providing for salaries, office equipment, travel and miscellaneous expenses. The other would be in the form of donations toward a permanent fund, the interests of which would be devoted to a research professorship, and fellowships in forest research. These fellowships should be given to Idaho boys preferably, and be made available for study at any institution in this country or abroad. Donations for this fund should be solicited from men who have made fortunes out of Idaho's natural wealth. It is only fair to suppose that such men should joyfully contribute toward the perpetuation of Idaho's natural wealth and Idaho's future prosperity.

The interest from this fund if sufficient should also be used for the publication of results obtained in forest research, in a dignified way and according to a high standard; readable and understandable abstracts should be furnished to various publications within and outside of the state.



# THE IDAHO FOREST EXPERIMENT STATION

By F. G. MILLER, Dean  
School of Forestry

To meet the growing demands made on the School of Forestry for forest investigations and to facilitate the administration of funds for forestry work, the Board of Education, in February, created the Idaho Forest Experiment Station. This is purely a research unit and is organized as an independent division of the University to serve forestry in the State in the same way that the Agricultural Experiment Station serves agriculture. Forest research has been a major activity of the School of Forestry for a term of years, but a large part of the cost of the work has been made a charge against instruction rather than against research, and the creation of this special research division will make it possible to segregate these expenditures.

One of the early research projects of the School of Forestry was the recovery of by-products from stumps and other forms of wood waste, and an exhaustive bulletin was published on the findings. A little later the state land board called upon the School for advice in the handling of certain state timber lands, and the year following the School responded to a similar request from the department of public works. Recommendations then made are still followed by these departments.

The School assisted the Forest Service in studies to determine public requirements to keep forest lands continuously productive, and co-operated with state officials, state chambers of commerce, the lumber industry, and other agencies in securing legislation to safeguard forest resources. More recently, the School has worked extensively with the federal government in white pine blister rust control, also in the compilation of a handbook on the forest wealth of the state. Meanwhile, fundamental studies have been made in relative durability of Idaho woods, and in finding new uses for our native trees.

Thus it will be seen that the establishment of a Forest Experiment Station does not represent an entirely new movement, but rather it marks definite expansion of an activity long under way. In particular have the demands of the lumber industry for the services of the School increased in very recent years and with the approach of a new era in industrial for-

estry, it is anticipated that these demands will increase even more rapidly in the future.

## Objects and Organization

More specifically, the objects of the Forest Experiment Station are to carry on fundamental investigations in forestry, in order to secure the best use of forest lands, and the most efficient utilization of the forest crop, also to afford training to forest school students in the principles and practice of forestry.

The major activities of the Forest Experiment station are organized in two separate units—The Forest Research Laboratory and the Experimental Forest.

## Forest Research Laboratory

The work undertaken here includes problems selected primarily with a view to increasing profits in the lumber industry through the utilization of wood waste. The projects include investigations in the properties and uses of wood, by-products to be derived from wood waste, forest pathology, and wood preservation. This laboratory also encourages the development of research projects in lumber production and utilization to be carried out in co-operation with private, federal, and state agencies, and a number of such projects are constantly under way. The scope of activity includes the maintenance of an informational service for the lumber and related industries of the State, the teaching of forest research methods, and the working out of laboratory theses on forestry subjects by students.

## Experimental Forest

The purpose of the Experimental Forest are to demonstrate methods of establishing and growing forest crops, to determine systems of forest management and regulation calculated to keep forest lands continuously productive, and to serve as a field laboratory for the training of students. It is sought to accomplish these purposes through the institution of experiments and studies in silviculture, forest mensuration, forest management, protection, range management, and such other investigations as will contribute to our knowledge of forest tree growth and assist in the solution of forest problems. A considerable number of experiments are already started in



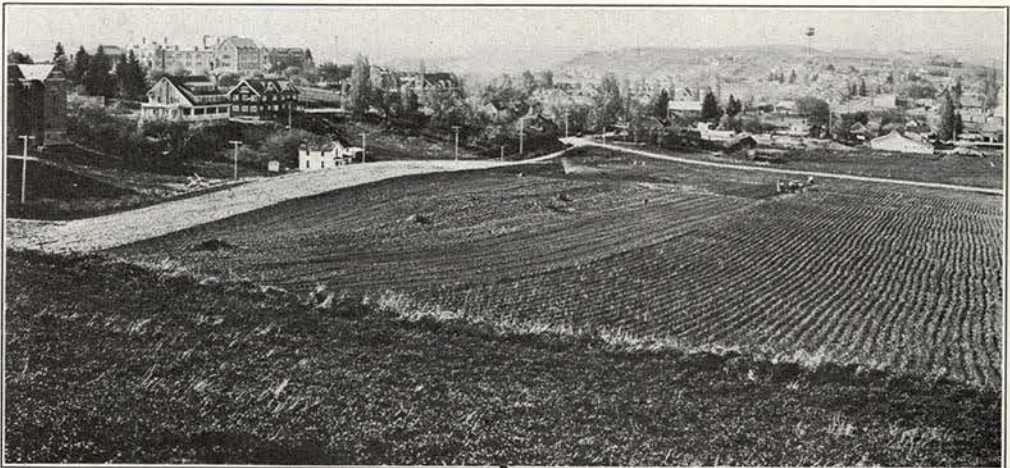
the forest nursery and arboretum, and in the way of permanent sample plots in different parts of the white pine belt. As in the past, the Station will continue to carry on certain of its projects in co-operation with the lumber companies.

Besides the experimental forest of 640 acres in Moscow Mountains, which has served as a field laboratory for several years, there will be selected one or more additional forest tracts within easy reach of the university. The principal area is now under consideration, and final decision will be made the coming summer. It is expected that the Experimental Forest will eventually comprise several thousand acres, so located as to typify as large a number of forest conditions as possible, where the field experimental work and out-door instruction will be carried on. The arboretum and forest nursery are also in constant use for experimental purposes, and constitute an integral part of the Experimental Forest.

their products and in the number of wage earners employed. The total valuation of the industry is placed at \$100,000,000 and the value of its products is \$41,000,000 annually. The annual lumber cut is about one billion board feet, and if Idaho's forest lands were placed under management, this annual output could probably be substantially increased and maintained indefinitely.

Of the total forest land area of nearly 20,000,000 acres, about 48 per cent still bears commercial stands of timber. The remainder is either logged-off or burned-over land in various stages of reproduction, or is classed as permanent protection forest lying at the higher elevations, much of it at the headwaters of irrigation projects, and therefore exerting an exceedingly important influence on stream flow and irrigation farming.

Certain large grants of land were made by Congress to the State for the benefit of educational and other institutions. A considerable amount of these grants consists of timber



#### New Nursery Addition

Showing Position Relative to Campus, 1928

#### The Need for Research

In Idaho, almost more than in any other state, the prosperity and social welfare of the people are dependent upon the forests. The total area of the state is nearly 54,000,000 acres, and of this area approximately two-fifths or about 20,000,000 acres are classed as forest land. Lumbering and allied timber industries rank first among the manufacturing industries of Idaho, both in the value of lands, of which the state still owns upwards

of 700,000 acres. The timber on these lands is conservatively valued at \$30,000,000. The University of Idaho has a potential endowment of several million dollars in its own timber grant.

Considering the importance of the lumber industry to Idaho, and the large asset the State has in its land grants, it seems anomalous that relatively so little should have been

(Continued on Page 34)



# THE BLISTER RUST SITUATION IN THE WEST

By ERNEST E. HUBERT

Professor of Forestry

## Introduction

It has been often and truthfully stated that the small things in life give us the greatest concern and certain scientists have gone so far as to state that the human race will be conquered in the end by tiny organisms such as bacteria and insects. We are confronted daily with examples of this unrelenting strife between man and the "microns". In our efforts to grow crops of every description we are forced to wage war upon a host of pests and in our struggles to perpetuate our forest crop so that we may remain a nation of wood users we are faced with problems, the magnitude and intricacy of which would do credit to the fertile brain of the forester's patron saint—Paul Bunyon.

The fight to hold what we have in white pine timber against a tiny but destructive organism, the white pine blister rust, began soon after the discovery of the disease in 1910 at Vancouver, B. C. During the past eighteen years, the disease has spread until today its southern limit is northern Oregon where it threatens the sugar pine stands of Oregon and California. It is well established in northwestern Washington and has flung a battle line eastward across British Columbia, northeast Washington, and has finally penetrated the panhandle of Idaho. That the spread in a northerly direction has been more extensive than in a southerly direction may give us some comfort. But when we consider that the rust has been found to make a jump of 150 miles from infected pine to currant bush we begin to realize that under certain favorable conditions the disease may lead us a merry chase. The spread from currant or gooseberry bush back to pine is limited, however, and may vary from 900 feet to a mile, depending upon the kind of currant or gooseberry.

As in any battle line pushed into our territory, we begin to look for the weak points of attack, and we find in this case that removal of the currant and gooseberry plants snaps the backbone of the rust attack by breaking the cycle necessary for the complete development of this organism. If you will recall how malaria fever was swept out of the Panama Zone by the systematic and, at first, hopeless

task of eliminating the carrier mosquito, you will find an apt parallel in our present difficulties. We might liken the spread and intensification of this disease in the white pine areas to the invasion, intrenching, reinforcing, and the advance of an army leaving destruction in its wake. From a few small infections on currant bushes the disease obtains a foothold on neighboring white pines. Its development in the pines is slow at first until the disease reaches the stage where spores are produced that are capable of infecting new bushes far and near. These areas thus become new centers of infection, and the disease spreads and intensifies. The coast of British Columbia has just reached the damage stage and the new infections in Idaho represent the invasion stage; between these two extremes are many gradations.

## Investigative Work

The Office of Blister Rust Control located at Spokane, Washington, has been steadily working on this problem and along with cooperating Federal and state agencies has been active in gathering data on the fungus and its hosts; devising and testing methods of control and improving control measures as well as reducing the control costs per acre. These data are gradually pointing the way to practical control measures in the face of a complexity of factors which makes blister rust one of the most difficult problems foresters and lumbermen have been forced to face. The forests of the western timbered regions are teeming with several species of wild currant and gooseberry, and along the stream beds solid masses of these plants flank valuable and extensive white pine forests. Fortunately, not all of these alternate hosts, as they are called, are as effective in developing and spreading the disease as is the cultivated black currant which is being rapidly eliminated from the white pine regions. The wild currant and gooseberry plants differ greatly in this respect and this fact has called for a series of painstaking experiments on the part of the Federal workers to determine the relative power of these different plants to develop and spread the disease.

## Classification of Control Areas

So far I have given you but a charcoal draw-



ing of the picture, but I hasten to assure you that from the timber owner's point of view there are several bright spots to be added. Based upon the information so far accumulated, we have every reason to believe that much may be accomplished by the adoption of methods of forest management which discourage the development and eventually eliminate the wild currants and gooseberries from the threatened stands. We find that in dense, mature stands the currant and gooseberry bushes are lacking or are so few in number that they can be disregarded. We also find that certain logged or heavily burned areas are also free of these bushes. Data obtained by the Spokane office indicate that there are large areas of timber from pole size on up containing but few bushes of a species so low in susceptibility that they can be disregarded as far as their damaging power to the timber is concerned.

Since fire in general and logging operations or other disturbances of the forest floor increases the blister rust hazard by reestablishing in large numbers the currant and gooseberry plants on the burned areas where white pine reproduction is developing, we have here an additional argument if any is needed, for keeping fire out of the white pine timber. A closed stand and a minimum disturbance of the forest floor reduces the fire hazard and prevents the development of large numbers of Ribes bushes. In the white pine region of Idaho, these facts point to a method of logging that favors residual stands, a minimum duff disturbance and a better protection against fire. That these requirements favoring blister rust control go hand in hand with better forestry practice give us a measure of encouragement.

These data apply more closely to the conditions existing in the white pine type of Idaho. The sugar pine stands of California, on the other hand, offer problems differing widely from those found in Idaho. In the sugar pine stands, fire does not occupy the same relative position of importance as it does in the forests of Idaho. The correlation of forest management and blister rust control in California must, therefore, follow somewhat different leads. With this in view, special studies are to be started in the California region in 1928.

#### Control Plan

In reviewing the principal elements of a general plan of control, it is obvious, at the outset, that the entire forested area bearing susceptible pines can not be included within

the control area. The job would be too huge and too costly, and we would be spending money protecting large units of forested land upon which the total present or future value of the white pines would be so small that the expenditure of control money would not be justified. The choice of areas needing protection, therefore, must be made (1) from areas including commercial stands, and (2) from areas including reproduction stands. All other areas may be excluded. To begin with, this reduces the burden of control appreciably. There are other factors that will aid us in paring this acreage under control down to a less formidable figure. (Heavy burns, double and triple burns at right intervals, dense stands, etc.) It has been roughly estimated that from 60 to 85% of the mature stands in Idaho are practically Ribes free.

The selection of acreage to be placed under control is complicated, however, and the need for control is most pronounced in regions where forest density is great, but where the streams within the drainage support a large number of highly susceptible bushes. Fortunately, the Spokane office has developed a chemical spray which is proving to be an effective weapon of control on such areas. Since reproduction areas are possibly the ones needing first attention, it is well to consider the increasing acreage coming into reproduction each year through the agencies of fire, logging operations, insect and fungus attack, and windfall.

The control problem is not so much concerned with the removal of small numbers of Ribes plants of low susceptibility scattered through the timber stand, but with the high concentrations of such species and also of the very susceptible species.

It is an established fact that young pines are killed by blister rust within a short time after infection. A much longer period is required to bring about the death of larger and older timber. It is estimated that it might require as long as 30 years to kill some of the larger trees. Within this limit the actual period of damage to pines in any particular locality may be shorter or longer than this, depending upon the severity of local infection. No general rule regarding the rate and severity of damage to mature white pines can be laid down with our present knowledge of the problem. It would seem, however, that the meth-



## QUALITIES REQUIRED BY FOREST SERVICE FOR SCHOOL GRADUATES

By C. B. MOORE

Assistant District Forester, Ogden, Utah

It is a pretty big job and a pretty difficult job to put down in writing a statement of the qualities that are wanted in men coming to the Forest Service from the forest schools. I presume that one tackling this proposition is required to say why he is doing so and should be expected to give his qualifications for writing upon such an important subject. As a matter of fact, I had just as well admit at the offset that I do not feel that I have all of the qualifications necessary, but my dear friend, Dean Miller has asked me to do it, and that is the reason for my attempt.

I make no claims to being a psychologist or a character analyst. My only claims are that I have had 21 years' experience in Forest Service work as forest guard, forest agent, which was a title given many years ago when there apparently was nothing else that they could call me under temporary appointment, as assistant forest ranger, as forest assistant, as deputy forest supervisor, forest supervisor and now assistant district forester.

I suppose that the whole question could be answered in a word by saying that the qualities which the Forest Service wants in men coming to them from the forest schools are, in the last analysis, the very same qualities which any other employer wants in men. I have always placed as the first and most important and indispensable quality, the quality of loyalty; loyalty to the profession, loyalty to the Service and loyalty to the particular unit of the organization in which the man happens to be placed. I do not mean that the man necessarily figures that he is always going to stay on the particular forest to which he is assigned, but that while he is there he must take a hold of the work, in fact go ahead with it in full co-operation with the other men on the job and do everything possible to put it over in the most successful way possible. He must expect and give all possible assistance to the other men in the organization and must certainly expect to get their loyal support and assistance in order to accomplish the best results. Elbert Hubbard has said:

"If you work for a man, in heaven's name work for him. If he pays wages that

supply you your bread and butter, work for him, speak well of him, think well of him, stand by him, and stand by the institution he represents. I think if I worked for a man, I would work for him. I would not work for him a part of his time, but all of his time. I would give an undivided service or none. If put to a pinch, an ounce of loyalty is worth a pound of cleverness. If you must vilify, condemn and eternally disparage, why, resign your position, and when you are outside, damn to your heart's content. But, I pray you, so long as you are a part of an institution, do not condemn it. Not that you will injure the institution—not that—but when you disparage the concern of which you are a part, you disparage yourself."

The second quality which the Forest Service demands of its men is industry. This means going to work with a smile on your face, keeping at work and keeping the smile. It means, of course, that whatever the work, whether it be manual or mental that is to be done, it is expected to be done by whomever the job is assigned to. There was a time when a few of the boys coming to the Service from some of the forest schools figured that some of the jobs to which they were assigned were beneath them and that they were wasting a lot of the knowledge which they had gained in four, five or six years' study in school by doing boundary survey or improvement jobs which they figured could just as well be done by unskilled labor. I will, of course, admit that a lot of these jobs could not only be just as well done by unskilled local labor, but probably could be done a lot better and some cheaper. These boys did not realize that if they were to go to positions of higher responsibility it would be very necessary for them to know what an employer can expect of a man in a day's work. They did not realize that it is necessary for the boss to learn by actual experience the standard to which a man can be expected to do a job in a given time. I am mighty glad to say that during recent years we have found mighty little of this attitude in the boys coming to this District in the Forest Service, and



that the result is not so much that the men are staying for a long time in this District, but they are rapidly being picked for positions of higher responsibility in and out of the District.

The third quality which I would call attention to is reliability. Every employer wants to feel that the men he has on his job can be relied upon to do the work assigned to them in the way that it should be done and he certainly wants to know that when a man tells him that a job is completed that it is completed and that he does not have to check up to see that it is completed. It is not nearly so important that a job be done when a man returns from an assignment as it is that he tell his employer flatly whether it is done or not done or only partially done, and so that the employer may know when a job is partially done exactly what part is completed.

The next quality which I would point to, one which really embraces all of the preceding qualities mentioned, is the quality of honesty. This can well be divided into honesty as it is generally understood in financial matters, and into mental honesty. It is much less important that a man in his recommendations agree with his superior officer than that he comes out flatly and says what he actually believes is right in his recommendations, regardless of whether his employer agrees with them or not. Certainly the superior officer's instructions are to be followed but the superior officer wants the honest recommendations of his subordinate and if there is difference of opinion the two can sit down across the table, thrash it out and either reach agreement or the superior can say that he believes he is right and decide then and there the plan or policy to be followed.

The next quality desired by the Service is persistence. By this I do not mean obstinacy, but rather the attitude which will make a man go through with his job and stay with it until it is completed. Too often we get a man who is flashy, brilliant perhaps, ready to start all kinds of worthy things, but he does not stay with them to the finish. Brilliancy is a wonderful asset but it must be combined with persistence for the best success.

