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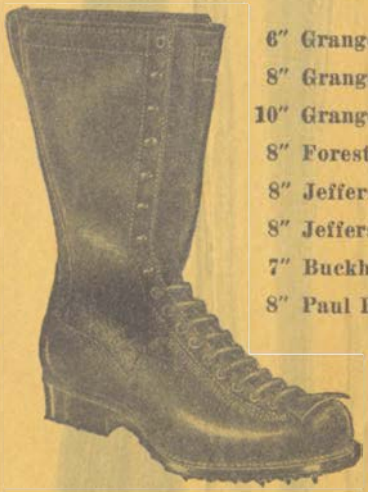

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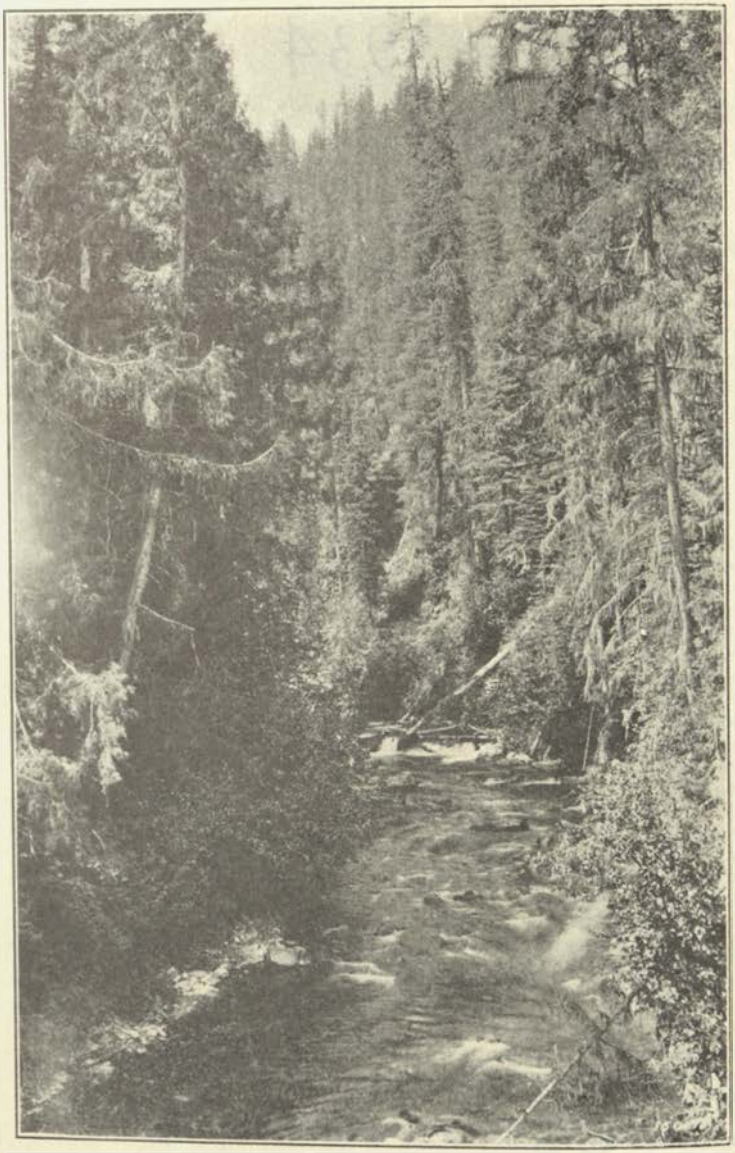


A Mountain Stream

By Richard Gallup

Between green chasms in the hills,
They leap and play, those alpine rills.
From some cold spring midst crumbling rock
High up where nests the mountain hawk,
They start, and gurgling in infants glee,
Begin the treek to mother sea.

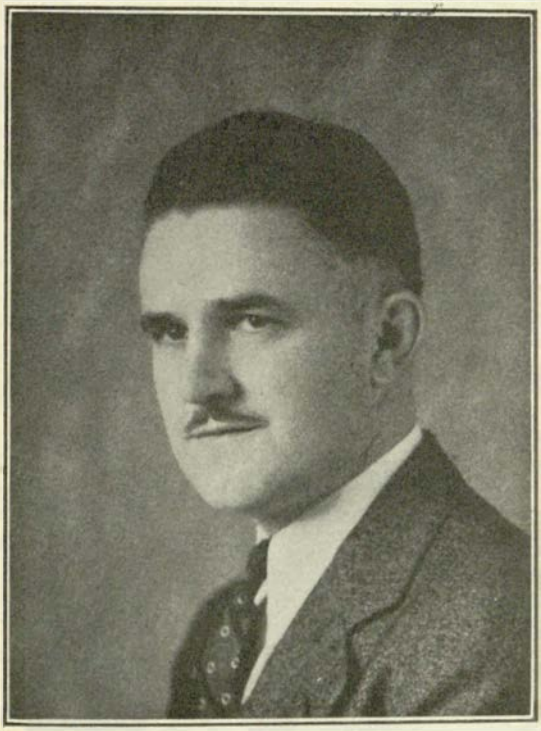
Each dripping stone and icy drift
To baby stream bestows its gift.
The youngster takes with murmered thanks,
And ever seeks for wider banks.
It lisps along with tiny tinkles,
And soon outgrows its baby wrinkles.

Down slippery rocks it gaily slides;
For a hobby horse a log it rides.
It dallies some in shallow pools,
Then over the obstruction drools.
Its childish days are almost o'er,
And one can hear its growing roar.

Another stream joins in at play;
With youthful shout it seems to say,
"Hurrah! I've got a teammate now,"
And linking arms they downward plow.
They rush along quite wild and free,
Another one, and they are three.

Faster, faster down they go.
Not thinking now of springs and snow,
For every gulch and gaping draw
Yields up a fellow from its maw.
Nor stop they now to gurgle greetings,
But wild uproar is at their meetings.

Until at last with youthful bellow
It joins with yet a stronger fellow.
Its current fast and treacherous grows,
And on the turns white water shows;
Then stretching out with a mighty leap,
Wide and gray it rolls to the deep.



TO DR. C. W. WATERS, a capable, enthusiastic instructor and best of all, our loyal friend, we, the members of the Forestry Club, respectfully dedicate this issue of the *Forestry Kaimin.*

State Forestry in Montana

By Rutledge Parker, *State Forester*

When Montana was admitted as a state, the federal government very generously endowed various institutions with land grants aggregating about 6,000,000 acres. Included in this vast inheritance was over 1,000,000 acres of forest land. The subsequent creation of national forests in the state automatically stopped the state's right to select or secure title to any unsurveyed lands within the boundaries of these various national forests. This unsurveyed status affected the title to about 500,000 acres of common school grant land. As a means of restoring to the state the full acreage intended under the grant, the federal government permitted the state to make lieu selections for all unsurveyed sections lost through federal reservations. In carrying out this plan for acquiring these indemnity lands it was agreed between the federal government and the state that all of the unsurveyed school sections which could be approximately identified would be examined and, if the stand of timber on any section was sufficient, the state would receive the equivalent in timber land from the national forests. Unsurveyed school lands not qualifying for a forest exchange were used as base for public domain indemnity lands.