The next quality which I would set up as one the Service requires in its men is good personality. By this I do not mean handsomeness, neither any one nor several qualities which perhaps can be described, but taken as a whole it is that combination of traits which

make people like one. I presume it requires good health; certainly it requires good temper. It includes getting into the game whatever the game may be and with a will. It includes generosity to the extent that one will bear his share, but it does not by any manner of means require that one do more than his share. It includes most certainly tolerance and consideration which I presume is the opposite of selfishness. It includes most certainly sympathy with other people's opinions, sympathy with the men and women in and around the forest in their troubles and joys, sympathy but not necessarily agreement with their opinions on matters affecting the Forest Service. I would not say that one can be self-centered or opinionated, can regularly believe that he is right and the other fellow wrong and have a good personality.

You may well say that all that I have said so far is that which every one knows and you may readily ask why I have said them in a paper of this kind to a bunch of your kind. Perhaps it is unnecessary with you who have lived with Dean Miller and unconsciously absorbed a lot of his wonderful qualities, outlook on life—religion if you please, but you are going to be away from him pretty soon and the Service wants you to keep and enlarge those qualities which he has tried his best to strengthen and fix solidly in you.

The Service wants you to have a good knowledge of the science of forestry. This means to me first of all a good grounding in the fundamental sciences. Next it means as much English, grammar, and rhetoric as you can get. You are going to need these. You need them first of all in the Junior Forester examination. You would be surprised at the grammar used by some of the fellows taking the examination and the obscurity of many of the statements made. Try to develop the ability to make a clear cut, concise statement. Your work in the service is bound to throw you into the position of writing articles for publication and of speaking before schools, clubs and all kinds of other organizations. The more you can develop the ability of presenting your subject clearly, concisely and convincingly the greater success you are going to have. Then, of course, reports on the work done must be made. You must have sufficient knowledge of strictly forestry subjects such as silviculture, management, regulation, utilization, etc., so that



## BEYOND OUR NORTHERN TIMBERLINE

By WILLIAM BYRON MILLER, '22

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It is a notable historic fact that in the early settlement of frontier countries the most civilized races have first chosen the timbered regions. Besides furnishing the primary requirements for shelter construction and fuel, the forest ameliorated the climate and afforded protection from storms. Game was also found there in greater variety and abundance and thus areas in or about the forest offered a better means for obtaining a livelihood. These areas were therefore first developed and subsequently became stably populated centers from which progress radiated.

The population of untimbered countries has been more or less unstable, unprogressive, or nomadic, while climate often reached torturing extremes. Although these people may have had sufficient food, drink, clothing, and even shelter they have shown a lack of industry and a hand to mouth fashion of living. For them the wheels of industry have failed to turn.

Civization has wrapped itself around the world, choosing first the best locations. Then gradually have the hands of progress fashioned means for its further spreading. However,



*The Eskimo builds his home in the ground, but he must have wood for framing and bracing it.*

With development of means for transportation, forest materials were later carried into the deserts and prairies paving the way for occupation, reclamation, and progress there. It has aptly been said that man requires wood from the cradle to the grave. No single factor has contributed so much to the upbuilding of the nations as an adequate supply of suitable forest materials. The forest has formed the foundation for industry, progress, and prosperity; contributing to pleasant surroundings and human happiness.

certain areas have defied man's progress, almost his existence. As this is true of the great unconquered deserts it is likewise true of the arctic regions where lives the Eskimo. Like the nomad of the burning sands with his steed and his camel is the Eskimo of the treeless arctic with his sled, his kayak, and his oomiak. Beyond our northern timberline, with no vegetative crops for his consumption, where the open lands are often swept by storms and blizzards, he lives. And for how many centuries has he lived thus, eating largely fish,





*Trees by the thousands are undermined by the current, falling into the streams they are borne to the sea.*

fowl, and animal, dressing in skins and furs, and digging his home in the ground to keep from freezing in winter, or constructing more temporary spring and summer camps of ice or skins.

Alaska's northern timberline separates generally the Alaskan Indian and the Eskimo. The northern Indians being men of the forest and mountains occupy the timbered country while the Eskimo has chosen the great treeless tundra beyond, usually along the shoreline which separates sea and the prairie-like tundra country.

The desert dweller conserves water, but the Eskimo must hoard and wisely use what wood he finds in the land where no trees grow. The Eskimos along the untimbered coast of Alaska and the islands of Bering Sea are dependent on interior Alaska for most of the wood they use for fuel or construction purposes. The frames of their kayaks, the spear shafts, sledges, and logs for framing and bracing inside their earth houses are obtained from driftwood. If wood is too scarce, Eskimo houses are built in the ground like dens.

The streams in the interior of Alaska usually originate in the high glaciated moun-

tains. Down in the lower levels they flow through timbered valleys. The drop of the water level is then only a few inches per mile. As a consequence the streams meander about, forming ox-bows and cutting many new channels. As the current cuts the banks trees by the thousands are undermined and fall into the stream. While yet attached to the bank and with their trunks in the water these trees are known as sweepers and constitute a menace to boats navigating the streams. Gradually loosened by the current they drift into the sea. The sea currents carry the logs about and finally distribute them along the coast, or the shores of islands. In many places beached logs may be found in abundance. However, this is unusual and wood is generally scarce rather than plentiful along the beaches. Nevertheless where man finds wood, fish, and game he chooses the site for his home.

Thus has nature furnished the means for man's abode about the shores of the great untimbered "barren ground". Much timber is first produced in the fertile valleys through which meander the sluggish silt laden streams, ever building, ever wearing away. The changing currents furnish means for harvest and for transporting the woods to the shores of the





*Sea currents carry the logs about. Finally they are distributed along the shore—they form the Eskimo's wood supply.*

great open country. The Eskimo selects a place to live where fish, game, and sufficient wood may be obtained to serve his primitive needs. He fashions his weapons and utensils,

his sled, and kayak frames, constructs his dwelling and collects his fuel from the driftwood along the beaches. Truly phenomenal is the wise provision of nature.

## THE IDAHO FOREST EXPERIMENT STATION

By L. F. PARSONS

Executive Secretary, U. of I.

Delivered at the Annual Banquet, March 7, 1928

The organization of Idaho's Forestry Experiment Station is but another advancement in the growth and development of our School of Forestry.

It is a further recognition that Forestry is something more than the production of 1x12's and 2x4's; that Forestry involves a knowledge of all of our fundamental sciences, both natural and social, and that the lumber industry needs the assistance and help of technically trained men—scientists.

The establishment of the Forestry Experiment Station by the Regents of the University is a recognition of the ever increasing service that the faculty of our School of Forestry has been rendering since the organization of the school.

At first their services were utilized only by the comparative few that recognized and believed in conservation and continuous pro-

duction in the handling of our forests. Our lumbermen were slow to accept this idea. In the past few years more and more of them have had cause to stop, look, and listen. They have had cause to look back over their trail across Pennsylvania, Michigan, and Wisconsin. They have noted the barren lands, abandoned mills, and dead lumber towns. They now recognize that a continuation of their past methods for another thirty or forty years means that millions of dollars now invested would be out of work and they, as lumbermen, will be jobless. Self-preservation makes necessary a much modified policy in forest management.

Our lumbermen are now ready to accept in part, at least, the theories of the white-colored lumber-jack, conservation, continuous cutting and the full utilization of the potential possibilities of our timber lands. In



doing so they recognize and accept an increased cost of operation. To offset this, they must find an increase in income.

Where is this increase to come from? That is the question the lumberman is now asking of Idaho's Forest Experiment Station. Shall it come from the third of each tree cut that is now waste? Shall it come from new uses for our larch, cedar, fir and spruce, or will it come from a decrease in loss from fire, decrease in loss from chemical reactions and from plant and animal parasites.

Assisting the lumber industry in answering these questions is one function of the new Station. Its major and largest function shall be to assist the State Forester and the State Land Board in the management and development of the forest lands belonging to the State. The State of Idaho itself is one of the largest single owners of forest lands in Idaho. I know not the total acreage, but it is many hundreds of thousands. These lands belong to our common schools, our institutions of higher learning, including the University, and our penal and eleemosynary institutions. Their management has been delegated to a very large extent to the State Forester, Mr. Ben Bush. It develops upon him to conserve, protect, utilize, and develop these lands in such a manner that they will ultimately yield the greatest income. Through his leadership the State Land Board has adopted one of the most advanced forest management programs. In doing so they have raised many questions.

What can be done with the thousands of acres of cut-over and burned-over land belonging to the counties and the State? How can a market be developed for billions of feet of lodge pole pine and other second and third grade species? What must we do for the protection of the watersheds so essential to our irrigation farmers? The State Forester is now calling upon the Forest Experiment Station for assistance in answering these and many other questions vital to the welfare of all Idaho.

A further service to be rendered by the Station is co-operating with and lending service to the National Forest Service in solving problems peculiar to Idaho in its management of the large timbered area held by the national government.

The demand for service from the School of Forestry by the State Forester, the lumber in-

dustry, and the Forest Service has increased rapidly during the past few years, but it is anticipated that this demand is going to increase much more rapidly in the immediate future. To better meet this demand and to be able to give more and better service the work of the School of Forestry is reorganized and the Experiment Station is created.

It is regrettable but true, the lumber industry has been slow in recognizing the value of technical and scientific service. For many years the mining industry has spent much for research, the Federal and State Governments have contributed toward this research through the Bureau of Mines. Even the poorly organized industry of agriculture has recognized the value of experimentation, and today our tax payers are contributing millions for the advancement of agriculture. In our Agricultural Experiment Stations we find the agricultural chemist, physicist, bacteriologist, entomologist, plant physicist, engineer and economist. Why do we not have similar titles in forestry and why do we not have public funds expended for research for the advancement of the lumber industry? Because our lumbermen have been asleep. They have slept so hard and long as to permit other industries through research to substitute metal and composite material for wood. They have lost a considerable part of a market that is rightfully theirs. They are now awakening to the needs of their industry. The general public is also awakening to the value of our forests as a state and national asset. From both of these sources, we may expect many demands for service. The future growth and development of Idaho's Forest Experiment Station depends upon how these demands for service are met. Director Miller, you foresters, assistant foresters, and would be foresters, it is up to you. Go to it.

#### UTILIZATION OF WOOD WASTE

(Continued from Page 8)

hold on until the crisis is past. It seems to me that quick action is imperative and that speed is the indispensable requisite under existing conditions in the lumber industry.

My prescription for the patient is: Equal parts of by-products and of chemical derivatives, with concerted and persistent movements to eliminate all unnecessary waste. I leave it up to you to get the prescription filled before it is too late.



## RECREATIONAL USES OF IDAHO FORESTS

By LEON NADEAU

This essay won the first prize of \$50.00 in the state-wide Forestry Contest sponsored by the North Idaho Forestry Association as a feature of the American Forest Week. The contest was open to all high school students in Idaho, and was participated in by over one thousand contestants from all parts of the state. The winner, Leon Nadeau, is eighteen years of age, and a sophomore in the Garden Valley High School.—Editor.



It is spring again, and the snow is swiftly melting away. Close at its heels tiny blades of green grass spring up and wild flowers push their way through the ground and up, up, until the swelling bud bursts into a beautiful lily, a crocus, or a daisy. The bushes on the slope and the willows along the brook are leafing out while in their green foliage birds twitter and sing as they build their homes of straw and mud, or huddle over their tiny speckled eggs. High over head a flock of wild geese honk faintly as they fly swiftly on their way to the north, now flying in a long straight line, now forming a great "V" which slowly fades and the flock molds into a mass of speeding black dots that gradually disappear.

In the marshy pasture the frogs croak in mechanical unison. From a thicket of reeds across a swamp, a rail calls to its mate; a grey mallard hen rushes out from under a broken tree top that has fallen with its branches in the water, and goes darting in and out among the reeds and clumps of grass along the bank. A few minutes searching beneath the old tree top reveals a nest of small, pale green eggs, slightly dotted. On the other side of the marsh, a young forest of

pinus has grown on a slight raise of ground. Grey squirrels dart hither and thither or sit vertically and statue-like at the mouth of their underground homes, then with a warning shriek they plunge into the ground.

A twig snaps in a thicket of low bushes ahead, the branches part and a timid doe steps into the clearing, holding her head high and her ears bent forward, while her sharp eyes search everywhere for some unseen enemy. Then, as she lightly steps forward, a tiny spotted fawn takes form out of the background and bounds nimbly to the side of its mother. Yes, no doubt it is spring and the dreary gloom of winter has been cast off, just as one draws back the curtains of a dark room flooding all with light and sunshine, giving new life to the world.

Today, the roar of the automobile on the highway announced the coming of the pleasure seeker and the tourist. Soon the muddy, turbulent streams will grow calm and clear and sparkle in the sunshine, and the speckled trout will again lurk in the dark pools and wait for the anglers fly and rod to out-wit him. Then will the cities pour forth their people, young and old, in automobiles of every description, shining with new paint and nicked radiators, old cars with patched tops and loose wheels, cars for two, and cars for ten, all with beds and provisions lashed on the sides and backs. Each will vie with the other for the open road to the hills and the wary trout that swim in the clear, cold, mountain streams.

Some will not be satisfied with the streams frequented by the public, and will hire horses from the "Dude Ranches" or packer's service stations to pack them and their supplies far back from the well beaten path of the tourist, where the trout are plentiful and strike harder. There, in the depths of the forest, they will pitch their camps and enjoy nature unmolested.

Later, in July, when the "Chinook" and the "Steel Head" run, the automobiles will be armed with long handled spears and the occu-



pants will carry rifles between their knees. Then the trout shall enjoy a rest. The cars will speed on and on into the heart of the forests, to the salmon waters and the greatest sport of all.

Other people love a lake. For these, there are many. Large blue lakes rippling in the breeze and reflecting like a sea of diamonds in the sunshine, bordered on all sides by dark cool frests and green meadows. Here the fish are abundant and boats are at all times available to those who have a desire to row or cast their lines. Then there are the cold, crystal lakes of the high country, only accessible by pack horses over rough mountain trails. These lakes are especially favorite haunts of lusty rainbow trout.

All through the summer these tourists will continue to come and go, some for pleasure, some for health; some remaining only a day, and others weeks and weeks; many to build summer homes in the woods and to live the entire season in the seclusion and fastness of the hills.

In September the grouse, the blue, the sage, the ruffed and the pintail, all will attract great numbers of hunters and sportsmen. Men of every profession will join in the pursuit of the game birds that are found here in the forest. For these men, there is but one heaven, a gun, a dog, a light heart, and an open field where the game birds are abundant.

In October, when leaves are red, and the morning crisp and frosty, there comes still another flood of eager huntsmen, and again the woods will ring and echo with the crash of guns. Ah, how proud is the man who seeks out the haunt and brings down a fine young buck with a beautiful spread of antlers as a trophy. Countless are the innocent deer that fall before the deadly aim of the hunter during the short four weeks each fall.

Still greater prized are the elk of the higher valleys. These huge red beasts, with their great horns and nimble feet, outwardly show their contempt for man. Though they are protected in most regions, there still remain a few small areas where the hunter is free to hunt and kill his elk each fall. Still farther back and high up the rough mountain crags are found the mountain goat and the mountain sheep. The goat with his glossy white coat and sharp black horns promises a real

thrill to anyone who wishes to pursue him in his natural habitat, the most rugged and barren mountain peaks and cliffs that Mother Nature can present. The mountain sheep also ranges high on the more rugged slopes, but seldom is found to be as daring and active as the goat. Until recently, this sheep attracted many hunters with his huge curled horns, but in the last few years a law has been passed to protect the few of these noble creatures that are left, so now it remains only for the hunter to pursue him with his camera.

This type of hunting is rapidly becoming a popular sport in all parts of the country where game animals are found. Many, who all their lives have hunted with heavy rifle and steel pointed bullets, now discard their deadly weapons for a camera with lenses and films. These men, who once strode steadily through the woods with ever a watchful eye and listening ear, or crept to the top of a ridge to peep over the other side, with rifle held ready to fire the instant some wild creature exposed itself and bring it to the ground lifeless merely for the sake of sport, now tread the same trails and lie in ambush beside the same paths with just the same caution and care as before, only their shots are harmless and the hunted creatures, though they have filled the hunter with emotion and triumph, are still free to live and roam in peace.

Now it is November, and all things denote that winter is swiftly descending upon the world again. Soon all will be buried beneath a great blanket of snow. The leaves that only a few weeks ago were green, then red and yellow, have fallen to the ground. The once green meadows, dotted with flowers and humming bumble bees beneath a summer sun, are now brown and barren, dotted here and there with pools of muddy water from the recent rains. To the north and to the west the great mountain peaks have long been enshrouded in snow which gradually with each storm descends further down the slopes. Soon it will reach the foot hills and then the valleys and the world will again be held in the grip of winter.

First, just before the final close, the great flocks of ducks and geese we watched as they flew north last spring will again take to the air and migrate toward the south. These great flocks will stop here and there to feed on the way usually in the stubble fields of the open



valleys or along the marshy shores of the larger rivers and lakes. Then again comes the time for hunting. The old shot gun comes out from its musty hiding place in the basement and dons a new luster. With it a large supply of shells, a rain hat and slicker, rubber boots a fine drizzle of rain, a dog, then as the flock passes over, what a thrill!

And yet these various sports are only a few of the many forms of recreation to be found in the forests. Hikes, picnics, horseback rides, berrying parties, and countless other entertainments are free to the public.

Summer resorts, situated in the most beautiful places, on shores of glistening lakes, on the banks of mountain streams, in the heart of a deep dark wood, everywhere that unusual beauty and typical mountain scenery are found, attract hundreds of pleasure seekers as well as health seekers.

Great areas of rough, unsettled timberlands and mountain streams form a complete heaven for the prospector with his pick and shovel. He may roam to his heart's content, digging and washing, tramping and camping. What a life for a carefree soul!

Yes, many are the ways in which the great open spaces of Idaho may be used for recreation. Hunters, fishers, campers, health seekers, prospectors, and tourists from every corner of the continent view the beautiful mountain scenery. Tired business men, who day after day bend over their books and papers, push all aside and seek out some secluded spot in the forest where they are free from worry, and enjoy a quiet peaceful rest.

Then is it any wonder that the Forest Service, which so carefully guards the timberlands and fosters the growing vegetation, pleads each year with the public to help protect the source of all this recreation? Each year, regardless of the precaution taken against fire, large areas are destroyed and laid waste. Not only are the woods destroyed, but many innocent forest creatures also perish in the flames, burned at the stake through the carelessness of some reckless person.