As a result of this exchange, the state acquired two blocks of national forest land totaling 108,000 acres and nearly 400,000 acres of grazing and agricultural land. While this method of completing the state's land grant showed a considerable shrinkage in forest area, it was actually a real gain in property values.

The record of state timber sold prior to 1910 was what might be expected when immediate revenue was the entire objective. In most of these early sales the land was included with the timber, at a price which apparently justified some purchasers in acquiring considerable amounts for future operations. Sales of this nature will account for the further reduction of the state's timber holdings by about 100,000 acres. It is reported that some of these timber land sales aroused considerable public interest. This may account for the fact that most of the state timber sold since 1910 included stumpage only.

By legislative acts of 1925 and 1927, all state lands carrying a forest classification are not subject to sale, so that as long as our present statutes are not changed Montana will retain full possession of approximately 500,000 acres of forest land acquired under the original federal grants.

With the exception of approximately 225,000 acres included in the present seven state forests, these state holdings are more or less scattered throughout western Montana. This checker-board distribution of the majority of state timber lands has some points in its favor, but on the whole, these are outweighed by the extra cost of proper administration. We now have all of the needed legal authority to exchange these timber lands for similar lands in federal or private ownership, so all that remains for a blocking up program is the inclination on the part of timber land owners.

The 500,000 acres of state timber land may be divided into three classes, as follows: Three hundred thousand acres of merchantable saw timber

with an estimated stand of two and one-half billion feet; 75,000 acres of cutover and 125,000 acres of burned-over or alpine protection forests. All of the alpine and most of the burned-over lands have a very low potential forest value. This, together with their inaccessibility, renders them almost worthless for the production of commercial timber. Accordingly, the 375,-

WHITE PINE OF WESTERN MONTANA

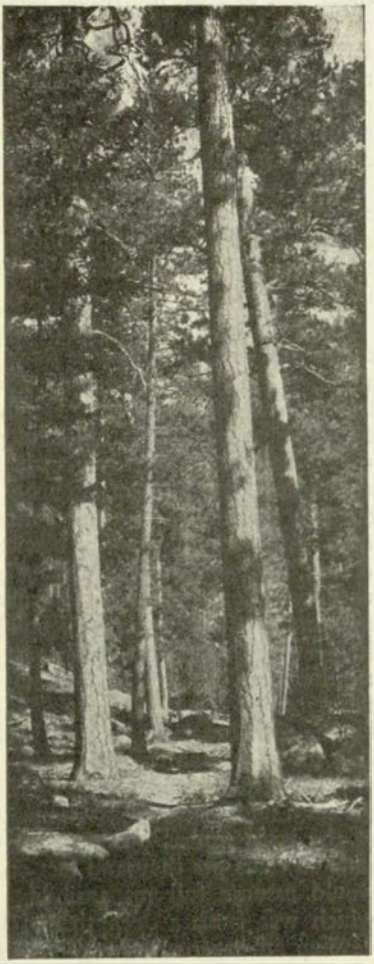
000 acres of commercial and cutover timber lands, and possibly 25,000 acres of the restocking and accessible burned areas include all of the state-owned forest lands having a real value.

Eighty per cent of the cutover lands are fully restocked with the promise of a heavy cut in 80 to 100 years. A scattering advance growth stand over most of these cutover areas will be ready to market in 40 to 50 years, with an expected average yield of five million feet per acre. This is apparently a low yield for profitable operations but the accessibility of these areas will overcome this objectionable feature.

During the past 13 years all timber cutting has been restricted to trees above 14 and 16 inches in diameter, the higher limit being favored for yellow pine. By leaving a heavier stand of advance growth and by more conservative methods of slash disposal, the acreage yield should be materially increased. It is believed that the present system of cutting will give an 80-year crop period with a yield equivalent to the average now obtaining in virgin stands. There are, of course, many factors, such as fire and insects, which may interfere with yield calculations; but after making

due allowance for these, it seems safe to expect that the state timber lands will sustain an annual cut of from thirty to thirty-five million feet.

During the five-year period preceding the present depression, the average cut closely followed the expected sustained yield. Naturally, during the past four years, the annual cut has fallen off over 50 per cent. Since the average annual cut has not exceeded the probable timber growth, there has been no attempt on the part of the state to limit the amount taken out. Under the present NRA plans for the lumber industry, we may expect a more constant and stable demand for timber, with the ultimate object of cutting on a sustained yield basis, not necessarily by ownership of timber, but rather by drainages and blocks, which can continuously supply each manufacturing plant within the state, operating under a fixed allotment. It should not be very difficult to set aside certain timbered drainages and districts, which will furnish a constant supply of logs to each of our present stationary sawmills operating at a prescribed capacity. The many timbered areas, which are peculiarly adapted to portable sawmill operation, could be assigned to these small mills for an average annual sustained yield cut.



PONDEROSA PINE

Early methods of fire protection on state and private lands were largely confined to the individual efforts of the timber owners and the assistance of local residents. The disastrous season of 1910 gave conclusive proof that a co-operative effort on the part of timber owners was essential, if the forests were to be saved. Consequently, the first organization for protecting state and private lands was formed in 1911. From this small beginning, the organized protection of private and state forest lands has expanded to now include almost all of the timbered portions of western Montana. The development of fire protection on these lands has been greatly stimulated by the allotment of federal funds to assist in the cost. In alloting this annual fire protection fund to the state, the federal government has expected that the state would contribute an equal amount for the same purpose. Unfortunately, the state's finances have not permitted appropriation for fire protection in excess of the amount actually

needed for lands owned by the state; and, at the present time, the funds provided are inadequate to properly protect these lands. So it can readily be seen that Montana has not fulfilled its share in the cost of our fire protection program.

The increase in the number of man-caused fires during the past 20 years has given considerable alarm to the protective agencies. This is not so much due to great individual carelessness, but rather to the larger number of people who make use of our present extensive forest road system. In 1931, man-caused fires of incendiary or careless origin became so numerous that protective agencies were forced to formulate some effective plan for reducing them. A system of registering cars and occupants on all main roads leading into the forests was adopted and proved to be of considerable benefit. The appointment of about two thousand volunteer fire wardens in 1932 and 1933, who were selected on account of their recreational interest in protecting the timber, has given very gratifying results in lessening man-caused fires. These volunteer wardens, most of whom are unknown to the general public, create a feeling of caution in the careless and of fear in the incendiary.