These burned-over areas may be seen frequently as one travels through the mountains. Great open spaces, crisscrossed with charred logs, and here and there a black snag, lonely and plain, gives the impression of black crepe, the symbol of death, and indeed it is a fitting symbol for years and years only black snags and charred logs adorn the earth. This

forms a striking contrast to the fresh, green forests on either side of the burn, with their towering pines and thickets of vegetation, cool, clear streams of pure water, blooming flowers, and berry bushes, and best of all the many wild creatures living therein.

These vast recreational resources should be preserved, and it is the part of every person to help preserve them. All persons enjoying some type of recreation in the forests should thoroughly understand the destructive powers of an unextinguished campfire or match. Through these agencies, the rare beauty and the cold spring by the shady nook, where one camped last summer may with the coming of the next camping season be a scene of grim desolation and the refreshing spring has disappeared forever.

So be it the motto of all who find recreation in the forests whether national, state, or privately owned, to put out every spark and strive to prevent forest fires.

#### EPSILON BECOMES GRAND CHAPTER

Epsilon Chapter of Xi Sigma Pi, national forestry honorary fraternity has accepted the duties and responsibilities of Grand Chapter of the organization for the years 1928-29.

As a result of such acceptance, the following members of Epsilon Chapter were nominated by the local chapter and elected by vote of all chapters to the following national offices.

Harry I. Nettleton.....	Forester
Arthur M. Sowder.....	Associate Forester
Wallace M. Saling.....	Secretary-Fiscal Agent

Upon these men rests the responsibility of directing the national business of the fraternity during the next two years, in accordance with the plan of rotating the leadership of Xi Sigma Pi from one chapter to another.

In accepting the leadership of Xi Sigma Pi, Epsilon Chapter should strive to become the strongest and most active in the fraternity, not only in affairs of the fraternity, but also in the upbuilding and closer coordination of the Associated Foresters in all worth while activities.

#### SCHOOL MAKES 100 PER CENT RECORD IN CIVIL SERVICE EXAMINATIONS

This year six men took the Junior Forester Examination in March. The School is proud of the record made, for all the men passed with very creditable ratings.



# OBSERVATIONS ON THE INFLUENCE OF RODENTS ON IMMEDIATE REPRODUCTION FOLLOWING LOGGING IN NORTHERN IDAHO

By ALDEN B. HATCH, '28

## Introduction

The absence of immediate reproduction following logging on a few areas in the western white pine type of northern Idaho is considered sufficiently serious to warrant research investigations. Some of the lands which are offering this difficulty are timber sale areas which have had several seed trees left per acre, and which have not burned over subsequent to logging. With such treatment one would ordinarily expect adequate and immediate reproduction. Occasionally, however, such has not been the result. Several years, and often a decade or more have passed before the areas have had sufficient reproduction to be considered adequately stocked (one established white pine seedling per milacre). The western white pine area is probably the only timbered area in the west, exclusive of the humid coast forests, which is at present considered to yield sufficient financial returns to interest private capital in growing timber on a sustained yield basis. Lengthening the rotation only a decade may greatly affect the financial returns of growing timber. It is desirable, therefore, that immediate restocking be secured. To this end the Northern Rocky Mountain Experiment Station is conducting a rather extensive series of experiments. The plan is to determine just what is taking place on these sale areas, and also to determine the truth regarding certain theories which have been advanced to explain the phenomenon of delayed restocking. It was while the author was working on these experiments that an opportunity arose to observe the effect of the Douglas squirrel (*Sciurus douglasi*) on reproduction in the western white pine type. This observation and the partial results of a preliminary study of certain factors affecting reproduction of western yellow pine in northern Idaho (in preparation by the author) will be presented in this paper.

## Theories for Delayed Restocking

The theory which is probably referred to most often when discussing delayed restocking in this region is "The Stored Seed

Theory." Laren (6) found that certain burned areas which apparently had no possibility of receiving seed from trees gradually restocked, and some reproduction came up five to six years after the source of seed had been removed by fire. He concluded, therefore, that the seed was probably stored in the half burnt duff and remained dormant until conditions became suitable for germination. The same tendency toward restocking after several years is found on the timber sale areas in question. The general belief, therefore, is that this apparent habit of white pine seed to lie dormant for several years is the cause of much of the delayed restocking on sale areas. Marshall (7) attributes many of the difficulties encountered in the western white pine type, including poor reproduction on timber sales, to a present periodic deficiency of precipitation which started about the time the Forest Service took over the management of the National Forests. He bases this observation on an analysis of tree growth in five age classes the youngest 75 years old and the oldest 280. An exceptionally dry year following logging or too long an interval between a seed year and time of cutting, are also given as causes of this lack of reproduction following logging. It may also be contended that insufficient seed trees are left on the sales to restock the area in a short time, provided the seed in the duff have failed. Duff is usually somewhat acid and it is often considered that seed will not germinate until the duff has become sufficiently disintegrated through oxidation, which is greatly enlivened by the increased warmth from the sun after logging. It seems that it would be difficult to place the cause on any one of these, or perhaps, other factors. Each of them probably has an individual influence in giving the reproduction conditions we find. That the rodent factor has an important bearing on the question has been known for several years. It has been demonstrated by Pearson, Weidman and many others that rodents become a deciding factor in delaying, and indeed in some cases, completely eliminating reproduction in the western yellow pine type. Willis "found that ro-



dents and white-footed mice in particular destroy a large percent of field sown seed.<sup>1</sup> In fact the method of securing reproduction by seeding has been abandoned largely because of rodents. Cox believes "that if western yellow pine bore a uniform crop of seed each year, the animals which feed upon the species might soon become so numerous as to seriously endanger the existence of the tree as a part of the forest."<sup>2</sup> If this is actually the case years of maximum seed production may fluctuate not only with climatic conditions but to some extent because of inherent qualities. The latter presumably is caused by animals destroying all the seed except in abnormal years for many centuries. This paper, however, will deal with the less abstract. As it is not desirable in the present discussion to review the literature available on rodents the author refers to an article by Taylor (9) who in addition to presenting a valuable outline of the biological side of forest production refers to the writings of a number of investigators of rodent activity. The following data, though meager, agrees with the findings of many of these investigations and in addition points to a possible cause of some of the delayed restocking in the western white pine type of Northern Idaho.

#### Data from Western Yellow Pine Type

In August, 1925, the Craig Mountain Lumber Company commenced logging a portion of the Nez Perce Indian Timber Reserve on Craig Mountain near the northern boundary of Lewis County, Idaho. By March, 1926, the Company had logged the area and was withdrawing. In Section 9, T 34 N, R 1 W of B. M. a strip of timber a quarter of a mile in width and a mile in length belonging to a private owner was not cut. Thus a strip of virgin western yellow pine timber was left intact, bounded on three sides by a freshly clean cut area and on the fourth side by farming land. In June, 1926, a set of three seed traps was placed in one end of this strip near the logging boundary. The site was a gentle slope in a small opening which had a little advance

reproduction of various ages. Two of the traps of the set were so constructed as to exclude rodents, and the third was an open trap which would enable rodents to enter and eat the seed caught if they so chose. The traps were each one yard square. Early in the spring of 1927 after the snow had melted the traps were examined. One of the closed traps (B) had 62 seed and the other (A) had 127, an average of 96 yellow pine seed per square yard. The open trap had 28 seed, making an average difference of 68 seed, or 70.8% between the open and the closed traps. The seed from trap A (having 127 seed) were collected to determine the germination per cent.<sup>1</sup> This was found to be 47.3%. The 62 seed from closed trap B were scattered over the ground where the trap stood, and the top half of the trap, consisting of five inch-high walls and a screen of one-half inch wire mesh, was turned over the area to exclude rodents until germination took place. The seed in the open trap were left in the trap. The set was again examined on June 15, 1927. Of the 62 seed from trap B scattered on the ground 31, or 50%, had germinated. Each seedling was staked and the cover removed entirely to eliminate any effect it might have on conserving moisture. The number of seed in the open trap had reduced from 28 to 9. The area around the set for a radius of about 75 feet was thoroughly examined by six persons. Not a single seedling was found. During the summer four more seeds germinated, making a total of 35, or equal to 57% total germination. Three seedlings died and the number of seeds in the open trap were reduced from 9 to 6. Assuming that 57% (germination per cent) of the disseminated seed crop was capable of becoming seedlings on the surrounding area (as is indicated by these data), rodents or birds prevented the germination of over 508,000 seedlings per acre. It should be noted, however, that the forest in question did not, as a whole, offer conditions so good for germination as did the area in the vicinity of these traps. It is believed that this is due largely to the lack of suf-

1. Willis, C. P. *The Control of Rodents in Field Seeding* Proc. Soc. Am. For. 9:365-379 July 1914.

2. Cox, William F. *Reforestation in the National Forests* U. S. Dept. Agr. Forest Service Bul. 98 P 16 1911.

1. The germination per cent was determined in the University of Idaho greenhouse. The soil was first sterilized by steam in a dry kiln. The first seed germinated 13 days after planting, on the fourteenth day ten seeds germinated and on the fifteenth day twenty-five. The following two days nine and seven germinated respectively, and then all germination ceased. No cause for this sudden ending was isolated but is very probable that some form of organism caused it as the total germination was only 47.3 per cent while actual field germination was 57 per cent.



ficient warmth in much of the forest.<sup>1</sup> The seed remaining in the open trap after the summer of exposure, equal to 6.2% of the seed crop per square yard, indicate that 93.8% (100-6.2) of the disseminated seed crop was destroyed. That even a much larger quantity of seed were destroyed is probable in view of the hoarding characteristics of squirrels. Table I. gives the results in tabulated form.

These data indicate that some form or forms of animal life have a perceptible influence on the volume of seed available for germination. The only animal actually observed on the area was the Douglas squirrel, which had a cone cache a few hundred feet from the seed traps. It is probable that the covering of the germinating seeds might have conserved moisture, and thus have increased the germination per cent. It is not likely, however, that it would have caused the difference between the 0% and 57% germination found on this area. If moisture had been the limiting factor certain small areas protected by brush should have had at least a few seeds germinate. If this point is still objectionable, one can hardly ignore the reduction of the number of seed in the open trap between the first examination and the end of the summer. Clearly this was due to animal life.

While this experiment was in operation nine other identical sets of seed traps were collecting seed in a virgin yellow pine forest near Potlatch, Idaho. There was no logging area within several miles of these traps. Examination of the data on this area reveals that seed reduction in the open traps was not as severe as on the Craig Mountain area. Reduction of seed in the open traps after examination appears to be somewhat local in character. Half of the six sets had no reduction of seed between examinations and the other half did. This indicates that presumably the rodent population was not uniformly abundant throughout the forest.

Table II. gives the number of seed from the Potlatch sets on the examinations of December 22, 1926, and June 17, 1927.

1. Qualifications for this statement will be discussed by the author in a future paper. "Certain Factors Affecting Reproduction of Western Yellow Pine in Northern Idaho." Briefly this study revealed that germination occurred more frequently on the very open sites than in the comparatively dense virgin stands. 1927 was an abnormally wet year in this region and even the most exposed sites were still moist in early June. Moisture, therefore, played a minor role as a limiting factor in germination while heat, as related to sunlight, appeared to be closely related to germination. Survival is limited by other factors than is germination and should not, therefore, be linked too closely with the latter.

The 94 seed remaining in the open traps on June 17, 1927, is equal to 47.7% of the 197 seed distributed in the closed traps. In contrast to this the Craig Mountain set showed a difference of 91.4% (nine seed found on examination of June 15—91.4% of 96 seed in closed traps). Evidently a considerable number of seed are unmolested and so are available for germination in this virgin forest which has no adjoining logged over area. It is probable, therefore, that rodents in such a forest are normally distributed and do not constitute a severe menace to reproduction.

#### Observations in Western White Pine Type

The second opportunity for observing rodent activity was offered while aiding in the establishment of Management Production Plot No. 134 for the Priest River Experiment Station, Priest River, Idaho. The plot is located in the western white pine type on the 1926 Big Creek timber sale, Kaniksu National Forest. On August 10, 1927, a large white pine seed tree was noted to have an excellent cone crop. By August 15th squirrels were observed in the act of cutting cones for hoarding, and the ground had quite a number of cones scattered over it beneath the tree. Examination of the seeds revealed that they were not quite ripe. I wish to emphasize the fact that squirrels were seen in the act of cutting these cones from the trees. On August 30th this tree was tagged, measured and phenological observations taken. It was entirely devoid of cones and the ground was bare of them also. During the first few days of September phenological observations were made on Management Reproduction Plot No. 136. This plot is on the Fox Creek drainage within a mile of Plot 134. Seed trees with cones were very rare and squirrels were noted to be hoarding here also.

#### Summary

The conditions caused by clear cutting in the western yellow pine type are such that there is probably only one course of action open to rodents, namely, migration. In the case here presented movement was into an adjoining uncut virgin forest. The increased demand for food caused by this migration was such that the entire seed crop of a maximum seed year was utilized. It seems evident that a demand which will completely utilize a seed crop during a year of maximum seed production will greatly exceed a supply of a normal seed year. It is believed that the excessive



number of squirrels, field mice and other rodents will, therefore, be reduced somewhat in accordance with the economic law of supply and demand. On this area the supply, food, cannot increase; accordingly the demand

dispersed seed of a maximum seed year. They did not, therefore, completely eliminate reproduction.

The results are somewhat different on Forest Service timber sales because of the

TABLE I  
Tabulated Results of Examinations of Craigmont Traps

Area	Seed found on examination of March 15, 1927	Germination by June 15, 1927	Total germination of seed at end of summer of 1927
Surrounding area	Not examined	0	0
Open trap	28	Number of seeds reduced from 28 to 9	Number of seeds reduced from 9 to 6—6.2 per cent of original seed crop of 96 per sq. yd.
Trap B closed	62	31	35=57 per cent
Trap A closed	127	Collected for Germination Test	

TABLE II  
Tabulated Results of Examinations of Potlatch Traps

Set number	Average No. seed in closed traps of set	Number of seed in open traps of sets	Difference between open and closed traps	Number of seed in open traps June 17, 1927
1	81	43	38	46
2	21	19	2	19
3	16	11	5	3
4	8	4	4	4
5	37	28	9	17
6	34	23	11	5
Totals	197	128	69	94

must decrease. This reduction of rodents may be by starvation, further migration, or death from disease caused by weakened vitality. Animals or birds which prey on rodents may also increase and eventually the rodent population may be less than under normal conditions.

A virgin western yellow pine forest which is not in close proximity to a logging area probably has a normal rodent population during a good share of its life history. If the rodent population at the time of this experiment was normal, the data from 18 square yards of area in seed traps indicates that on this area rodents destroyed about 53% of the

method used in procuring reproduction. In the western white pine type several seed trees and a considerable number of immature trees are left on each acre of a timber sale. Accordingly some food remains, and plenty of shelter for new homes for the squirrels and other rodents. There probably is as a result very little migration unless the sale unit is very small and virgin timber is close by. The result on some of those areas which have not restocked immediately probably is that during the first three or four years or more very little if any seed accomplishes the purpose for which the seed trees were left.

If the law of supply and demand is again



operative in this instance it would seem that the rodents would be reduced to normal or below in a few years and then seeding would occur. In the western white pine type restocking actually does occur in some cases a few years after logging and consequently is coincidental with this supposition. It is also peculiar, or perhaps natural, that the stored seed theory on some areas coincides in like manner with this actual time of restocking.

#### Recommendations

Too many mistakes have already been made to remind us that we should not blindly advocate legislative or other means of exterminating seemingly destructive but often beneficial animals. There are too many monuments to wanton destruction, the Great Auk, the Passenger Pigeon, the Prong Horned Antelope, to remind us of man's avidity. Let not the forester contribute ever so slightly to this ever mounting shame. Intensive and thorough investigation only should guide our actions against the inhabitants of the woods. It is hoped that along with other investigations to determine the cause of delayed reproduction in the western white pine type, this problem may be considered.

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## THE RELATION OF THE MOISTURE CONTENTS OF SAPWOOD TO THE DEVELOPMENT OF A BLUE STAIN ORGANISM

A. R. COCHRAN, '28

### Introduction

The loss from blue stain to the lumber industry of the United States is estimated to amount to ten million dollars annually. This loss is the result of degrade due mainly to discoloration. The presence of the fungus threads in the wood causes the characteristic bluing from which comes the name "blue stain." The wood so affected can be utilized when it is covered or painted, but cannot be used where the clear natural finish is desired. The blue stained material falls into a lower grade than it otherwise would. As a consequence it commands a correspondingly lower price, hence the loss to the producer. (1)

Investigation and research into the factors favorable or unfavorable for the development of blue stain have been very meager and by no means commensurate with the magnitude of the problem. Munch worked on the moisture relation of one of the sap stain fungi *Ceratosomella coerulea* in the sapwood of Scotch pine. (4) No work has been done in this particular direction, however, on our native timber species. It is suggested that Munch's results hold only for woods of about the same density as Scotch pine and that they would not apply to lighter or heavier woods. It is with the aim of throwing further light on this phase of the problem that this study is conducted. (3)



### Object of the Study

The object of this study is (1) to determine if possible the maximum, optimum, and minimum moisture contents of wood favorable or unfavorable to the development of blue stain, and (2) to correlate the matter of moisture content with the specific gravity of the wood affected.

cured by a spring clip. This allowed an exchange of air in the jars.

The jars thus prepared were placed in the Freas electric oven for 48 hours at a temperature of 100 degrees C. At the end of this time the jars were removed from the oven and allowed to cool. About one-half inch of distilled water was then introduced into the

TABLE 1

Species Sapwood	Specific Gravity	Rings per Inch	Upper Limit of Maximum Growth <sup>1</sup>	Upper Inhibition Point of Growth <sup>1</sup>	Source of Fungus
Liquidambar styraciflua	.526	16	1.87	2.33	Ceratostomella sp. from sap red gum collected in Tennessee
Tilia glabra	.455	16	2.20	2.35	
Pinus monticola	.458	12	1.87	2.11	Ceratostomella sp. sap of yellow pine collected in Idaho
Pinus ponderosa	.304	18	1.90	1.98	
Pinus lambertiana	.242	46	2.34	2.67	

1. Average moisture contents (per cent of moisture over dry weight basis) of eight test pieces.

### Methods Used in the Study

Preparation of material: Four test pieces one-half inch square by fifteen inches long were ripped from boards of the sapwood of each of the following species, *Liquidambar styraciflua*, *Tilia glabra*, *Pinus monticola*, *Pinus lambertiana*, and *Pinus ponderosa*. The test pieces were divided into two seven-inch lengths and a one-inch length, the latter being cut from the center of the original fifteen-inch piece and used for specific gravity determination. The seven inch pieces cut in this manner were permanently numbered and numbers recorded. One of the seven-inch pieces was reserved for inoculation and one for checking the ascent of water and the distribution of moisture contents along the different parts of the stick. Two quart wide-mouth Mason jars used for culture jars were numbered, and the numbers and contents recorded. Two test pieces were placed in a jar and inoculated. Two pieces, the mates to the first two, were placed in another jar for checkpieces or controls as mentioned above. Another set of the same species was prepared in this same way, thus two sets were prepared for each of the five species used in the test. Each jar was capped with cotton which in turn was covered by a metal lid and se-

bottom of the jars. Former tests conducted in the laboratory by Dr. Hubert showed that in general there is a gradient in moisture per cent contents of a stick of wood, which diminishes from the water level to the top of the test stick. The sapwood sticks of certain species do not show as regular a gradient as does heartwood.

The jars were set aside for a week to allow the moisture to rise and become distributed throughout the test pieces. At the end of this time the moisture-contents-control jars were set aside and the jars containing the test pieces for inoculation were inoculated. The inoculum used was grown on a three per cent malt agar media. The hardwood species were inoculated with blue stain *Ceratostomella sp.* from sap gum collected in Tennessee, and the softwood species with blue stain *Ceratostomella sp.* from yellow pine collected in Idaho. The inoculation was done in a specially designed culture case. These jars were put aside for a time sufficient for the development of the blue stain organisms.

Determining the specific gravity of the sapwood of the different species was accomplished by: (1) Obtaining the oven dry weight of the one-inch blocks from the middle of the fifteen-inch test pieces, after 48 hours in the



Freas electric oven at 100 degrees C.; (2) the blocks were immersed for an instant in hot parafin for the purpose of waterproofing them; (3) the weight of the displaced water was obtained by immersing the blocks in water. A torsion balance weighing to the nearest tenth of a gram was used in this work. (4) The weight of the oven dry block was divided by the weight of the displaced water to obtain the specific gravity; (5) The final value was found by averaging four trial values.

The number of rings per inch was taken as an average of four counts. The texture of the wood was such that this average would be accurate enough for the purpose of the study.

### Conclusion of Laboratory Experiment

The spread and distribution of blue stain and the fruiting bodies on the four surfaces of the test sticks were recorded on a blank form drawn to full size scale for the four sides of the test stick. A ruler was placed beside the test sticks to facilitate this measurement. These records were made before the sticks were removed from the jars. The next step was to find the distribution of moisture at regular intervals along each stick, expressed in moisture per cent on the oven dry weight basis. This was accomplished by cutting the sticks into one inch blocks numbering the blocks and recording the numbers. Immediately on doing this the wet weight of each block was obtained on the torsion balance and the weights properly recorded. The blocks were placed in the Freas electric oven for 48 hours at 100 degrees C., weighed again at the end of this time, and the weights properly recorded. The moisture per cent contents of each block was computed by the means of the following formula:

$$\frac{W - D}{D} \times 100$$

Where W = the wet weight of the wood as removed from the jar and D = the oven dry weight of wood after 48 hours in the Freas electric oven at 100 degrees C. The moisture contents of the separate blocks of both the inoculated and the control test pieces were obtained in this manner for the different species. The results were entered in the form provided.

### Discussion

This investigation was made with the objective of obtaining information on some of

the fundamental factors which make it possible for blue staining organisms to develop in the sapwood of certain commercial timber species. It will be necessary to discuss these factors before practical control measures can be applied. Much more work will be necessary before definite conclusions can be drawn. However, the results of these preliminary tests are indicative of certain conditions favorable or unfavorable to the development of these fungi. In these tests only the upper point of maximum growth and upper point of inhibition of growth in relation to the moisture content (per cent of moisture in relation to oven dry weight basis) could be obtained. A method for controlling the moisture content must be devised for determining the minimum moisture content that would support growth, and to determine the lower moisture point at which growth was inhibited. It is probable that more uniform results would be obtained if each species of sapwood was inoculated with a blue stain organism which had grown in that particular species, and had later been isolated from it. This was the situation in the case of *Tilla glabra* inoculated with blue stain collected from the sapwood of *Liquidambar styraciflua*. The growth of the organism was retarded by the uneven temperature of the room in which the experiment was conducted. The temperature would fall each night as the heat was turned off each evening. This factor would have no effect, however, on the comparative results obtained.

The relation of the density of wood to the moisture content (expressed in per cent of water in relation to oven dry weight) favorable or unfavorable to the growth of the blue stain organisms was brought out rather vividly. The results show (Table 1) that the greater the density the less is the moisture content required at the point of maximum growth and at the point of inhibition of growth. This is explained in that the denser woods have thicker and heavier cell walls and smaller lumina and intercellular spaces. Even though there was present in the dense wood the same weight of water per unit of volume as compared to a less dense wood, the moisture per cent would be less. Also there must be present a certain amount of air for the best growth of these fungi. This would necessarily reduce the moisture content required for the inhibition and upper limit of growth in the case of the denser wood.



The data show (Table 1) that the inhibition point of growth for the fungi contained a higher moisture content than for the point maximum growth, by a range of eight to forty-six per cent of moisture content (oven dry weight basis). The average was twenty-five per cent of moisture content higher than the point of upper maximum growth. The moisture content at the point of inhibition of growth of these stain fungi is considerably higher in these tests than the moisture content of the green sapwood. For example, the moisture content of green sapwood of *Pinus ponderosa* is 157 per cent.<sup>1</sup> The average moisterable growth was 190 per cent (Table 1). Roth, in Timber Bulletin 10, U. S. Division of Forestry, gives 150 per cent of moisture content for the sapwood of green *Tilia glabra*. The staining fungus was able to grow when the moisture content was 220 per cent (Table 1). The relation, no doubt, holds for the other species.

*Pinus monticola* suffered a greater degree of staining than any of the species tested. The time required to reach a given degree of staining was less in the case of *Pinus monticola* than any of the species tested. The other species in the experiment had only a surface growth of the blue stain organism. On the other hand, *Pinus monticola* sapwood was stained to a depth of from 1-64 to 3-64 of an inch. This indicates that this species is very susceptible to attack and injury by the particular fungus used in the tests.

The experiments brought out the fact that frequent irregularities occur in the distribution of moisture content in a sapwood stick which has been placed with one end in water. This was especially true in the case of *Pinus ponderosa*. The fact that there was only surface discoloration of the test pieces except in *Pinus monticola* indicates that the moisture content of the inner portion of the wood just below the surface was too high for the penetration of the organisms.

Munch, in working with the sapwood of Scotch pine, found that there was no penetration and staining by the fungus (*Ceratostomella coerulea*) at 143 per cent of water above oven dry weight of wood, and at from 119 per cent to 78 per cent of moisture con-

tent there was little penetration and staining. He found that the optimum moisture per cent for growth ranged from 79 to 33 per cent of moisture content. Below 28 per cent there was very little staining of the wood.

The staining of *Pinus monticola* to a depth of 1-64 to 3-64 of an inch may be due to the fact that there was a lower moisture content in the outer layer of wood than would be indicated by the average figures of the moisture content of the block. The per cent of moisture certainly must have been very much higher than that of Scotch pine as determined by Munch.

### Summary

Under the particular conditions affecting this study and for the species used, the following is a summary of the results obtained.

1. The moisture content (per cent of oven dry weight of wood) of sapwood favorable or unfavorable for the growth of blue stain *Ceratostomella* sp. bears an inverse ratio to its density (Table 1).
2. The maximum moisture content at the points on the sticks where growth of the blue stain fungi was inhibited was found to be considerably higher than the points at which any considerable growth of the fungi took place.
3. The moisture contents inhibiting growth of blue stain fungi in the sapwood of the species tested is considerably higher than the moisture contents of the green sapwood at the time of felling.
4. *Pinus monticola* at the high moisture contents used offers less resistance to the invasion of blue stain *Ceratostomella* sp. than any species used in the tests.

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<sup>1</sup> Determined by E. E. Hubert. This is an average of twenty samples of *Pinus ponderosa* collected from the Boise region.

ture content of the test sticks for any consid-



## OUR ALUMNI

By EDWIN C. RETTIG '29

A toast delivered at the Annual Banquet of the Associated Foresters, March 7, 1928

(Mr. Rettig is an ideal example of the successful alumnus. Immediately upon graduating he associated himself with the Clearwater Timber Company, where, by his ability and industry, he has steadily advanced till he now occupies an influential position in the company affairs.—Ed.)

Your committee has asked that I say a few good words for the alumni. After scratching a few cobwebs away, I have taken as my topic what I consider the relationship and usefulness of the alumni to their Alma Mater, their undergraduate brethren, and to their country.

If I had the power to fathom the innermost thoughts of the undergraduates I am sure any number of them would be saying to themselves, "Of what use or benefit are the alumni to us? They are just some has-beens, spent four years at the university, probably flunked trig or chemistry the same as the rest of us, and now come back and try to pull the wool over our eyes with their tales of fictitious success."

I thoroughly agree as to the wool business, but I do hope I can convince you that your success in at least a small way is due to the success and accomplishments of the alumni and that you in turn will be responsible for the success of the students and graduates who are to follow.

The alumni, by their success, do far more to advertise their Alma Mater than any other medium. In my opinion, Yale and Michigan have achieved their success through their alumni, and not through advertising and their curricula. The former graduates have given such prestige to their schools that we are inclined to hold a Yale or Michigan man in awe, and feel that he is a step ahead of us.

However, as our school grows older and our alumni have had a chance to cope with the obstacles confronting them and have made good progress, they will in turn establish prestige for Idaho. Through this medium, they should bear close relationship to their school, as upon their success depends the success of the University, and through the same medium they have established their usefulness to the school.

Because of the now established prestige of the school, I am inclined to think that the students upon graduation will be farther ahead and much more in demand in their struggle

for success than the early graduates. I can remember when both graduates and undergraduates had considerable trouble in finding employment. The Forest Service, which now employs a large number of our graduates, at that time thought very little of Idaho men, due to the fact that the school was in its infancy and the Forest Service wanted men from well established schools with more prestige. Neither did private forestry at that time present a very wide or attractive field, hence the lumber companies did not call for many trained foresters. I might state that the Potlatch Lumber Company did place a few of the best of the early crop of foresters and also helped quite a number of others through school by giving them employment during the summer months, and in many ways helped materially in nursing the infant school to its present growth.

I have often heard Professor I. W. Cook, now of the University of Montana, but formerly of Idaho, say that during the early years of the School of Forestry Dean Shattuck and he heaved a great sigh of relief if they succeeded in placing three-fourths of all of the students in forestry work when fifteen or twenty students constituted the forestry School. Today, with its increased enrollment, I do not believe I am far wrong in stating that Dean Miller has far less trouble in placing his hundred men than Dean Shattuck his fifteen or twenty.

This change has come about through the prestige of the School and the combined efforts of all foresters who have now conclusively established a demand and market for their labors. With the many and varied problems confronting the lumber companies of today, trained men are becoming a necessity for the future well being of the industry. Certainly the alumni should be given some credit for the advancement of forestry and the demand they have partially created for forestry graduates.

Last, but not least, I desire to say a few words relative to the relationship of forest-



ers and forestry to our country. I was allotted only ten minutes for my toast, hence I shall be brief on this most vital point. Had it not been for the greatest forester of all time, who planted our trees in the beginning, America might still be undiscovered, as Columbus did not sail to America in a big steel ocean liner, and had it not been for our American forests he might not have reached his home to tell his story as I believe he made new spars for some of his vessels while visiting near our shores.

Forests again played a very important part in the settlement and development of our country and even today it is helping to provide an education for all, build good roads, make municipal improvements, furnish outdoor recreation, extend the railroads, furnish employment to millions of people, act as a reservoir for water which irrigates millions of acres of land, and last, but not least, the forests provide the material for the homes of the great majority of people.

Foresters have many problems to solve that are of nation-wide importance. Such matters as sustained yield, flood control, water shed protection, range management, tree diseases, insect depredations, fire protection, and forest taxation are problems of national interest that foresters must help to solve.

As a closing remark and thought to leave with you, I am wondering if there is not a relationship between the increase in the number of technical foresters and the decrease in the forested area.

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#### IDAHO FOREST EXPERIMENT STATION

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(Continued from Page 13)

done in the way of research calculated to safeguard these resources. There are few large industrial concerns today in other lines that do not maintain well organized research departments. American agriculture owes its world leadership to the research which the agricultural experiment stations have made possible.

Forest experiment stations abroad have been established generally in the last half century, and they are already giving the countries maintaining them a sound forestry practice. The United States is only now getting

this phase of the forestry program under way. Eleven government forest experiment stations are now established in different sections of the country. But federal effort must be supplemented by that of other agencies, and of the latter none are better calculated to take the lead than the forest schools. A few schools have already established forest experiment stations, notably Yale, Harvard, and Minnesota, hence the recent action of the University of Idaho in creating the Idaho Forest Experiment Station is timely and in line with the trend. Its work is a large one, as the problems pressing for solution are many and important.

#### Current Projects

The Forest Experiment Station starts out with an initial program consisting of some thirty projects, the most of them taken over from the School of Forestry. Among the more important of these are: Studies of Inland Empire Ribes in relations to blister rust control (under way two years); forest management as a method of blister rust control; a study of the efficiency of chemical end coatings of logs left in the woods or stored; the cause and prevention of sap stain in lumber; studies on the decay resistance (durability) of native woods; studies on the toxicity of the water soluble extractives and on the effect of kiln drying on the durability of *Pinus ponderosa* heartwood and sapwood; studies of the rots found in wood products, such as sash, doors, screen frames, etc.; utilization of little used species; factors influencing the movement of moisture in wood; the diagnostic characteristics of the woods of the species of the genus *Abies*; studies in the rate of growth and future yields of western white pine which has come in on old burns in northern Idaho (under way four years); the effect of logging on the growth and form of residual species in the western white pine type of Idaho (under way four years); the effect of logging on the growth and form of residual western red cedar in northern Idaho; basic studies for empirical yield tables and for determining the marginal diameter limit for cutting; studies in rate of growth and yield of residual western yellow pine; a study to determine the influence of windbreaks on the growth and yield of farm and orchard crops.



## CO-OPERATIVE WORK WITH THE STATE DEPARTMENT OF VOCATIONAL EDUCATION

During the past year, the School of Forestry has again entered the field of extension education in the lumber mills. In co-operation with the State Department of Vocational Education, the School has given direct aid in conducting a certain number of the classes held at lumber mills in the Idaho region.

Classes in seasoning of lumber and in the properties and uses of wood were conducted at the Edward Rutledge Timber Company's mill at Coeur d'Alene. Instruction on these subjects and on the problems of sap stain and decay was given the millmen by Dr. E. E. Hubert, of the School staff. Similar work was carried on at the Clearwater Timber Company's mill at Lewiston by Dr. Hubert. A complete course in seasoning and in the properties and uses of wood was given. The re-

sults were very gratifying and keen interest was shown in the discussion of the principal mill problems dealing with the seasoning of wood and the prevention of defects. As many as fifty employees were assembled at some of these classes.

A series of talks on stain and decay defects was given by Dr. Hubert before the class in scaling held at Potlatch, Idaho, in November, 1927. This course was attended by scalers from various lumber companies, from the Forest Service, and from the Northern Pacific Railway. The course was in direct charge of C. E. Knouf, who is head scaler for the Weyerhaeuser companies. The scaling course, as well as the other courses mentioned were all organized by Mr. N. B. Giles, Supervisor of Vocational Education.

## TWENTY-FIFTH YEAR IN FORESTRY FOR DEAN MILLER

The Rocky Mountain Section of the Society of American Foresters fittingly celebrated the completion of twenty-five successful years which Dean F. G. Miller has so unstintingly given to the profession, by gathering at a surprise banquet at the Elk's temple in Moscow to commemorate this silver anniversary.

The State Commissioner of Education, W. D. Vincent, was toastmaster and among the able speakers were found Ben E. Bush, Idaho State Forester; W. D. Humiston, Assistant General Manager of the Potlatch Lumber Company; Stanley A. Easton of Kellogg, one of the University Regents; Melvin Bradner, Missoula, Assistant District Forester in charge of Forest Products; and Arlie Decker, '13, Potlatch Lumber Company. Dr. E. E. Hubert presented the Dean with a scrap book containing congratulatory letters and telegrams received from foresters from all parts of the country, many of whom were Dean Miller's classmates at Yale. Generous praise was given the honor guest for his good work as a forester, educator, and scholar during his twenty-five years of active service to the profession.

In the course of the after dinner speaking, it was disclosed that Dean Miller received his degree of Master of Forestry from Yale in 1903, after having received his B. Ph. degree

from the State University of Iowa in 1903, and his B. S. in Agriculture from Iowa State College in 1901. He was made Professor of Forestry at the University of Nebraska in 1903, directly after his graduation and remained at that institution until 1907 when the call of the west became too strong for him and he accepted the Deanship of the School of Forestry at the University of Washington at Seattle, where he remained until 1912. He then left his chosen profession for a short time to reenter it in 1915 as Professor and Head of the Department of Forestry at Washington State College at Pullman, where he remained until 1917, in which year he accepted the Deanship of the School of Forestry at the University of Idaho.

After the formal addresses were given, the Dean was called upon to say a few words and his usual wit was found to be up to the occasion when he remarked that "Like the time Bre'r Rabbit fell into the honey, it will take me a long time to lick this all off".

Dean Miller, however, has made for himself an enviable reputation among foresters, worthy of emulation by men desiring to advance and do the best for their chosen profession. He is now widely known throughout the United States and his honest efforts have placed his pride, the School of Forestry of the Uni-



versity of Idaho, among the recognized leaders of American forestry education.