With the exception of fire protection, the most important factor relating to the next crop of timber is slash disposal. It is generally agreed that the summer climate conditions of western Montana are too dry and hot for leaving any large amount of unburned slash. On state lands, all slash from timber operations must be piled and burned, but this method has always been considered too costly for the private timber owner. The old method of getting rid of slash on privately owned lands was to broadcast burn it. Naturally this killed most of the young tree growth left on the area. After several years of blackening our forested areas in this manner, a state law was enacted placing supervision of slash disposal under the state forest department. In accordance with this law, the state made specific recommendations for slash disposal — not to exceed 15 cents per thousand feet — to each operator, who was given a time limit for carrying out the requirements. If the slash was not taken care of according to instructions, the state had the right to do the job and file a slash lien on the property for the costs incurred. It soon became apparent that funds were not available for a program of this kind. It was also evident that the best slash disposal results could not be obtained by letting the operator take care of the slash under state supervision. An agreement was then reached with all of the large timber operators by which each operator would pay to the state 15 cents per thousand feet on the amount of timber cut and the state would assume full responsibility for slash disposal. This arrangement, which was further strengthened by legislation, has enabled the state to develop an experienced organization for handling at least 90 per cent of all slash disposal on privately owned lands.

Satisfactory slash disposal should remove the fire hazard with the least possible damage to the remaining young tree growth on the area. It can not be expected that 15 cents per thousand feet will do a perfect job, but by good judgment in the location of areas or strips for piling slash, and by skillful burning over most of the area, when the weather is suitable, it is

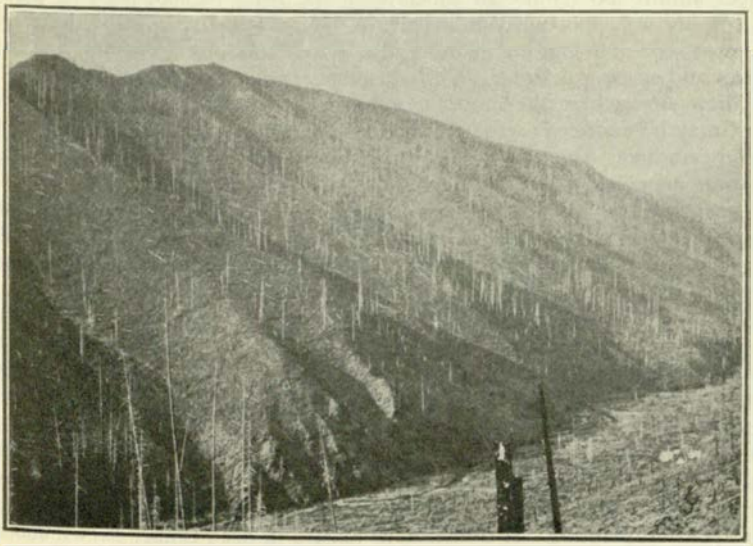
(Continued on Page 55)

The Forest Planting Problem of Region One

By D. S. Olson
Chief of Planting, U. S. Forest Service

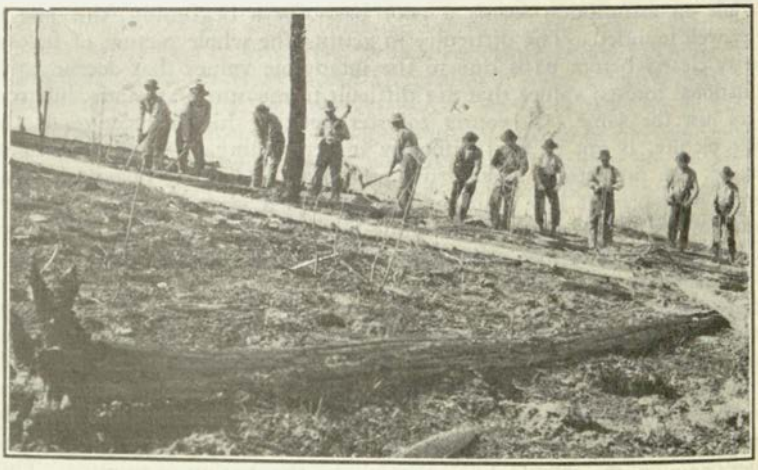
It is assumed that the American people do not wish to see their national forest land lying idle.

While an assumption seems a poor basis for a beginning, this one is pretty well founded. The difficulty in getting the whole picture of federal forestry clearly before us is due to the intangible values that accrue from the national forests; values that are difficult to measure in dollars, but real values just the same. A young forester, seeking his perspective of the whole picture, is apt to find difficulty in reconciling production costs of planting, fire protection, blister rust protection and other heavy carrying charges with present low stumpage prices and a glutted lumber market. These are the important considerations to commercial timber production. For private owners timber production, as any other private business, must be profitable as measured in dollars, over a comparatively short time. In public ownership the business may be spread over centuries covering changing economic conditions and immediate returns on the investment are of lesser importance. But public forests mean a great deal more. Here all the intangible values must be recognized, such as recreation, protection of wild life, regulation of stream flow, conservation of moisture and possibly climatic influence. Behind this is even a more indefinite urge and, in the writer's opinion, the principal one that guides the destiny of forestry. This heritage of beautiful forests that was ours, we wish to perpetuate. There isn't a one of us, I dare say, that wouldn't wish to pass on to his children the same forested slopes, the same good fishing streams and the same abundant natural resource of timber that was ours and our forefathers.



A DOUBLE BURN READY FOR PLANTING

This preamble may seem a long way from the subject of forest planting, but actually those general principles that guide forestry are more important to planting work than any other phase of forest work because in planting, new forests are being created and there is every opportunity to make the best of it. Planting in this region makes it possible to develop forest land to its highest use. Unlike the natural tree growth that is here and for that



PLANTERS AT WORK AFTER THE NINETEEN-TEN FIRE

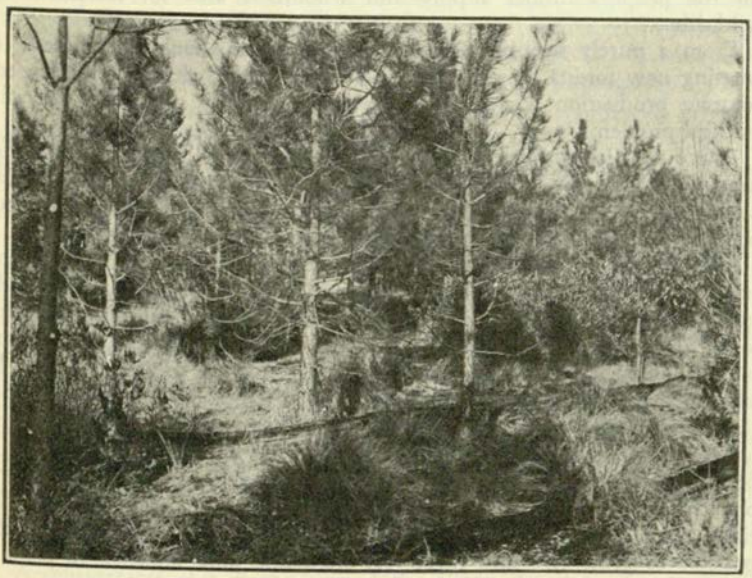
reason with which the forester must do the best he can whether it be a lodgepole thicket robbing an excellent white pine site, or a fine body of timber almost too remote to conceive of its being logged, planting gives the forester an opportunity to select the best productive site for the crop, the most accessible logging chances, the more easily protected sites, and the species and spacing desired. While primary emphasis is placed upon planting those sites where the most favorable returns from an economic standpoint may be expected, recognition is also given in planning a new forest to those indirect benefits, for example, erosion control, social values, etc., for these may be sufficient in themselves to justify planting.