The alumni present at the banquet were as follows:

Arlie D. Decker, '13	Arthur M. Sowder, '27
Walter D. Fields, '26	Arlie W. Toole, '27
Edwin C. Rettig, '19	Fairly W. Wa'rath, '27
Harold Z. White, '26	

### QUALITIES REQUIRED BY FOREST SERVICE

(Continued from Page 17)

you can figure out for yourself problems on the ground and know where to go to find the answers to innumerable questions which will come up to you in every varying form. I agree absolutely with a statement which Dean Miller once made to me in reply to a question which I asked him when he said "We bend every effort to teaching forestry". Remember that statement whether you get the full import of it now or not. As the years go by I believe it will mean a lot to you.

Another thing which the Forest Service wants you to have is an appreciation of the fact that when you finish school it is commencement for you. Once in a while we get a lad who figures that when he has finished school he has learned forestry; that he knows enough about it so that he can quit studying. Such, of course, is never the case. It is an old saw that never stands still; one must either go ahead or backward. To be successful it is necessary to keep studying to keep up with the procession. I would therefore put down as one of the qualities, the willingness to study, to specialize and the courage to continue. Another thing that ties in very closely with this same idea and a thing that the Service wants on the part of the men who come from the forest schools is a realization that the "old timer" in the Service has a lot to give you and is perfectly willing to trade his experience gained in the field for your experience gained in the class room. I have yet to find the old timer who is not perfectly willing to give all the help which he possibly can to the man from school who lets him know that he wants his help and who also lets him know that he does not believe that he knows it all.

Another quality which the Forest Service wants in its men is initiative. It wants independence of thought; the willingness to take a chance and go ahead on new work. Mistakes are expected; use your very best care-

ful judgment, surely, but go ahead and try things out. Try hard not to make the same mistake twice but for goodness sake go ahead and do something.

In our game as well as in any other it is necessary, of course, to accept responsibility for your acts and work. We want you to stand squarely on your own feet; we do not want you to hedge or cover.

We want you to have a pride in your profession as well as a pride in yourself. Time was when it was not uncommon to caution the men assigned to the Forest Service from the forest school to forget as quickly as they could the things they had learned in school. That was many years ago. It is not the case any more. We have come to the understanding that forestry as a profession is just as much a profession to be proud of as any other profession, that forestry is just as vital to the welfare of humanity as law or medicine or architecture. And so I say we do not want self-pity, but we do want you to have pride in yourself and pride in your profession. I expect you know now the reason why I said in the beginning that the qualities which the Forest Service require in its men are the same as those that any other employer requires in his men.

### OUR STATE FOREST LANDS

(Continued from Page 6)

sawmills, we shall see the country dotted with chemical plants and other industries and the resulting flow of outside money will add immeasurably to our prosperity.

Idaho's timber is the greatest factor in the ultimate general prosperity of the state and the great resource behind penal, charitable and educational institutions. We are not going to let it burn nor will we permit its ruthless exploitation.

Idaho put no restrictions on methods of cutting timber in state sales prior to 1919 but at that time the State Board of Land Commissioners established the policy of selling timber with certain reservations. The principal feature of this policy was reserving the immature trees on sale areas and requiring purchaser to pile and burn the brush in such a way as not to fire kill the young timber remaining. In no case now will the state include in a sale any pine under fourteen inches in diameter or any cedar poles under twelve inches in diameter, these two being of chief



value for deforesting, and all sizes of other species of timber are allowed to be cut. However, in the case of the other species there is a large number of trees left which are thoroughly protected by having the brush carefully disposed of. We have found that this leaves a nice stand of immature timber after the merchantable trees have been removed, and in some cases there will be an-

hemlock to be removed by the operator, sometimes at a loss.

Some of the private operators are also making certain reservations in their cuttings on their own lands.

In the adoption of this policy in 1919 by the State quite a number of the operators objected to these restrictions, but at the pres-

When Idaho became a state, the Federal

#### Sales of State Timber by Counties from 1891 to 1919 and from 1919 to 1928

COUNTY	1891 to 1919		1919 to 1928*	
	Acres	Amount	Acres	Amount
Adams .....	520.00	\$ 16,597.00	80.00	\$ 5,780.00
Bannock .....			160.00	120.00
Benewah .....	280.00	6,051.50	2,739.94	99,373.75
Blaine .....			40.00	
Boise .....	45,703.90	295,313.01	1,328.13	16,777.00
Bonner .....	14,255.87	247,276.30	17,564.24	1,083,049.97
Boundary .....			2,320.00	64,866.25
Clearwater .....	1,467.75	45,388.00	12,108.00	845,537.75
Fremont .....			480.00	4,253.00
Idaho .....	490.80	8,045.40	520.00	11,500.00
Kootenai .....	43,725.88	461,181.47	4,444.42	128,012.50
Latah .....	51,672.08	310,438.30	480.00	8,395.00
Lewis .....	520.00	1,900.00		
Nez Perce .....	4,520.81	7,423.25		
Shoshone .....	36,625.23	178,538.75	4,857.50	211,951.25
Valley .....	3,160.00	21,083.00	5,453.33	38,173.85
Washington .....	1,229.87	20,105.00		
<b>TOTALS .....</b>	<b>204,172.19</b>	<b>\$1,619,340.48</b>	<b>53,695.56</b>	<b>\$2,517,940.32</b>

\*The period from 1918 to 1928 includes the period up to May 1, 1928.

#### Recapitulation of Timber Sales—1891-1928

Sales by Periods	Acres	Amount
Total Timber Sales 1891-1919 (28 Years).....	204,172.19	\$1,619,340.48
Total Timber Sales 1919-1928 ( 9 Years).....	53,695.56	2,517,940.32
<b>Grand Total 1891-1928 (37 Years).....</b>	<b>257,867.75</b>	<b>\$4,137,280.80</b>

other commercial crop in from thirty to fifty years.

In all timber sales the state reserves the lands with the immature growth and requires the purchaser to remove the timber purchased by him in a specified time, after which the lands revert to the state in an ideal condition for reforestation.

The United States Forest Service is going even further in this matter than the State of Idaho and is emphasizing the growing of white pine to the extent of requiring all inferior species in the way of larch, fir, and

Government made certain grants of land. Among these were two designated sections in each township for the common schools, providing title had not already passed. This ent time we are getting excellent results.

The following tables show the timber sold by the state prior to 1919, before the present methods were adopted, and the sale of timber since their adoption.

amounts in round numbers to three million acres. In addition to this certain grants for other institutions were also made. The following table shows the acres by grants:



	Grant Acres
Scientific School.....	100,000
Public Buildings.....	32,000
Normal School.....	100,000
Agricultural College.....	90,000
Charitable Institutions.....	150,000
Insane Asylum.....	50,000
Penitentiary.....	50,000
University (State).....	50,000
Public School.....	2,873,241
<b>TOTAL</b> .....	<b>3,495,241</b>

### THE BLISTER RUST SITUATION

(Continued from Page 15)

od of forest management adopted by the owner of the timberland would be a determining factor in his decision to apply control measures. An owner who is cutting everything merchantable with no intention of returning for a second crop and who has but a ten year cut of mature timber ahead of him cannot be expected to invest money in blister rust control. That he will have to suffer some loss is inevitable, the extent of damage depending upon a number of factors. On the other hand an area representing several year's cut and where continuous production of white pine timber is the goal cannot be neglected—control measures must be applied if the white pine is to be grown permanently.

Local control, which is based upon the inability of the rust to spread from Ribes to pine for more than a relatively short distance, was developed in the eastern part of the United States. It has been in use there sufficiently long to justify its adoption. In the eastern states over 800,000 acres are annually being placed under protection by this method and during the past ten years more than six million acres of white pine land have been cleared of Ribes. The method consists of the removal by pulling or by the use of chemical sprays of the Ribes growing within 900 feet of pine stands. In more open pine stands a second removal is necessary in the sixth or seventh year following the first. Where the stands are dense, the first removal of Ribes suffices for a much longer period and in many cases needs no further eradication until fire and logging change the nature of the stand and cause the return of the currants and gooseberries.

The plan of applying this method in the Inland Empire region as outlined by the Spokane

office of Blister Rust control includes the following steps:

1. Ribes eradication and re-eradication in the stream type before heavy damage results.
2. Ribes eradication in those reproduction stands which will suffer damage before Ribes are naturally eliminated by dense forest growth.
3. Ribes eradication in maturing stands that are in danger of serious damage.

It is believed that the stream type represents our greatest rust hazard in Idaho and, therefore, needs our immediate attention. That sugar pine regions differing greatly from the north Idaho areas, cannot be handled under such a plan is obvious and methods of attack to meet the local conditions must be developed.

As I see it, the problem of control is of such a magnitude and involves such a complexity of factors that nothing but a uniform control plan applied to the entire white pine area as a unit can ever bring about the measure of control that is essential for protection. As a part of such a plan, there is every reason to believe that proper methods of forest management will plan an important part in the successful control of white pine blister rust.

### What the Boys Will Be Doing

Anderson, Bernard A. "Andy" will be with the Blister Rust this summer. His address is 618 Realty Building, Spokane, Washington.

Axtell, Donald H. Ecology experimental work for the Blister Rust. 618 Realty Building, Spokane, Washington.

Balch, A. Prentice. Blister Rust reconnaissance. 618 Realty Building, Spokane, Washington.

Beckwith, Samuel C. Mountain Home, Idaho c-o R. W. Beckwith.

Biker, John B. c-o Harry C. McAllister, Wallace, Idaho.

Brown, Harold G. Trail crew, Kaniksu National Forest, Port Townsend, Wn.

Euchanan, T. Stewart. Blister Rust. Plant Pathology Office, New Post Office Building, Portland, Oregon.

Burton, C. Leslie. Lookout, Idaho National Forest, South Fork Ranger Station, McCall, Idaho.

Connaughton, Charles A. Cruising on Boise

(Continued on Page 60)



## THE FORESTERS' EXHIBIT

THORNTON G. TAYLOR  
Assistant Professor of Forestry

The Foresters' Exhibit was one of the outstanding and most popular displays shown on Engineers' Day, which was held this year on May 4. The combined displays of the foresters, engineers, and miners drew a particularly large and interested crowd for the second occurrence of this biennial affair.

The foresters' exhibits were located on the grounds just east of the U-Hut and inside the U-Hut. Of our many exhibits, one which attracted a great deal of attention was the Model Forest. A miniature forest area was laid out on which was shown different age

ping contests. These exhibitions of speed and skill drew a large number of interested spectators. Prizes for both contests were furnished, the saws for the log sawing contest being donated by the Simmonds Saw and Steel Company of Spokane, while a four-pound axe was given to the winner of the log chopping contest by Collins and Orland of Moscow.

The Pacific Marine Fire Pump was one of the champion noise makers of the whole show, running the stamp mill a close second. The remainder of the outside exhibits included an Osborne fire finder, a smoke chaser's equip-



Model Forest

classes of timber, a burn, a newly cut-over area showing brush piling, a lookout cabin, a trail, a ranger station and pasture, a lake, a high lead unit, a dam and a flume. To add to its attractiveness, water was furnished so that the streams might appear natural and so that the flume might be seen in operation.

Two contests were arranged on the grounds of the U-Hut—the log sawing and log chop-

ping contests. These exhibitions of speed and skill drew a large number of interested spectators. Prizes for both contests were furnished, the saws for the log sawing contest being donated by the Simmonds Saw and Steel Company of Spokane, while a four-pound axe was given to the winner of the log chopping contest by Collins and Orland of Moscow.

The exhibits inside the U-Hut were also varied and of general appeal. A transparency backed by electric lights depicted an exceptionally real interpretation of a forest fire.





There was a guessing contest as to the age of a section of white pine trunk, in which 534 people participated. Silk hose were given by Davids of Moscow for the man and woman guessing the correct age. The guesses ranged from 10 to 6754 years. The exact age was 235 years and this was the age given in two guesses.

Several exhibits as wood technology, forest products, and dendrology were grouped together. Here the log men could observe through a demonstration microscope the structure of wood. The Potlatch and Standard Lumber Companies furnished specimens of their various products and here also we find the lignun vitae and balsam wood for the spectators to lift and exclaim over. Representative samples of Idaho conifers, framed and showing twig specimens, seeds, fruit, and pictures of the general appearance of these trees in the woods were found. Jeff, the digger pine cone, and Mutt the redwood cone were also on display.

Many of our visitors were interested in finding out how tree measurements were taken and the general processes of map making. The mensuration exhibit, therefore, had several trees painted on a long strip of paper tacked to a wall and methods of obtaining heights were demonstrated. The various instruments used in cruising and mapping were displayed and the use of some of them shown through the medium of a log.

The blister rust display made up of beauti-

fully colored enlargements and preserved specimens brought home to the visitors the importance of protecting our forests from the dread ravages of the white pine blister rust. One of the features of this display was a model forest in a bottle constructed by and loaned through the kindness of Ranger Daughs of Princeton.

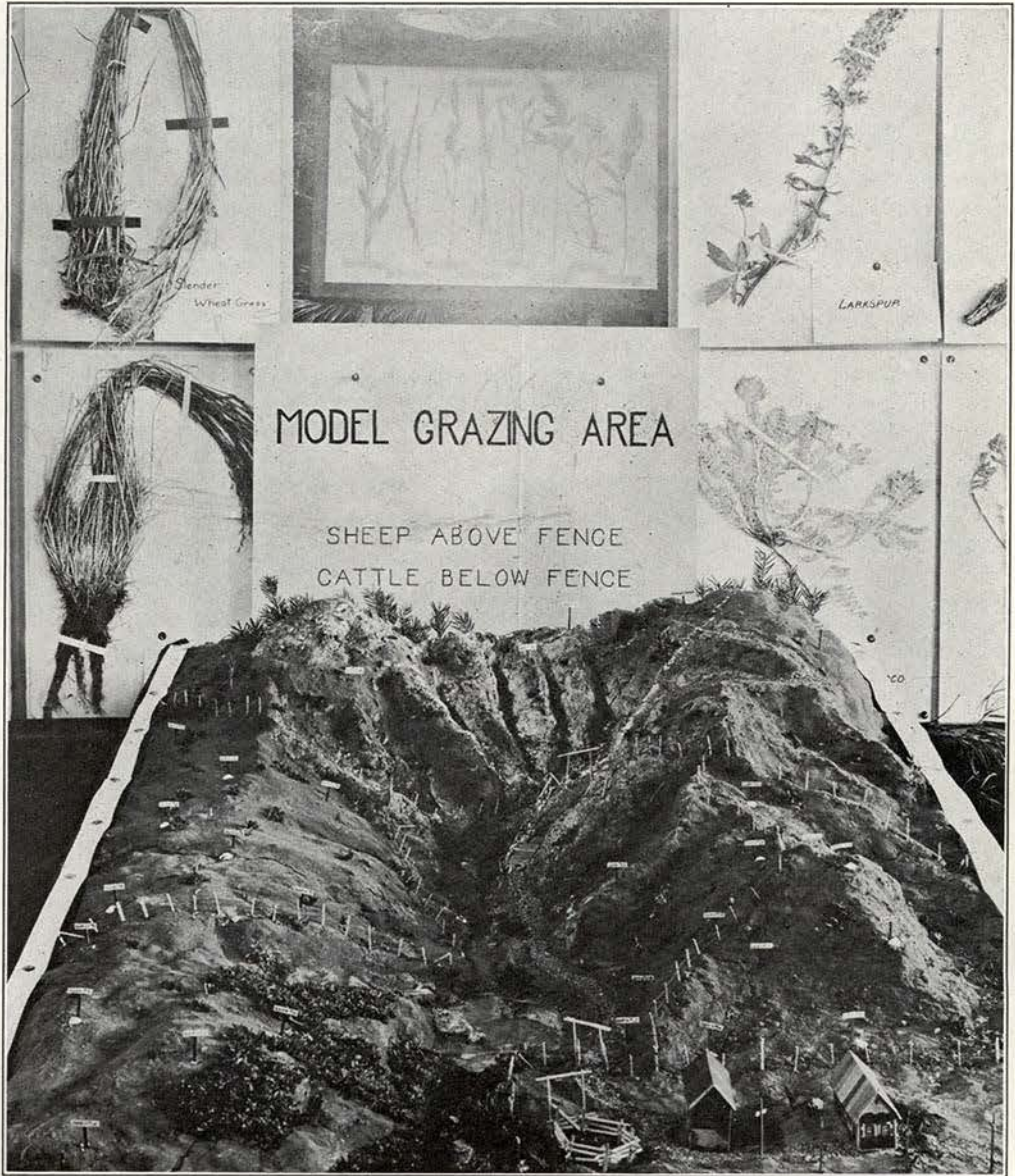
The last of the displays was the range management exhibit. Here, we find a Model Grazing Area constructed from clay showing one sheep and one cattle allotment and other necessary features included. Flanking this miniature grazing area were displays showing on one side a few of the plants poisonous to livestock and on the other side important forage grasses.

All the various exhibits were explained and questions were answered on all forestry subjects. It may be seen that a good deal of work and material were necessary to make these displays a success, and credit should be given to the student body of the Forest School and our friends who furnished a large amount of the exhibit material.

#### ASSOCIATED FORESTERS ELECT

At the last meeting of the year, May 17, the Associated Foresters elected officers for the ensuing year as follows: Fred H. Kennedy, Dubois, Idaho, president; William T. Krummes, Boise, Idaho, vice-president; George V. Hjort, Kooskia, Idaho, secretary-treasurer; and Howard J. Sargeant, Granger, Washington, publicity agent.





Ranger Management Exhibit at Engineers' Show

### Foresters, A Cosmopolitan Group

The student body of the School of Forestry is notable for its geographical distribution. Twenty-one states and three foreign countries are represented in the enrollment for the year of 1927 and 1928. Thirty-nine are from Idaho, twenty-two from Washington, eight from California, seven from Illinois, five from Canada,

four from Oregon four from New York, three from Montana, and and three from Ohio.

Other states and countries represented by one or two students are: Delaware, Iowa, Kansas, Minnesota, New Jersey, North Dakota, Pennsylvania, Rhode Island, Texas, Utah, Wisconsin, Colorado, Wyoming, Philippine Islands and Russia.



## AMERICAN FORESTERS MEET AT UNIVERSITY

A. M. SOWDER, '27

Extension Forester for Idaho

The Northern Rocky Mountain Section of the Society of American Foresters held its first Moscow meeting in Morrill Hall, University of Idaho, March 10, 1928. The meeting was called to order by Dean F. G. Miller, of the Idaho School of Forestry, who welcomed the members and guests to the University, and introduced Mr. Wilfred W. White, U. S. Forest Service, Missoula, Montana, who presided. The committee in charge of the meeting consisted of Dean F. G. Miller, Chairman; C. K. McHarg, and A. A. Segersten.