Since time unknown, fires have seared the forests of this region. The patchwork of even-aged stands, quite clearly mark the areas burned 20, 60, 100, 200 years ago. In most cases, natural regeneration seemed to come spontaneously with the removal of the crown cover overhead. Old burns, dating back 60 years or more, that have no tree growth are rarely found. The obvious conclusion would be that the more recent burns will likewise restock under natural processes and planting become unnecessary. But there was one fire, the holocaust of 1910, that destroyed this natural balance. Previous fires had left small islands of devastation in the sea of virgin timber, by comparison with the 2,500,000 acres burned in 1910. Parts of this area were too remote from a source of seed to be benefitted by any normal seed dissemination. This fire created another condition that gave an impetus to planting. A tremendous hazard in dead timber strewn about the slopes, made protection of the new crop of seedlings, intermingled with

debris, a difficult task and hundreds of thousands of acres in the 1910 burn have since reburned, leaving complete devastation. Then too, logging operations, forever hewing into the wall of virgin timber, finally reached the fastness of this region and the inevitable slash and fires followed.

Based upon the most reliable data available, there are approximately two million acres of denuded commercial forest land in the region. This does not include the treeless plains, nor the natural grassy slopes in eastern and central Montana, where justification of afforestation would be highly questionable, but only the true forest land west of the Continental Divide. Here climatic conditions are more favorable to tree establishment and growth and the land unsuited for any other purpose than the growing of tree crops. Nor does it include land where tree growth will be sparse because of poor forest soil conditions, or the subalpine type where the scrubby growth of trees will be unfit for commercial timber. All classes of land ownership are represented. However, more than 60 per cent is federal and the bulk of the remainder is private land, most of which will undoubtedly revert to government ownership through tax delinquency and become the common burden of the people to plant. Very little of the denuded land is at present in state and county ownership.

Within this vast denuded acreage, there are, of course, some areas of higher priority for planting, than others. One group comprising 815,000 acres, may be forgotten for the time being, at least, because this acreage has possibilities of regeneration naturally. It is comprised of smaller burns and in timber types where natural seeding may be expected to occur from a visible source of green timber within 20 years. At any rate, before areas more urgently in need of planting have been restocked, this uncertainty will have been removed.



THE SAME SPOT TODAY

A second group, totaling 409,000 acres, comprises areas remote under present development of logging operations, brush fields, land capable of producing good commercial timber, yet of a lower order in site quality than the best.

The third group is set up as the immedate planting problem of Region One. This is the land on which the finest timber of the region grew and has since been removed by logging and fires. Repeated fires have denuded this acreage and chances of natural reproduction coming in are remote. Of the 830,000 acres in this group, 318,000 acres are in federal ownership. This denuded acreage remains after planting 80,000 acres, representing the planting effort of the region the last 25 years. At the present rate of planting it will require a hundred years to complete this job, or stated differently there are about 20,000 acres denuded annually, of which less than 4,000 acres are planted each year.

That serious fires continue to increase the amount of denuded acreage does not in the least mitigate the duty of the government to reforest these lands. On the other hand, increased planting in the face of continued forest devastation is not analogous to pouring potatoes into a torn sack before the hole is mended as some have expressed it. It is only because fires occur that there is a planting problem in the region. Planting is a sequence to a necessary evil — fire — and fortunately planted areas, because they are on ground made reasonably safe by previous fires with their removal of dead debris, are safer from fire.

This region, as a whole, will always be a purely forest region that will not be encroached upon by agricultural extension. Because of its remoteness from densely populated areas, its ruggedness, its unfitness for any other use, it is all the more certain to be best suited as a national reserve for the people's timber supply and wilderness area for recreation and wild life.

From a purely scientific viewpoint these areas should be planted. By creating new forests it is possible to select the most desirable species, concentrate production on the best sites and simplify protection and silvicultural problems.

There are also problems peculiar to the science of forest planting. Fortunately much experimental work has been done in the region to place planting on a scientific basis and while many of the problems are far from being solved, there is at least a fair understanding of those problems.

Eager to get a new crop started after the destructive fires of 1910, direct seeding was chosen as the quickest means to attain this end. Out of 451 trials, representing 17,483 acres, only 48 succeeded. Failures were found to be absolute in most cases. Successful seeding projects were associated with frequent summer rains the first year following seeding. Nature has succeeded in this method where artificial attempts failed, because where the forester sows about two pounds to the acre in one attempt, nature is lavish with her seed and showers down vastly greater quantities and repeatedly keeps at it until finally a season of ample rainfall coincides with one of her seedings. Briefly, dessication of the soil is commonly more rapid than penetration of the radicle. Seed is quite expensive and it is possible to grow two and three-year-old white pine sufficient to plant an

(Continued on Page 51)

Thinning in the Western White Pine Type

By J. H. Ramskill
Professor of Forest Products

Of the many activities made possible during the past year by C. C. C. labor in Region One of the U. S. Forest Service, probably one of the most interesting to technical foresters is that called "Stand Improvement". This was mainly confined to thinnings in the two principal types of the region. In the white pine type two areas were selected, one on the Priest River experimental forest in the Kaniksu National Forest; the other on the Deception Creek experimental forest on the Coeur d'Alene National Forest. In the yellow pine type thinning was also done on two areas, one in the vicinity of Frenchtown and the other in the Nine Mile valley, both in the Lolo National Forest.

Except in a few favored localities in the United States, present economic conditions preclude any thought of monetary return from thinning of immature stands of timber. This is particularly true in the West. Here forest management must be prepared to justify thinnings on the basis of possible increased yield, or improved quality of the stand through the elimination of undesirable species, or both. There is relatively little knowledge of how western species respond to thinning, at what ages thinning will produce the best results, and what degree or severity of thinning best fits given conditions. In the western pine type on the Priest River experimental forest there are eleven experimental thinning plots, some of which are now twenty years old. While most of the results obtained from these plots are still inconclusive, they indicate that the age at which western white pine responds best to thinning is 35 years or less. Therefore, to obtain more conclusive and extensive data from which the answers to these questions may be determined, the thinning experiments of 1933 were initiated by the Northern Rocky Mountain Forest and Range Experiment Station.