There were present at the meeting seven lumbermen, fifteen members of the U. S. Forest Service, including representatives from the Selway, Idaho, St. Joe, and Clearwater National Forests, and from the Missoula and Ogden Offices, seven from the Forest School faculty, five from the Office of Blister Rust Control at Spokane, the State Forester and two assistants, and twenty-seven forestry students from Idaho and W. S. C., making a total of sixty-four.

The first paper on the program was entitled "Blister Rust and Its Relation to Forest Management", by Dr. E. E. Hubert of the Idaho School of Forestry.

Mr. C. C. Strong, Assistant Forester, Office of White Pine Blister Rust Control, Spokane, read a paper on "The Application of Blister Rust Control in the Inland Empire".

The third paper on the afternoon program was by Mr. W. W. White, the subject being "Is White Pine Essential to Forestry in the Inland Empire". A general discussion followed the reading of each paper.

Mr. Strong then showed a series of lantern slides pertaining to white pine blister rust.

A dinner was held at the Moscow Hotel at 6:00 P. M., with an attendance of thirty. Entertainment was furnished by the University of Idaho male quartet.

Evening Session: Meeting called to order by Chairman W. W. White at Dean F. G. Miller's home, Moscow, 8:00 P. M. Thirty-five were present.

Motion made, seconded, and passed that a committee of three be elected to arrange for similar meetings for the coming year. The following were chosen as the committee: E. E. Hubert, C. K. McHarg and Jesse L. Bedwell.

Chairman White introduced Mr. W. D. Humiston, of the Potlatch Lumber Company as the first speaker of the evening. His paper was entitled "Utilization of Wood Waste—The Need". This is published elsewhere in this issue.

The subject of the second paper for the evening session was "Possibilities in the Reduction and Utilization of Wood Waste", by Melvin Bradner, which in his absence, was read by E. G. Wiesehuegel.

Harry I. Nettleton, of the Idaho Forest School faculty, then gave a progress report on the "Importance and Value of White Pine Residual Stands".

A lively discussion followed the reading of these three papers, participated in by R. H. Rutledge, E. E. Hubert, E. H. Myrick, A. D. Decker, Roy A. Phillips, and others, at the conclusion of which Mrs. Miller served refreshments.

## XI SIGMA PI

WALLACE M. SALING, '28

Xi Sigma Pi, national honorary fraternity, was organized as a local society at the University of Washington in 1908. The objects of the fraternity are to secure and maintain a high standard of scholarship in forest education, to work for the up-building of the profession of forestry and to promote fraternal relations among earnest workers engaged in forest activities.

A new constitution with a broader field was drawn up in 1915 and the fraternity became a national organization. Since 1915 eight other chapters have been installed at prominent forest schools throughout the United States. These are Alpha chapter, University of Washington, Seattle, Washington, 1908; Beta chapter, Michigan Agricultural College, East Lansing, Michigan, 1916; Gamma chapter, Univer-



sity of Maine, Orono, Maine, 1917; Delta chapter, University of Minnesota, St. Paul, Minnesota, 1920; Epsilon chapter, University of Idaho, Moscow, Idaho, 1920; Zeta chapter, Oregon Agricultural College, Corvallis, Oregon, 1921; Eta chapter, Pennsylvania State College, State College, Pennsylvania, 1924; Theta chapter, University of California, Berkeley, California, 1925; and Iota chapter, Pennsylvania State Forest School, Mont Alto, Pennsylvania, 1927. The Epsilon chapter, Idaho, started with a membership of seven, two members of the faculty and five students. The increase in interest has been growing and the members are aggressively active.

To be eligible for membership in Xi Sigma Pi, a student must have completed two and one-half years of standard college work in an approved school of forestry. Three-fourths of his grades shall have been above 80%, and he shall have received no failures in forestry subjects. He shall also have shown creditable interest and activity in practical forestry work. Scholastic standing in forestry is not the only aim of the fraternity, as it wants to stimulate and increase the activities and interest of the undergraduates in all matters dealing with forestry.

Soon after its establishment the Idaho chapter of Xi Sigma Pi inaugurated a movement to stimulate scholarship in forestry education. As a result, the chapter purchased an attractively designed bronze tablet, upon which are engraved each year the names of the students attaining the highest average in each class for the year. This tablet is placed on the walls of the main floor of the Administration building, and the honor of having one's name upon it acts as a beacon throughout the four years.

Those students who have so far reached the goal are as follows:

1922—James W. Farrel, senior; Russell M. Parsons, junior; Arthur M. Sowder, sophomore; Paul M. Harlan, freshman.

1923—Albert S. Daniels, senior; Ralph S. Space, junior; Paul M. Harlan, sophomore; Floyd W. Godden, freshman.

1924—Rogers G. Wheaton, senior; Robert P. McLaughlin, junior; Floyd W. Godden, sophomore; Henry C. Hoffman, freshman.

1925—Ralph S. Space, senior; Warren H. Bolles, junior; Galen W. Pike, sophomore; William W. Mitchell, freshman.

1926—Warren H. Bolles, senior; Galen W. Pike, junior; Charles A. Connaughton, sophomore; George J. Illichevsky, freshman.

1927—Arlie W. Toole, senior; Charles A. Connaughton, junior; George J. Illichevsky, sophomore; William T. Krummes, freshman.

When prominent foresters visit the campus it has been the custom of the fraternity to have a luncheon followed by informal talks. This has not only served to get the men together in a social way, but they have always been given a message full of helpful pointers on matters of forestry.

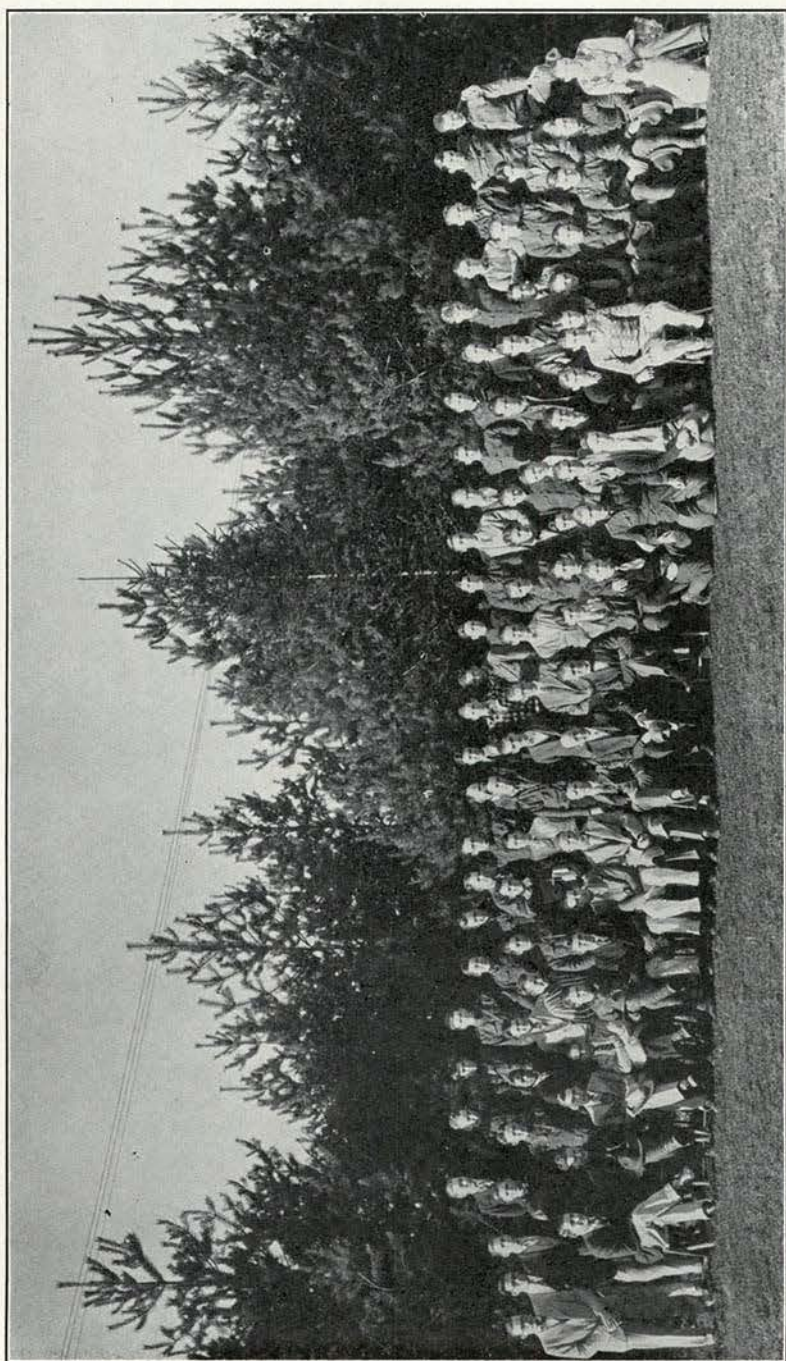
The officers of Epsilon chapter for the past year just closing are: Wallace M. Saling, Forester; Charles A. Connaughton, Associate Forester; Allan R. Cochran, Secretary-Fiscal Agent; and William W. Mitchell, Ranger.



Members and Pledges  
of  
Xi Sigma Pi

The new pledges this year are George J. Illichevsky, '28; Prentice Balch, '29; E. Gordon Ellis, '28; Robert Davis, '28; and Erwin G. Wiesehuegal, Instructor. The fellows appeared on the campus Wednesday morning, May 9th wearing their wood's clothes and pinned on the back of their shirts was a large Forest Service fire prevention sign. During the fore-noon they carried some appropriate forester's tool. They served an excellent feast to the members at noon, in the arboretum. Initiation was completed at four o'clock and every one journeyed to the Blue Bucket, at six, for the initiation banquet. A short business meeting after the banquet was very successful. Prentice Balch was elected forester and George J. Illichevsky, secretary-fiscal agent, for the coming year.





Associated Foresters, 1927-28



## THE ASSOCIATED FORESTERS

By CHARLES A. GREGORY, '28, President

The evolution of our present day organizations had its beginning in early man who was a very primitive creature. He inhabited most of the favorable regions of the earth, and in his wanderings in search of food he rarely came in contact with others of his kind. His neighbors were few and far between and since the gregarious instinct was not highly developed, he operated largely as an individual and killed his own food, though it was a difficult and dangerous task. But he early realized, when population began to increase, that two or more individuals by co-operation could kill a beast with less danger and difficulty. So it was natural that he began to live with others to protect himself from his enemies.

The size of these groups increased with the population at first into tribes, later into societies, and now into nations. Thus it will be seen that it was not only due to the greater development of the gregarious instinct, but also to the interests which they had in common that brought about organization.

Aside from the obtainment of the necessities of life, they also began to provide for their entertainment. Those who enjoyed certain things in common naturally formed minor groups within the larger ones.

To this we may liken our organization, as being within the larger group, the University. We are one of the many organizations on the campus, each of which is the result of com-

mon interests among individuals. We, The Associated Foresters, are banded together primarily because we are interested in a profession common to us all—forestry, but if that were the only reason, the organization would not be justified. There are other reasons.

Of all the other organizations on the campus, we are perhaps the most cosmopolitan. We have a greater number of states represented as well as a greater geographical distribution. This is fortunate, since our profession is a national one and requires a knowledge of conditions not only in our own region but in others in order that we may keep in mind the scope of our problems. From these men who come from states other than our own we can become acquainted with the practices and conditions in regions unfamiliar to us.

The privilege of expressing our ideas to promote a closer fellowship and to offer constructive criticism is afforded us in meetings. We can then come in contact with the faculty which is willing to listen and assist in making our four year visit as smooth as possible.

But if we confined ourselves wholly to technical matters the purpose of this organization would in a large measure be defeated. To break the monotony of the routine class work, we hold programs among ourselves, prominent lumbermen and foresters are invited in to address us from time to time, and special events are staged on occasion.

## SOCIETY

By C. N. TAYLOR, '30

First on the Club's social calendar, and outstanding in the social events of the University of Idaho, was the foresters' dance. This fall the foresters responded nob'y, and turned out in full force to decorate. Extensive thinning was done in the arboretum and outlying woods and the trees therefrom were used to make a model forest of the gymnasium. The effect of artificial light on the hanging roof of the boughs and on the walls of standing trees, together with the scent of freshly cut fir, pine, and cedar was indeed very pleasing. An eight-piece orchestra was screened off in a sylvan glen, and a refreshment booth in another. Quite at home in the forest greenery,

the foresters danced, and when tired sought out chairs hidden in the deep shade of evergreens.

Second on the Club's social calendar was the foresters' smoker. Finding themselves unable to live forever in the more or less dignified mien of the student, the foresters feel each year that they have to "let off steam", to let themselves go for once. Here is their big chance. Last winter the U-Hut was booked, mats and boxing gloves were provided, and everyone came with the idea of having a good time. They did! The seniors, juniors, sophomores, and freshmen put forth a play, each class endeavoring to out-do the other. Box-



ing and wrestling matches were fought with the usual "vim and gusto" of the forester. An unusual and very amusing event on the program was a boxing match on roller skates. Intermingled with the more strenuous events, musical selections on fiddle, banjo, mouth-organ, and sundry other instruments, were given by members of the Club. To cap the evening, hot-dogs, doughnuts, apples, and smokes were put out by the dozen. The concensus of opinion was that a smoker every week would not be unwe'lcome.

One of the most elaborate affairs staged by the Club was the annual banquet. The twelfth annual banquet of the Associated Foresters was held in the special "Varsity Banquet Room" of the Hotel Moscow, March 7, 1928. A fuller write-up of this affair appears elsewhere in these columns.

Another annual event is the foresters' barbecue. This is held early in the summer, a

few weeks before the final examinations. The foresters are packed into cars and whisked away to the woods where they can shake off the atmosphere of books and can compete with each other in such arts as log-rolling, sawing, and axemanship. When the shadows begin to close, the gang gathers round the campfire and partakes of a feast, a true lumberman's meal which hits a weak spot in the human anatomy, a spot which hasn't been hit for nine long months.

This closes the social calendar of the Associated Foresters. These four major events, the dance, smoker, banquet, and barbecue, imprint themselves firmly in the minds of the members of the Club. To the graduates and alumni, these events bring fond memories of the years they spent at their alma mater; to the undergraduate, the happy thought that student life is decidedly not "all work and no pay".

## TWELFTH ANNUAL BANQUET

By HARRY I. NETTLETON  
Instructor in Forestry

One hundred twelve members, alumni, and guests of the Associated Foresters attended the twelfth annual banquet held the evening of March 7 at the Hotel Moscow.

The problems, responsibilities, and opportunities of the professional forester, the forest school and its graduates provided the key notes to a happy blend of instructive and mirth provoking series of after dinner addresses.

Mr. E. G. Wiesehuegel, of the Forest School faculty, presided as toastmaster. He introduced, as the first speaker of the evening, Mr. R. H. Rutledge, District Forester of District 4, United States Forest Service, Ogden, Utah. Mr. Rutledge spoke on "The New United States Forester", outlining some of the nationwide problems which will meet and test the new Chief Forester, Mr. Robert Y. Stuart, successor to W. B. Greeley. In addition to the flood problems of the Mississippi valley, Mr. Rutledge especially emphasized the three problems of timber taxation, public relations, and the handling of cut-over land.

Mr. L. F. Parsons, Executive Secretary and Comptroller of the University, outlined the responsibilities and opportunities of the Idaho Forest School in the recent establishment of the new Forest Experiment Station. Mr. Parsons pointed out that this station was estab-

lished in recognition of past service by the school and of the importance of scientific forestry in the present day problems of the timber industry. The speaker stressed the fact that while mining, agriculture, and allied industries have fully recognized the importance of research in their development, the timber industry has but lately awakened to a like need within its own ranks, especially as regards closer utilization, new uses of wood, and the competition of substitutes.

In addition to this opportunity for service within the timber industry, Mr. Parsons emphasized the chance for closer co-operation with the State Forester in the solving of state problems, and with the Forest Service in its problems.

Reverend Marshall Wingfield, pastor of the Christian Church, added spice to the occasion by his opening and pungent comments on the previous speeches. He then spoke of his boyhood and foreign experiences in forests at home and abroad, stressing the influence of forests in developing unselfishness, courage, and strength of conviction in those who dwell in the open and silent places.

Mr. Earl David discussed the rapid development and use of rayon silk, which is a by-product of spruce wood. He traced briefly the



rapid development of this industry, stating that it has already come to play a large part in the manufacture of clothing in this country. He added that this was only a hint of the possible by-products we shall shortly be deriving from wood.

Charles A. Gregory, president of the Associated Foresters, gave a snappy talk on the technical and social reasons for the development and existence of the Forest Club.

Mr. E. C. Rettig, of the Clearwater Timber Company, and an alumnus of the Idaho Forest School, outlined the part played by successful alumni in helping to develop and sustain the prestige of their Alma Mater and thus indirectly aid the later graduates in securing positions after leaving school.

General sidelights on the relationship of liberal arts and technology were given by Mr. Geoffrey Coope, instructor in English. Mr. Coope emphasized the importance of liberal arts as the basis for the present development of science, and pleaded for a closer co-operation between both branches of learning.

The last speaker, Mr. C. L. Billings, Assistant General Manager of the Clearwater Timber Company, gave some timely tips to prospective graduates as to opportunities open to them in helping to solve some of the present problems of the lumber industry. The speaker suggested that forest school men should not overlook opportunities to work with hand as well as brain and especially that they should uphold and defend the ideals fostered in their collegiate training.

Guests introduced by the toastmaster were: Ben E. Bush, State Forester; Arlie Toole, Deputy State Forester; Edwin G. Green, Moscow; Norman F. Gillham, Moscow; Jackson Space, Orofino; Adrian Nelson, Moscow; H. S. Tusler, Potlatch Lumber Company; Arlie D. Decker, Potlatch Lumber Company; A. A. Segersten, Potlatch Lumber Company; Harold Z. White, Clearwater Timber Company; Walter Fields, Clearwater Timber Company; Fairly J. Walrath, Clearwater Timber Company; R. L. Woessner, Potlatch Timber Protective Association; and E. H. Myrick, Supervisor of St. Joe National Forest.