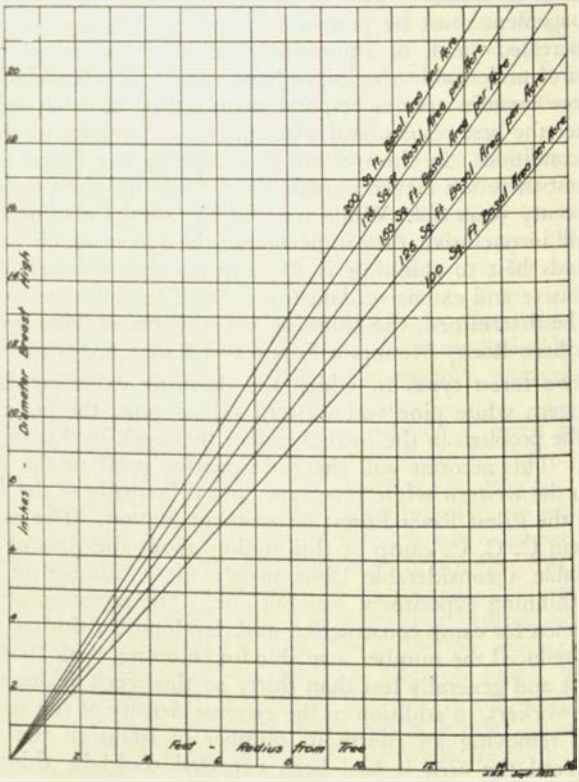
Of the two forest types in which the thinning experiments were conducted, western white pine and western yellow pine, the far greater complexity of the problem in the former makes the work in this type the more interesting. This account will therefore confine itself to the problems of thinning in the western white pine type, and principally to the experiments initiated at the Priest River Forest Experiment Station. The establishment of a 200-man C. C. C. camp at this station about the first of July, 1933, made available a considerable labor supply for a number of projects of which the thinning experiment was but one. The retention of about one-half of the men for camp construction and development during most of the summer so reduced the number available for thinning work that there were seldom more and generally less than thirty on this work at one time. This shortage of workers, in addition to the extreme density of the stand and the necessity of removing an enormous number of stems in the understory, greatly reduced the area it had been expected could be thinned. Altogether nearly twenty-one acres were thinned and seven permanent sample plots established in the thinned area.

A considerable part of the area of the Priest River experimental forest was heavily burned between 75 and 80 years ago. Occupation of the ground

apparently began almost immediately, by the usual succession of species, from the very intolerant western larch, followed by Douglas fir and white pine, and completed by the development of a dense understory of the very tolerant western red cedar and western hemlock. A total of eight coniferous species were found in this stand in mixture, nowhere occurring pure. In the area thinned the maximum stand per acre was found to be 8,214 cubic feet, or about 24,200 feet board measure, the minimum 3,016 cubic feet, or 3,030 feet board measure. The average stand totaled 6,395 cubic feet, or 18,500 feet board measure. Board foot measure is by the Scribner Decimal "C" scale and includes all trees ten inches d. b. h. and up.

The natural thinning which goes on in a virgin stand of timber produces the four recognizable classes of living trees: (1) Dominant, (2) codominant, (3) intermediate, and (4) suppressed. The process producing them begins immediately with the seedling stage. Throughout the development of the stand, intolerant species gradually are eliminated until, in

FIGURE 1



the final or "climax" stage, it is composed of only the most tolerant species. Finally these old survivors succumb to disease, insect attacks, or fire, and the cycle begins anew. Upset the conditions within the stand by removal of

a portion of the stems and either one or both of two things will occur. Either the remaining stems will monopolize the vacated space and utilize it for their own development, or, if unable to do so, new stems will appear (seedlings). Therefore, artificial thinning, by the removal of stems of lesser value, aims at causing the total possible growth to occur on picked individual stems.

In the white pine type of northern Idaho, western white pine is of course the most desirable species, with western red cedar of pole size not far behind. But, because of susceptibility to disease and insect attack, pure stands of any species are always undesirable from the forest protection standpoint. This is particularly true with western white pine because of blister rust and dendroctonus bettles. There is a possibility of producing two crops on the same area in this type, such as an overstory of white pine and an understory of cedar poles, which might partially reduce this danger.

Reliance on judgment alone, even when supported by a thorough knowledge of the silvics of the species concerned and a high degree of skill in marking for thinnings, cannot prevent a considerable variation in the resulting stand. Therefore, some means of controlling the severity of the thinning is needed. While the number and d. b. h. of the stems per acre vary with age and with site in fully stocked stands of western white pine, the cross-sectional basal area per acre of the stems at any given age is fairly constant for all sites. Haig[1] shows the following variations in basal area in fully stocked western white pine stands, between excellent and poor sites, for all ages up to and somewhat beyond maturity, indicating the greatest effect which site may have at any age.

TABLE I.

	AGE OF STAND (Years)							
	20	40	60	80	100	120	140	160
Basal Area of Poor Site (Sq. Ft.)	45	146	215	257	286	306	323	338
Basal Area of Excellent Site (Sq. Ft.)	47	151	223	266	296	318	335	350
Per cent of Variation	4.3	3.3	3.6	3.4	3.4	3.7	3.6	3.4

The average per cent of difference is quite constant for all ages, being a little less than 3.6 per cent. The difference between excellent and fair site is about 2.3 per cent, and between excellent and good sites, 1.2 per cent. Hence, for all practical purposes, site can be dropped as a factor influencing basal area per acre, and thinning to a definite basal area can be carried on quite independently of it, when the proper basal area to suit the age class has been selected. Hawley[2] says, "The basal area per acre is considered one of the best indicators of the character of thinning. Ultimately a standard basal area per acre can be established for each degree of thin-

1. Haig, I. T., **Second-Growth Yield, Stand, and Volume Tables for the Western White Pine Type, Table I.** U. S. Department of Agriculture Technical Bulletin No. 323.