#### THORNTON G. TAYLOR JOINS US

With the opening of the school year last September, Thornton G. Taylor joined the faculty of the School of Forestry, succeeding Clarence W. Watson, assistant professor of silviculture, who resigned to take up advanced

work at the Yale Forest School, where he is now registered as a candidate for the doctorate degree in forestry.



Our New Professor

Mr. Taylor comes to the school with a good background in both training and practical experience. He did undergraduate work at the Massachusetts Agricultural College, and then entered the Yale Forest School, from which he graduated in 1921 with the degree of Master of Science in Forestry. Passing the examination for Forest Assistant, he accepted an appointment from the Forest Service and was assigned to District 4, where he served in various capacities till called to the University of Idaho as assistant professor of forestry.

## SPECIAL LECTURERS

E. GORDON ELLIS, '28

The School was fortunate this year in securing the services of Mr. Gerhard Kempff, resident silviculturist of the Northern Rocky Mountain Forest Experiment Station, and Mr. R. H. Rutledge, District Forester, Ogden, Utah, each for a special course of lectures.

Mr. Kempff explained the purpose and work of the branch station at Priest River, and contrasted it with the Harvard Forest. He also compared forestry and forest conditions in the region of the Harvard Forest with those in the Selkirks of northern Idaho.

Mr. Kempff's discussion of the Priest River



branch of the Northern Rocky Mountain Forest Experiment Station was of special interest to the forestry students, since, through the courtesy of the Forest Service, they use this branch as one of their field stations.

Mr. Rutledge gave a very instructive series of lectures on forest economics, touching specifically such topics as range management, sustained forest industries, forest research, public relations work and the organization of the Forest Service. This was the first visit on the Idaho campus by Mr. Rutledge since he was a student here in 1895 and '96. The school sincerely hopes that his next visit will not be so long delayed.

### Other Addresses

Besides the two series of lectures just mentioned, the Associated Foresters enjoyed addresses by other prominent visitors from time to time in the course of the year. Among these were Huntington Taylor, member of the board of regents and general manager of the Edward Rutledge Timber Company; George M. Cornwall, editor of the *Timberman*; Jesse L. Bedwell, '20, forest pathologist, Office of Blister Rust Control, Spokane; W. W. White, office of forest management, Forest Service, Missoula, Montana; and Russell N. Cunningham, '17, Forest Service, Missoula.

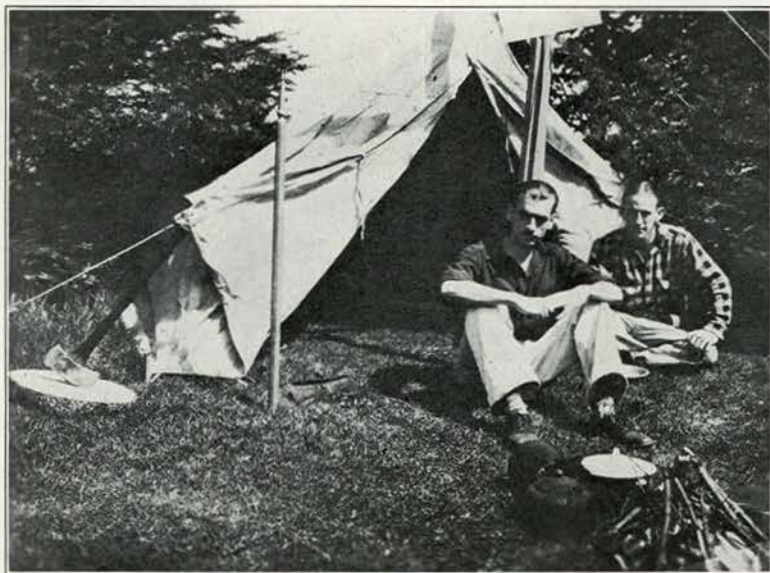
## FIELD TRIPS

CHARLES F. FOX, '28

### The Senior Trip to The Clearwater

On October 2, the senior class started on a two-weeks' trip to the logging operations of the Clearwater Timber Company near Pierce, Idaho. The Company has large holdings in

train of "empties" being hauled back to the scene of operations. The class was quartered at Camp 5 for most of the time, later moving to Camp 3. The Company generously gave over the use of two large tents supplied with



In the Field

this region, cutting for the immense new plant at Lewiston. White pine makes up the bulk of the cut; Douglas fir, cedar, white fir, larch, and yellow pine also being cut in small amounts.

Nine seniors made the trip to Orofino by train, and there transferred to the logging

bunks and bedding, and meals were had with the loggers in the mess hall.

The work for the first week was under the supervision of Dean Miller and Mr. Nettleton. On Monday, the entire class made a general inspection of the logging areas and Forest School permanent sample plots. The



next day was given over to stem analysis studies of white pine trees recently felled. The data obtained were worked up later in the year by the senior mensuration class. On Wednesday, a residual strip survey was made of logged-off areas to determine the character and volume of cut-over stands, brush-burning damage, and loss by windfalls. Thursday was given over to sample plot reproduction studies, the class working in crews and covering logged-off areas in strips to determine the amount and character of reproduction.

On the next day three three-man crews laid out separate sample plots, carrying out the work as though the plots were for permanent study. Measurements and growth data were taken and used to develop yield tables in class. Saturday was given over to log-scaling in actual practice, check-scales being run by Mr. Nettleton and a Company scaler. Sunday was considered a "holiday in camp."

The work for the second week was supervised by Mr. Taylor and Mr. Wiesehuegel. Time studies for the various phases of the logging operations were made, thus affording a first hand study of the details that are a part of logging. The following operations were studied and timed, the data being noted on forms supplied: Felling and bucking, swamping and skidding, and power log-loading. The class checked specie and volume of logs handled by scaling each piece. Most of another day was given over to study of the larger trestles built for the main line of the logging railroad. Detailed sketches were made of these trestles.

A day and a half was taken up with the marking of timber, attention being focused on the silvicultural and economic basis for marking practice. Each tree received individual attention. The last day was spent in a study of brush piling and the construction of model piles. A diameter limit cutting study was made in conjunction with this.

On the following day the class returned to Moscow, after two weeks of "lumberjacking."

#### Spring Mensuration Trip

The work this year was conducted on a timbered area about two miles south of Potlatch, Idaho. Over the week-end of May 11-14, the mensuration class of ten men, headed by Mr. Nettleton worked on Section 24, Township 41 North, Range 5 West. Boundary control was run around the section and, working in

two-man crews, a drainage and type map of the area was made in connection with a ten per cent cruise. The area was mostly a yellow pine type, but three other timber types were recognized and mapped.

#### Snake River Trip

Eight members of the native forage plants class left with Mr. Taylor on Thursday, May 17, for a three-day field trip up the Snake River. The trip to Lewiston was made by car. The class then boarded a boat and traveled by water for sixty-five miles up the Snake River to Divide Creek where camp was pitched.

The next two days were spent in plant identification, the collecting of specimens, and study of actual range conditions. The region is especially rich in plant material and is being extensively grazed. Consideration was given range management problems and attention was centered upon the types of forage being eaten by the sheep on the area.

#### Experiment Station Trip

On May 27, twenty juniors and seniors left with Dean Miller for a ten-day trip to the Northern Rocky Mountain Forest Experiment Station, returning on June 6. Most of the crowd made the journey by train.

The work was carried on under the instruction of Dean Miller and four Experiment Station officers, R. H. Weidman, H. T. Gisborne, Gerhard Kempff, and Robert Marshall. Much of the instruction and study was in the fields of silviculture, management, and mensuration. Protection and logging were also taken up. Instruction was mainly by actual performance of the job under intensive supervision.

Yield and thinning plots were studied, permanent plots laid out, and reproduction and fire studies made. The class visited nearby logging areas and studied timber sale practice. Brush piling, timber sale marking, and methods of working up data were covered by the studies.

Those making the trip to the Experiment Station were A. P. Balch, G. V. Hjort, G. J. Illichevsky, E. L. Keene, F. H. Kennedy, O. C. F. Krueger, F. L. Otter, Rex Wendle, Carey Bennett, J. B. Biker, A. R. Cochrane, C. A. Connaughton, F. G. Ellis, W. G. Guernsey, W. W. Mitchell, P. B. Rowe, L. E. Spence, W. M. Saling, A. B. Hatch, and Dean F. G. Miller.





Baird  
 Biker      Rowe  
 Davis      Ellis  
 Hoffman      Mitchell      Fox  
 Cochran      Saling  
 Connaughton      Anderson  
 Hatch      Spence  
 Gregory

## SENIOR REPORTS

ANDERSON: "I'm going over to see Attle for a few days!"

BAIRD "When I got out here in Wyoming where they wear a 'gat' on one hip and a bottle on the other, I thought that I was in Chicago."

BIKER: "Yes, I'm one of the June grooms, to be. With the Idaho Forester and All, it's been a pretty busy year."

COCHRAN: "Yes, yes—yes, yes. I shall return, of course, to assist the Dean to carry on. Yes, I drank two bottles of Percy's hair restorer. It's a great tonic—for spring fever!"

CONNOR: "My hair is falling out, too."

DAVIS: "I do not choose to talk-in public." That is saying a lot—for a Californian.

ELLIS: "I've got money in the bank and cattle on the range!"

FOX: "No, I wasn't chewing snoose when that picture was taken."

GREGORY: "My only hobbies are golfing and truck-driving."

HATCH: "I absolutely refuse to be quoted."

MITCHELL: "Guess I will have to buy new field clothes this spring. 'Bob' and 'Shorty' ruined my last year's outfit."

ROWE: "There should be a law forbidding the publishing of false advertisements. That 29 cents Quick Hair Restorer is a farce. My scalp remains as hairless as an egg. What little did come resembled peach fuzz. How about you, Al?"

SALING: "Bough beds are not what they're 'cracked up' to be."

SPENCE: "I agree with 'Hank.' Let us have bigger and better things to eat. Give me six eggs—and a hind quarter of that mule."

HOFFMAN: "Well, now, I don't like these Moscow meals. They give you just enough to half fill a flea at a formal banquet. Back to the lumber camp for me, where a serving is a meal and three servings are a fairly good start."



## ALUMNI AND FORMER STUDENTS

BARTLETT STANLEY F., (Ex.) 1921-22.

Mr. Bartlett is doing art and editorial work for the Northern Magazine, official organ of the Great Northern Paper Company. He writes, "While visiting one of the company camps recently, was interested to learn that a couple of days before, Professor Behre, under whom I had studied at the old U. of I., had stayed there while doing some special forestry work." Mr. Bartlett's address is Locke's Mills, Maine.

BAUMANN, HERMAN, B. S. (For.) '24

Since graduation, Mr. Baumann is Forester to the Fruit Growers Supply Company of Susanville, California.

BAIRD, John C., '27.

Baird is Junior Range Examiner on the Medicine Bow National Forest. His present address is Holmes, Wyoming, c/o Keystone Ranger Station.

BEALS, W. F., B. S. (For.) '27.

Beals was first on a timber sale in the Washakie National Forest, but recently he was given a ranger district in the Harney National Forest with headquarters out of Lauzon, South Dakota. He writes that the country is "plenty dry" and lots different from the hills in Idaho.

BEDWELL J. L., B. S. (For.) 20.

Mr. Bedwell is assistant pathologist in the Bureau of Plant Industry; Office of Blister Rust Control. He is in charge of reconnaissance on federal and private lands. "Married and have two daughters," he writes. His address is 618 Realty Building Spokane, Washington.

BIELER PAUL S., '21-22.

Mr. Bieler is employed as draftsman and photographer for the Southern Pacific R. R. "Married", he writes, "and have two fine girls. Also have a Boy Scout Troop. Teaching them all to be foresters." Mr. Bieler gives his address as 2928 Grant Ave., Ogden, Utah.

BOLLES, W. H., B. S. (For.) '26.

Since graduation, Bolles has been employed as Junior Forester out of McCall, Idaho. He writes that he is getting lots of good experience and likes the work. He also states that he met Collis Huntington at the meeting of the Society of American Foresters at San Francisco. Bolles has accepted a research

fellowship from Yale School of Forestry for next year.

BURROUGHS I. C., B. S. (For.) '27.

"Ike" is taking his Master's degree at Yale, specializing in silviculture and management. His address is 44 Kelsey Road, Poughkeepsie, New York.

CRUZ, EUGENIO DE LA, B. S. (For.) '26.

After graduating, Mr. Cruz took his Master's degree at Yale, and returned to the Philippines. He then took a contract to appraise some private timber. This was the first work of this kind ever done in the Philippines. Mr. Cruz is now with the Forest Service as Junior Forester in charge of land classification all over the Islands. He writes that he was married December 1st, and is living at 1315 O'donnell, Manila, P. I.

CUMMINGS, LEWIS A., B. S. (For.) '25.

Mr. Cummings is doing timber survey work on the Superior National Forest. He can be reached at Ely, Minnesota. Cummings has received a scholarship from the Yale Forest School and will study there next year.

CHAMBERLIN, GALE B. '22.

Mr. Chamberlin, formerly with the Brooks-Scanlon Lumber Co., is now in the wholesale lumber business in Spokane. He was married in 1924 and has one son. "Always glad to get the Forester," he writes. His address is 1303 Old National Bank Bldg., Spokane, Washington.

COCHRELL, ALBERT N., Ranger '22.

Cochrell is assistant supervisor on the Kaniku National Forest, with headquarters at Newport, Washington.

DANIELS, ALBERT S., B. S. (For.) '23.

Daniels is chemist to the Southern Pacific Railroad in Texas and Louisiana, doing wood preservative work. He was married in 1924 to Margaret Macey of the class of '24. His address is Box 19, S. P. Bldg., Houston, Texas.

DOYLE, IVAN S., B. S. (For.) '26.

"Ike" had a seige of pneumonia this winter but is back on the job again now. He is with the Clearwater Timber Co., Pierce, Idaho.

FARRELL, JAMES W., B. S. (For.) '22.

"Assistant Supervisor, Idaho National Forest," his questionnaire reads. Mr. Farrell was married in 1924 and has one boy. His headquarters are at McCall, Idaho.

FERGUSON, RAY S.

Mr. Ferguson is a Ranger on the Selway



National Forest. He writes that R. L. Hand, F. W. Shaner, Leroy Lewis and George Case are all on the Selway. All can be reached at Kooskia, Idaho, c/o U. S. F. S.

FENN, LLOYD A., B. S. (For.) '26.

Mr. Fenn is practicing law at Kooskia, Idaho. For several years he has been a member of the Idaho state legislature.

FIELD, WALTER D., B. S. (For.) '26.

Walt is in the land department of the Clearwater Timber Co., head offices at Lewiston, Idaho.

GARNER, L. H., Ranger '23.

Mr. Garner is a ranger out of Evanston, Wyo. He was married in 1925 and has one boy.

GATLEY, HOWARD A.

Mr. Gatley is Scout Executive, Boy Scouts of America and can be reached at 710 Chestnut St., Terre Haute, Indiana.

GERRARD, PAUL H., B. S. (For.) '23.

At present Paul is assistant supervisor of the Clearwater National Forest, headquarters at Orofino, Idaho

GILLHAM, NORMAN F., B. S. (For.) '26.

Mr. Gillham is now in business in Moscow.

GREENE, E. G., B. S. (For.) '27.

Mr. Greene is in business in Moscow with Mr. Gillham.

GODDEN, FLOYD W., B. S. (For.) '27.

He has recently started making a management plan for the South Fork of the Payette Working Circle. Godden was a visitor here this winter. He is Junior Forester on the Payette National Forest, headquarters at Emmett, Idaho.

GUSTAFSON, CARL A., B. S. (For.) '27.

"Gus" was Second Lt. in the U. S. Army for a while but resigned and is now in the Forest Service, working out of Salt Lake. "Because I like it better", he says. He plans to continue his education at the University of California this year.

HEGGIE, TRACEY L., '27.

"Trace" is working on grazing reconnaissance out of Albuquerque, N. M.

HAMEL, JOSEPH H., '21-'22.

Mr. Hamel is a patient in the U. S. Veterans hospital at Bremerton, Washington.

HAMMOND GEORGE M., '20.

Mr. Hammond is Vice President and Secretary of the Bowerman Lumber Co., Glendale, California. He reports visiting with Francis Bartlett who is a C. P. A. in Oakland, Calif.

HEDRICK, NEIL H., Ex. '28.

Neil is employed at present as a carpenter at Willapa, Wash., he writes.

HUNTINGTON, COLLIS H., '26.

Mr. Huntington is on timber sale work in the Crater National Forest, headquarters at Medford, Oregon.

JACKSON, TOM B. S. (For.) '19.

Mr. Jackson is woods superintendent for the Fruit Grower's Supply Co., Susanville, Calif.

JOHNSTON, R. H., B. S. (For.) '27

"Jerry" is with the Clearwater Timber Co. Lewiston, Idaho. He also slipped one over the boys and was married this spring to Roa Groves of Moscow

KANE, VINCENT.

Kane can be reached at 2022 Lockport St., Niagara Falls, New York.

KELLY, R. C.

Kelly is working in a steel mill but expects to get back to the timber soon. His address is 427 Orchard Ave., Elwood City, Pa.

KEMP R. L., Ex. '27.

Kemp is yard foreman for the Panhandle Lumber Co., Spirit Lake, Idaho.

LEHRBAS, MARK M., B. S. (For.) '27.

After graduation, Lehrbas spent several months in travel and is now Junior Forester located at Hot Springs, Arkansas.

MALMSTEN, HARRY E., B. S. (For.) '17.

Malmsten is Assistant Professor of Forestry at the University of California, Berkeley.

MARTIN, P. J., '17.

"Special Agent, Chapman and Nauman Company, Spokane, Wash.," Mr. Martin's report reads. His address is 426 Chamber of Commerce Bldg., Spokane.

MILLER, WILLIAM B., B. S. (For.) '22.

Mr. Miller is with the U. S. Biological Survey in Alaska, conducting experimental work with reindeer. Reindeer grazing will be an important industry in Alaska soon, according to Mr. Miller. He was married in 1925. His address is U. S. Biol. Survey, Fairbanks, Alaska. Miller visited the States in April and May.

MALHOTRA, DES RAJ, B. S. (For.) '25.

Mr. Halhotra is Assistant Conservator of Forestry to the State of Kashmere, India, with headquarters at Jammu, Kashmere State, India.

MORRIS, LEO F., Ex. '16.

Mr. Morris has a stock and bond business in Spokane, Wash., with offices at N. 6 Wall Street.