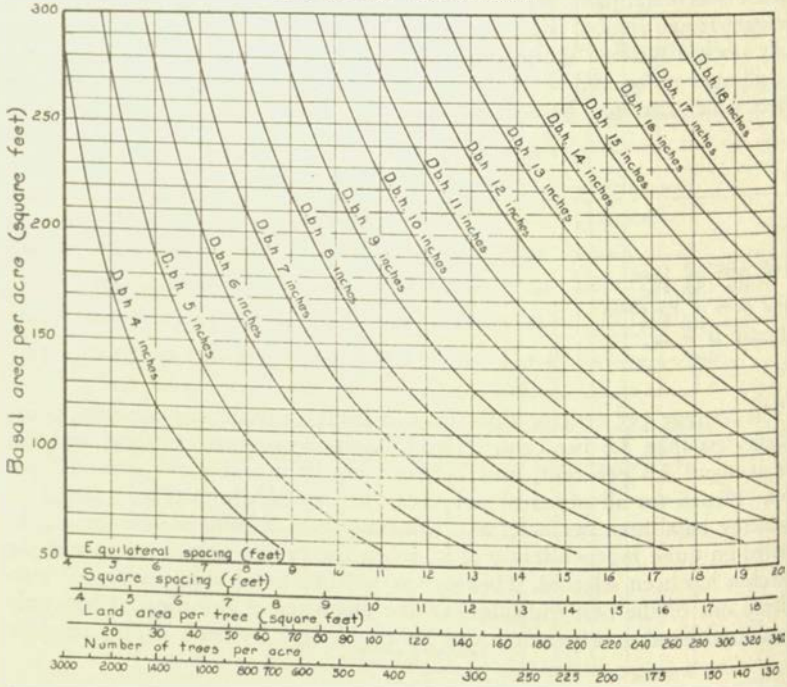
2. Hawley, Ralph C., **A Progress Report of the Results Secured in Treating Pure White Pine Stands on Experimental Plots at Keene, New Hampshire.** Yale School of Forestry Bulletin No. 7, p. 26.

ning. After and as a result of each thinning, the basal area would be reduced to this standard."

Some mechanical means by which the basal area of the trees to be left after thinning could be readily determined was therefore desirable. For this purpose the chart shown in Figure 1 was worked out. It indicates the radius of the area occupied by each individual tree of each d. b. h., when spacing is uniform, for basal areas between 100 and 200 square feet per acre. Any or all basal areas per acre could as easily have been shown. From it can be obtained the distance between any two trees (the sum of the radii of their areas) of any d. b. h. necessary to maintain a given basal area per acre. For example, it is desired to secure a basal area of 150 square feet per acre after thinning; to maintain this two 12-inch d. b. h. trees should be 17 feet apart (8½ plus 8½), or the distance between one 12-inch and one 8-inch tree should be 14¼ feet (8½ plus 5¾). The idea expressed in Figure 1 was later elaborated into that of Figure 2, by Kenneth Davis, a member of the Northern Rocky Mountain Forest and Range Experiment Station staff, who had charge of the thinning work on the Deception Creek experimental forest in the Coeur d'Alene National Forest.

FIGURE 2

SPACING DIAGRAM



The proper rotation for western white pine on all but the poorer sites has been fixed at 100 to 120 years. The stand in which the thinning was done on the Priest River experimental forest, being about 75 years of age,

is believed therefore to be too old to secure the maximum benefits from thinning. This view, however, is only conjecture, and remeasurement of the permanent plots will give definite evidence at some future time as to its validity.

The following summarizes the main factors considered in thinning:

1. Western white pine, being the most valuable species in the overstory, was consciously favored in thinning.
2. Western red cedar, being the most valuable of the understory species, was favored where understory trees were needed for spacing or site protection.
3. Whenever possible only dominant and codominant trees were reserved. Spacing needs, however, required frequent reservations not only of other species than pine, but occasionally individuals belonging to the lower crown classes. The inability of intolerant species to recover when released from suppression restricted choice to the more tolerant trees for these purposes.
4. Thinning was primarily aimed at release of reserved trees from competition with less valuable neighbors.
5. Several degrees of thinning were made from light to severe. Although only 35 to 40 years remain before the stand will reach maturity, and it can hardly be expected to respond greatly to thinning, by increased increment in this short period, a measure of this response to severity of thinning is considered important.

Tables II, III, and IV, which follow, summarize the data concerning the stand, and its treatment on the permanent sample plots:

TABLE II. NUMBER OF TREES

Plot No.	No. Trees — Per Acre Basis			Average d. b. h. Reserved Trees (Inches)	Approx. Site Index	No. Trees Fully Stocked Stand *
	Original Stand*	Cut	Reserved			
154	1186	878	308	9.2	70	530
155	2392	1592	800	5.4	63	760
156	2742	2194	548	5.1	55	1130
157	908	508	400	7.6	60	840
158	1152	620	532	7.2	60	840
159	1232	668	564	7.2	60	840
160	1148	924	224	10.7	60	840

* 0.6 inches d. b. h. and up.

TABLE III. VOLUME IN CUBIC FEET

Plot No.	Vol. in Cu. Ft. — Per Acre Basis			Approx. Site Index	Vol. in Cu. Ft. of Fully Stocked Stand
	Original Stand*	Cut	Reserved		
154	8250.0	3109.2	5140.8	70	9440
155	5342.8	1845.6	3497.2	63	8848
156	3012.2	1239.2	1773.0	55	7647
157	7039.2	2675.6	4363.6	60	8220
158	6506.8	1331.2	5175.6	60	8220
159	7373.6	1412.0	5961.6	60	8220
160	7273.6	1820.0	5453.6	60	8220

* Including all trees 0.6 inches d. b. h. and up.

TABLE IV. BASAL AREA IN SQUARE FEET

Plot No.	Basal Area in Sq. Ft. — Per Acre Basis			Approx. Site Index	Basal Area of Fully Stocked Stand * (Sq. Ft.)
	Original Stand *	Cut	Reserved		
154	255.2	114.2	141.0	70	255.25
155	211.0	81.8	129.2	63	252.60
156	157.3	81.4	75.9	55	251.0
157	209.5	84.8	124.7	60	252.50
158	198.0	48.3	149.7	60	252.50
159	202.9	44.5	158.4	60	252.50
160	210.3	71.2	139.1	60	252.50

* Including all trees 0.6 inches d. b. h. and up.

The figures in the columns headed "Approximate Site Index" refer to the quality site index rating of each plot, obtained from Table 24, "Second Growth Yield in Western White Pine", by I. T. Haig, and have the following values: Excellent site—70; good site—60; fair site—50; poor site—40. The last column in each of these tables lists the number of trees, cubic volume, and basal area, respectively, for fully stocked stands, corresponding to the site index number in the preceding column.

The seven plots listed are in two groups. Plots 154 to 156 belong to one, while plots 157 to 160 belong to the second group. The two groups are several miles apart. Although plot 156 belongs to the first group, it is quite different from its sister plots. While the stand is even-aged, it is decidedly a selection forest in character, and the site quality is distinctly lower. Thinning here was principally aimed at removal of competition, and the results may have value in future management of such western white pine stands. The other two plots of this group, in addition to close proximity to each other, possess features which give them comparative values. The overstory on plot 154 is especially well developed, largely at the expense of the understory. Although the latter included a considerable proportion of the stems in the original stand, it was practically eliminated in thinning. If the number of stems left after thinning is retained until the stand is 100 years of age, it will then be practically fully stocked in this regard. Since the average diameter of the trees left after thinning is very close to that of a fully stocked stand of its age, and since it should be safe to assume that normal increment will take place during the interval to maturity, the stand on this plot should then approach that quite rare condition, a normal forest.