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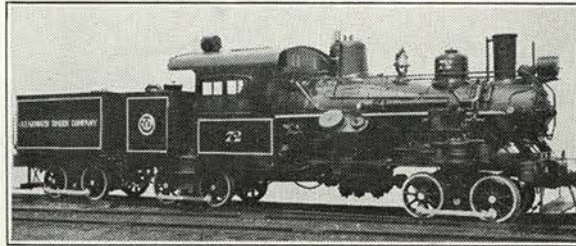
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OLSEN, CLARENCE C., B. S. (For.) '26

"Ole" is a Junior Forester on the Deschutes National Forest. He was married in 1926 and writes that he has a marvelous daughter. As usual "Ole" is up to something and says that he is now hunting for footprints of Fremont, the Pathfinder. His address is U. S. F. S., Crescent, Oregon.

PAGE, MILFORD M., Ex. '28.

"Page" is a scaler for the Clearwater Timber Co., Pierce, Idaho. He writes that he had a little "luck" of a broken leg this winter but is all right now. He was married in 1926 and was recently a proud father.

PARSONS, RUSSELL M., (For.) '24.

Mr. Parsons is a licensed land surveyor and timber cruiser for the Clearwater Timber Co., Pierce, Idaho. He was married last August.

PIKE, GALON W., B. S. (For.) '27.

"Gale" is taking his Master's at Yale, specializing in management and mensuration. "Under Chapman", he adds.

POTTER, ARTHUR, '23-'24.

Mr. Potter is assistant supervisor on the Boise National Forest, headquarters at Boise.

PUGH, LAWRENCE R., B. S. (For.) '26.

Mr. Pugh is a lumber salesman at Springston, Idaho.

RENSHAW, EMERA W., B. S. (For.) '25.

Mr. Renshaw was deputy state forester for two years but is now with the Forest Service.

RETTIG, E. C., B. S. (For.) '19.

Mr. Rettig is Land Agent for the Clearwater Timber Co., Lewiston, Idaho. He was married in 1925 and has one boy.

RODNER, JACK W., '24.

"Jack" is cruiser for the Blackwell Lumber Co., Emida, Idaho.

ROBINSON, ERNEST G., '23-'24.

Mr. Robinson was formerly with the Clearwater Timber Co., as fire warden but is now sheriff of Clearwater County, Idaho. "Busier than a ranger with a quarter section fire, high wind and no men," he writes. When at home his address is Orofino, Idaho.

SHARMA, PARMISHIRIE DAS, B. S. (For.) '22.

Sharma is Technical Adviser Forest Branch, State of Gwalior, India.



# FOREST PERPETUATION



THE NORTHWESTERN STATES—Oregon, Washington and Idaho—possess well over one-third of the Nation's supply of saw timber.

While embracing only a small part of the forest land area of the United States, the region is, in general, one of high productivity and, consequently, of real importance from the standpoint of the Nation's present and future timber supply.

Throughout this region, forest industry has, in the past, and, for many years to come, will play a principal part in its industrial progress. Possessing, as it does, raw material sufficient to supply its industries for many years, there is still in the Northwest time and opportunity to plan for needs of the industry after present merchantable supplies are exhausted.

Most of our Eastern States gave little thought to forest perpetuation until their mature timber had been removed. They are now slowly building back their forests, but, in the meantime, many of their industries have ceased to exist or found it necessary to seek more favorable locations.

Our Northwestern States should be warned by what has happened elsewhere and begin at once to plan for the future. In considering forest growing, we must not lose sight of the fact that a very long period is required to mature a crop. Vision, far-sightedness and careful planning are necessary in dealing with this question, and hence the need for speedy but not ill-considered action.

Companies, and individuals owning forest land, are becoming actively interested in possibilities of successive crops on their properties. Our States are slowly advancing toward policies which will encourage and foster perpetuation, and the Federal Government is taking similar action.

Not, however, until our various States adopt definite and clean-cut policies with regard to forest protection and forest taxation, can the private owner figure with the necessary degree of definiteness upon the financial outcome of an investment in forest growing.

Reforestation of our denuded areas is not the problem of any particular group or class of people. It is a matter which vitally concerns everyone. And, for this reason, it behooves our States to aid so far as is reasonable and possible in putting the business of timber growing on a sound financial basis.

In this Northwest country, we are not fearful of a timber shortage which will extend to our needs for local use. At the present time, however, a large part of our production is to supply the demands of other regions. With a vast land area suited only to forest growing, there is every reason for the permanent maintenance of an industry which can continue to supply material not only for local use but for those regions not so favored by soil and climate to the production of forest crops. Forest growing, therefore, becomes a problem of land use and payroll maintenance.

To make sure that our land is put to beneficial use and payrolls continue to increase, all agencies must assume definite responsibility and work to a common end.

Forest protection and tax reform are two of the principal problems to be solved, and, in their solution, the student bodies of our Universities, and particularly those attending our Forest Schools, should take a prominent part.

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SAJOR, VALENTIN, B. S. (For.) '26.

Mr. Sajor took his Master's at Yale and then returned to the Philippines where he is instructor in forestry at the School of Forestry, Los Banos College, Laguna, P. I. He is now stationed at Manila with the Forest Service, doing grazing work which is a new field in the Island Service.

SCHOFIELD, WILLIAM R., B. S. (For.) '16.

"Supervisor, Humboldt Redwood Reforestation Association, an association of all Redwood Manufacturers of Humboldt Co., Calif." Mr. Schofield writes. He mentions seeing several Idaho graduates at the Idaho-St. Mary's game this year. He can be reached at Samoa, California.

SMITH, WILLIAM H. '25.

Mr. Smith is a ranger in charge of a timber sale out of Wallowa, Oregon. He states that Mr. Jerald Tucker of his class is a ranger on the Umatilla National Forest at La Grande.

SPACE, RALPH S., B. S. (For.) '25.

Mr. Space is a Junior Forester on the Blackfoot National Forest, Kalispell, Montana. Ralph was a caller at the school in December.

SPACE, JACKSON W., B. S. (For.) '27.

"Jack was with the Forest Service last summer, until October when he underwent an operation for appendicitis. He spent the rest of the winter convalescing and studying for the Junior Forester examination.

SNOW, ELVA A., B. S. (For.) '25.

Mr. Snow is a Junior Forester on the Medicine Bow National Forest with headquarters at Laramie, Wyoming

SOWDER, ARTHUR M., B. S. (For.) '25; M. S. (For.) '27.

"Art" is Extension Forester to the State of Idaho with offices at Moscow. Last winter he was married to Rose Pruess '27.

STEVENS, ARTHUR W., B. S. (For.) '15.

Mr. Stevens is with C. W. Swearingen, consulting Engineer of Great Falls, Montana. He writes that he is busy in Missoula on the design and installation of a new sewer system. His address is Box 107, Missoula, Montana.

TOOLE, ARLIE W., B. S. (For.) '27.

"Arlie" has been Deputy State Forester since graduation, with offices at Moscow.

WHITE, HAROLD Z., B. S. (For.) '26.

White is superintendent of the dry kilns at the new Clearwater Timber Company mill at Lewiston, Idaho.

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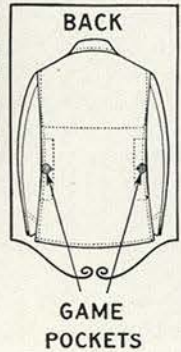
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Investigative work, looking forward to a solution of this pressing problem, offers a fertile field for the research laboratories of our Forest Schools. Not so many years ago the laboratory worker was eyed askance, to be tolerated, yes, but not taken too seriously.

Today the lumber industry is looking toward the trained research man with hopeful eyes, for it feels that only through scientific research can it hope to fully utilize, through saleable by-products, the large amount of raw material now going to waste.

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WALRATH, FAIRLY, B. S. (For.) '27.

Fairly is with the Clearwater Timber Company at Lewiston, Idaho.

WARD, ROBERT D., Ex. '28.

"Bob" is at Detroit now but expects to return to Idaho soon.

WHEATON, ROGERS G., B. S. (For.) '24.

Mr. Wheaton who was formerly District Forester, North Carolina Forest Service, is now Assistant Silviculturist at the Northeastern Forest Experiment Station. He writes that he was married May 23, 1927 to Marjorie Scott of Springfield, Mass. He can be reached at 631 White Street, Springfield Mass.

YATES, DONALD R., B. S. (For.) '17.

Mr. Yates is secretary-treasurer of the Exter company, a realty company in Seattle, with offices at 810 Allison street.

ZUVER, JOHN H. JR., Ex. '26.

Mr. Zuver is vice president of the Mirror Press Inc., South Bend, Indiana. He was married in 1925.

### WHAT THE BOYS WILL BE DOING

(Continued from Page 38)

National Forest. Forest Service, Boise, Idaho.

Dittman, Clarence P. Engineering crew on a construction job. 408 Liberty Street, Aurora, Illinois.

Dodd, Jack B. Blister Rust Control, 618 Realty Building, Spokane, Wn.

Eastman, Virgil. Trail crew, Clearwater National Forest, Forest Service, Orofino, Idaho.

Ensign, Warren W. Research for School of Forestry, School of Forestry, Moscow, Idaho.

Fagerlund, Gunner. Trail crew, Kaniksu National Forest. Forest Service, Priest River, Idaho.

Fisher, George M. Blister Rust reconnaissance, 618 Realty Building, Spokane, Wn.

Fritchman, Holt. Blister Rust eradication. 618 Realty Building, Spokane, Wn.

Fuller, G. Lester. Road construction. 25 Frederick Street, Ilion, N. Y.

Goodwin, C. Wayne. St. Joe National Forest, Forest Service, Avery, Idaho.

Guernsey, William G., Blister Rust eradication. 618 Realty Building, Spokane, Wn.

Hatch, Alden B. Experimental work. Appalachian Forest Experiment Station, Asheville, North Carolina.

Hepher, William S. Assistant Ranger, B. C.



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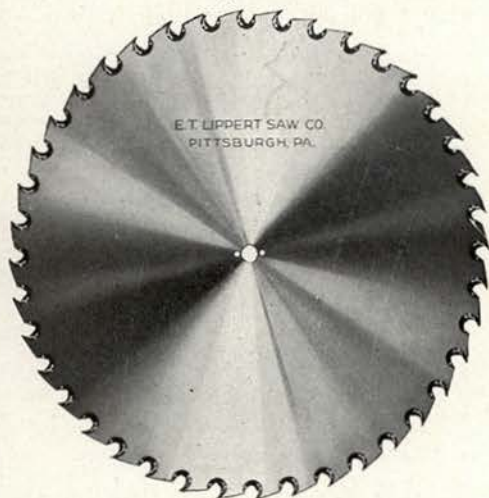
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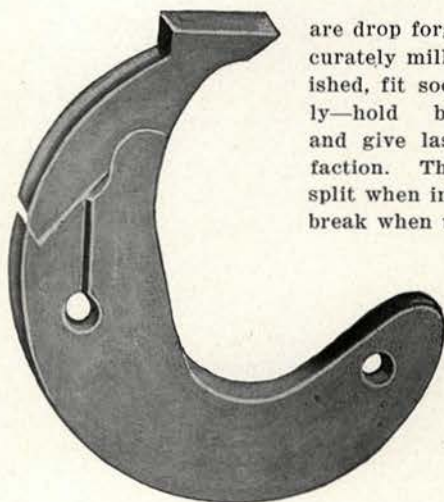
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- Hjort, George V., Foreman, trail location, crew, Kootenai National Forest. Forest Service, Libby, Montana.
- Hume, John F. Alternate Ranger, Pend Oreille National Forest. Forest Service, Clark's Fork, Idaho. co- Antelope Ranger Station.
- Illichevsky, George J. Ecology work for the Blister Rust. 618 Realty Building, Spokane, Washington.
- Jemison, George M. Smoke chaser, Coeur d'Alene National Forest. Forest Service, Coeur d'Alene, Idaho. c-o Magee Ranger Station.
- Johnson, Robert B. Timber survey, Weiser National Forest. Forest Service, Weiser, Idaho.
- Keene, Edward L. Sample plot work, School of Forestry. School of Forestry, Moscow, Idaho.
- Kennedy, Fred H. Timber survey, Targhee National Forest. Forest Service, Ashton, Idaho.
- Kennedy, Howard R. Trail crew, Clearwater Timber Protective Association, Clearwater Timber Company, Pierce, Idaho.
- Krueger, Otto. Sample plot work, School of Forestry. School of Forestry, Moscow, Idaho.
- Krummes, William T. Experimental work, Mindoka National Forest, Forest Service, Burley, Idaho.
- Langer, Charley J. Assistant Ranger, Clearwater National Forest. Forest Service, Weippe, Idaho. c-o Musselshell Ranger Station.
- Lord, Philip B. Lookout, Salmon National Forest. Forest Service, Northfork, Idaho.
- Madison, Roy W. Alternate Central Dispatcher, Umatilla National Forest. Forest Service, Kamela, Oregon.
- Miller, Richard B. Sawmill work, Salmon, Idaho.
- Mitchell, William W. 1105 Madison Street, Wilmington, Delaware.
- Moss, Virgil D. Blister Rust, reconnaissance. 618 Realty Building, Spokane, Washington.
- Newcomer, Fred R. Guard on Big Horn National Forest. Forest Service, Sheridan, Wyoming. c-o Penrose Park Ranger Station.

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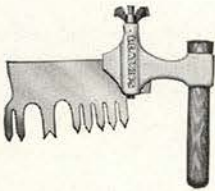


Atkins No. 51 Cross Cut Saw



Atkins No. 52 Cross Cut Saw

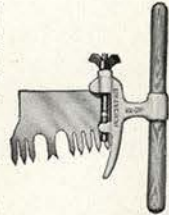
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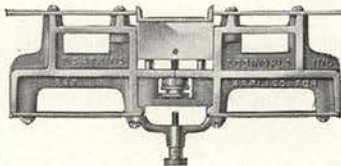
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- Otter, Floyd L. Assistant Ranger, Lolo National Forest. Forest Service, Lolo Hot Springs, Montana. c-o Powell Ranger Station.
- Pechanec, Joseph F., School of Forestry, Moscow, Idaho.
- Prater, Vilas E. Forest Service, Jackson Hole, Wyoming. Address: St. Anthony, Idaho.
- Richardson, Kenneth F. Trail crew near Wallace, Idaho. Box 997, Burke, Idaho.
- Rohn, Don C. Smoke chaser, Umatilla National Forest. Forest Service, Pendleton, Oregon. c-o Tollgate Ranger Station.
- Rowe, Percy B. Blister Rust, reconnaissance. 618 Realty Building, Spokane, Wn.
- Saling, Wallace M. Field Assistant, Northern Rocky Mountain Forest Experiment Station, Priest River, Idaho.
- Sargeant, Howard J. Fireman, Clearwater National Forest. Forest Service, Orofino, Idaho.
- Shank, Paul J. Assistant Ranger, Salmon National Forest. Forest Service, Northfork, Idaho.
- Sowder, James E. Lookout, Blackfoot National Forest. Forest Service, Trego, Mont.
- Stanley, Wilfred B. R. O. T. C. Summer Camp, 12 East 27th Ave., Spokane, Washington.
- Stock, Merlin R. Assistant Ranger on the Minidoka National Forest, Naf. Idaho. c-o Erwin Jones.
- Swain, Robert F. Lookout, Mount Baker National Forest; Forest Service, Concrete, Wn.
- Talbot, Loyal E. Trail crew, Kaniksu National Forest. Forest Service, Newport, Wn.
- Taylor, Cyprian D. Geographical Survey work, Route 1, Nelson, B. C.
- Teater, Arthur S. Sunnyside Orchard Com-uglem, Harold A. Clearwater mill at Lewiston. Corner Eighth and Highland Streets, Clarkston, Washington.
- Urell, Thomas. Trail crew, Nez Perce National Forest. Forest Service, Grangeville, Idaho.
- Waddell, Robert M. Draftsman for Philadelphia Electric Company, No. 3 E. Turnbull Avenue, Upper Darby P. O., Philadelphia, Pennsylvania.
- Wendle, Rex. Fire Patrolman, Pend Oreille pany, Weiser, Idaho. Route 3.
- National Forest. Forest Service, Sandpoint, Idaho.
- Whiting, Harry L. Blister Rust reconnaissance, 618 Realty Building, Spokane, Washington.
- Woodward, Doren E. Trail crew, Coeur d'Alene National Forest. Coeur d'Alene, Idaho, c/o Forest Service.
- Woesner, Raymond C. Protective work for Potlatch Timber Protective Association, Elk River, Idaho.
- Zoerb, Ernest L. Traveling at home and in the Orient. 2700 Cass Street, LaCrosse, Wisconsin.

#### Advisory Committee to the Forest Experiment Station

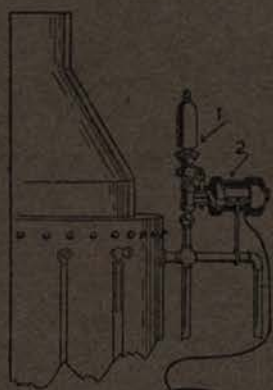
The outstanding development of the School of Forestry the current year was the creation of the Forest Experiment Station. This is a forward looking step on the part of the State Board of Education and one that will add distinct strength to the School, not only in its research activities, but in its instructional work as well.

In outlining the objects and scope of the new Station, the School sought the assistance of an Advisory Committee, consisting of the state forester and four practical operators. The personnel of this Committee is: W. C. Geddes, Manager of the Craig Mountain Lumber company, Chairman; W. D. Humiston, Assistant General Manager of the Potlatch Lumber Company; W. S. Rosenberry, Manager of the Winton Lumber Company; C. L. Billings, Assistant General Manager of the Clearwater Timber Company; and Ben E. Bush, Idaho State Forester.

This Committee has already held three meetings and, with its advice, the budget for the maintenance of the Station and the investigative program to be undertaken for the biennium beginning January 1, 1929, have been set up. However, through the financial aid of the state forester's office, the timber owners of the state, and the Western Pine Manufacturers' Association the additional personnel of the Station for which the plans provide will be added September 1, 1928. Accordingly, the Board of Education has authorized two new associate professorships and two research fellowships for the coming academic year.

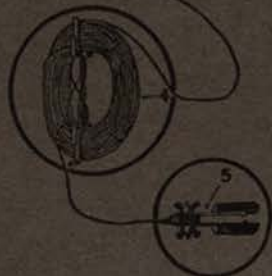


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