Plot 155, on the other hand, possessed a much less well developed overstory, while the understory was particularly vigorous. Here the result after thinning is a conspicuously two-storied forest, the understory of which is almost wholly made up of western red cedar. The forest on this plot can never approach the fully stocked condition of an even-aged stand, because of the lack of stems in the overstory, which number but 320 per acre. The plot should demonstrate, however, the feasibility of producing two crops from the same area, the white pine of the overstory for sawtimber and the western red cedar of the understory for poles.

The forest in which the remaining four plots are located, Nos. 157 to 160, was remarkably even in almost every way before thinning. The greatest variation from the average basal area of 205 square feet per acre

was 6.9 square feet. Here was an excellent opportunity to experiment with degree of thinning. Accordingly, three weights of thinning were made, leaving the following square feet of basal area per acre:

124 sq. ft. on plot 157
150 sq. ft. on plot 158
158 sq. ft. on plot 159

An additional experiment in which plots 158 and 160 were paired concerns the understory of cedar which occurred on both. Plot 158 was thinned to a basal area of 150 square feet, of which 133 square feet is in the overstory and the balance, or 17 square feet, is in the western red cedar understory. All the understory of cedar was removed from plot 160, leaving 139 square feet entirely in the overstory. Here the effect of the removal of the competition of the understory with the overstory may later be studied.

All of the thinning plots should constitute an excellent basis for comparison with unthinned areas, concerning the increased value of the thinned stand at maturity. Even though increased increment as a result of thinning may be doubtful, particularly in stands of this age, the very pronounced improvement in quality of the stand, because of a higher proportion of the desirable species, should yield an increased financial return at maturity over unthinned stands. With western white pine and western red cedar poles averaging about $10.00 per thousand board feet stumpage value during the past decade, and with Douglas fir and western larch averaging about $1.00 per thousand board feet and western hemlock and lowland fir with minus values during the same period, it seems almost certain that the elimination of most of these species of such low value and the retention of those of high value cannot help but greatly enhance the value of the resultant stand at maturity. Whether this increase in value will prove equal to or greater than the cost of thinning is another matter, which only the results of harvest at maturity will answer.

NOTE—The data necessary for the writing of this article was loaned through the courtesy of the Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

Photographer—Everybody smile, please.

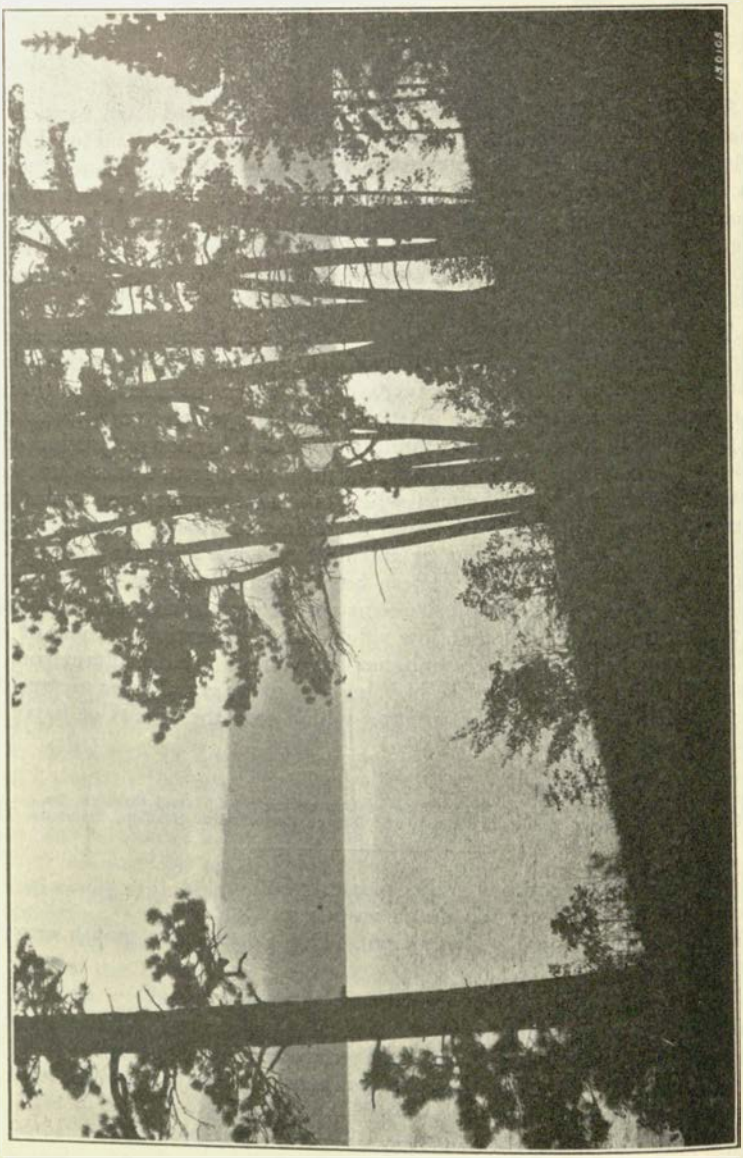
Hall—Can't, we've got too much on our minds.

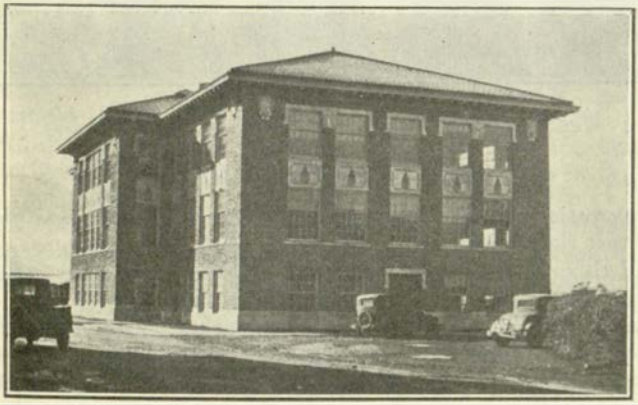
Voice from the crowd—That's right. Don't open your mouth or you'll sure lose it.

A former lumber salesman was convicted of a certain crime and sentenced to hang. When asked if he had anything to say, he replied:

"Say, Judge, how about giving my company the contract for the material to make the scaffold?"

In these few lines we wish to express our appreciation for the co-operation which has been given the *Forestry Kaimin* by the men who have written the articles and the advertisers who have taken space on its pages and thus made it possible for us, the Forestry Club, to print our 1934 annual.





School Activities

Forestry Kaimin Staff

Sparrow Stein Harris
Robbins Hinman Hague Wagner

THE EDITOR'S PAGE

Twenty years have passed since the first *Forestry Kaimin* was published. During that time numerous changes have been made in the magazine as time and circumstances have warranted, and the *Kaimin* has grown with the school.

The readers of this, the Forestry Club annual, are men of all ages, from the prospective student now attending high school, who plans on entering the School of Forestry, to the man far advanced in our profession. All have one interest in common, forestry. With this in mind, we have chosen the material for this issue of the *Forestry Kaimin*. We sincerely hope that our readers find it worthwhile, and that it serves to bring happy memories to the members of the Forestry Club, past, present and future.

School of Forestry graduates have looked on a rather depressing situation for several years past. This year, however, the aspect has reversed itself. Under the present national administration, the forestry profession has gained ground with leaps and bounds. It is now more firmly established as one of our major national activities than it has ever been. Scarcely a year ago the graduates of forestry schools were dubious about their future. Now they are much in demand.

Forestry has been pushed to the front through the many new projects carried on under the C. C. C., E. C. W., and other national programs. The people of the country now look to our forests as places of employment for a great many men each year, and in order to carry on such a large expansion, trained men are required. Forestry school graduates are filling these jobs ably and efficiently. Those who have had faith in the profession and have hung on during the lean years are now profiting by that faith.

The seniors of the Montana School of Forestry are waiting and anxious to step out into this newly revived activity. We will be proud to be a part of such a move toward the advancement and stabilization of our chosen profession. All we ask is a chance to do our share.

The Montana Druids

By Dick Gallup

The Montana Druids is an honorary society composed of junior and senior students of the School of Forestry who have better than average grades and are active in outside functions of the School.

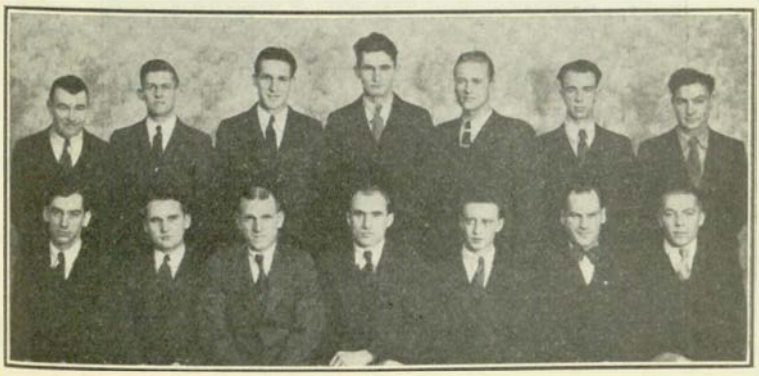
Druid meetings are held twice each month at the home of some member. Here the students and faculty members meet on a common ground and iron out many of the difficulties that might otherwise cause friction in the organization. A club of this kind has an inestimable value to the students and to the School. By keeping the students and faculty a close knit unit, a feeling of good fellowship is built up which is something to be highly desired.

The ranks were severely thinned, due to many of the Druids graduating last spring, but it was not long before we had another group of active members taken from this year's juniors and seniors. The following men were initiated into the club this year: Lester Robbins, Orville Sparrow, Professor E. W. Nelson, Lloyd Bernhard, Wesley Harden, Lincoln Landall, Lester Harris, George Gable and M. O. Hancock.

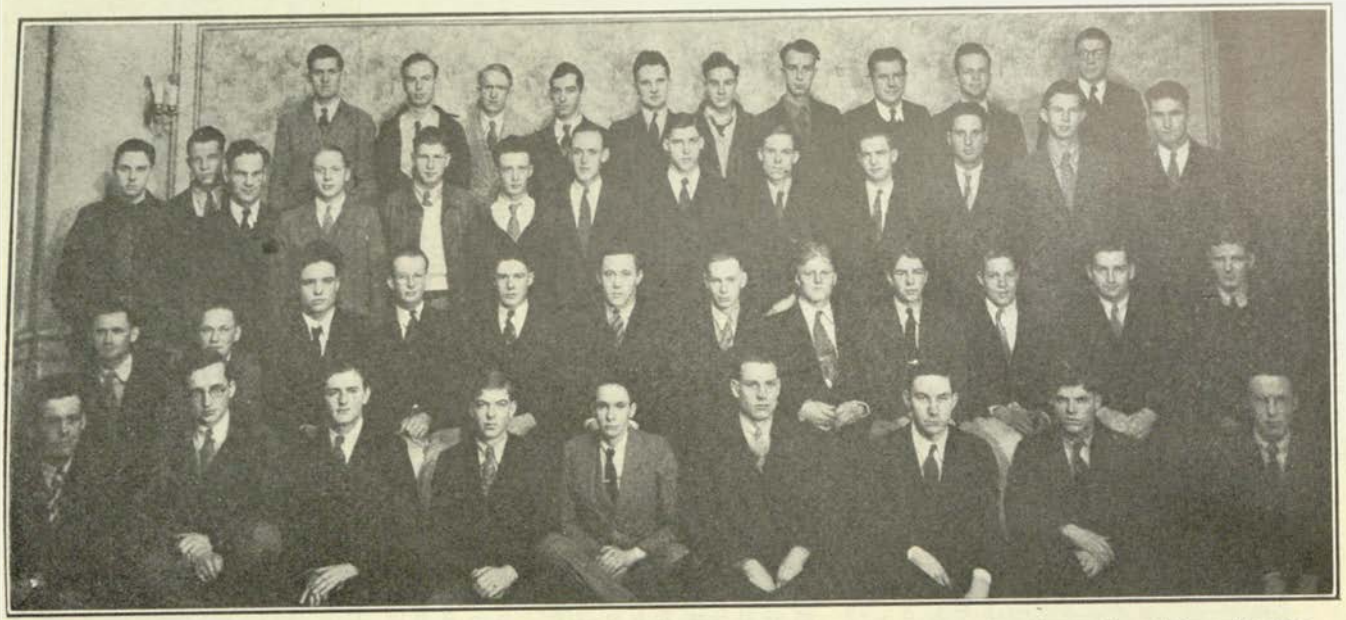
This year's officers were: President, Ed Dobrinz; vice-president, Mark Lawrence; secretary, Dick Gallup; treasurer, Joe Wagner; corresponding secretary, Jack Hinman. Next year's officers are named in the same order: Dick Gallup, Lester Robbins, Wesley Harden, Lloyd Hague and Orville Sparrow.

The motto of the Club, "To give full measure of service" has been exemplified in every activity the Druids have undertaken. No member is ever too busy to do his part.

The School is proud of the club and expects it to grow and prosper in the future as it has in the past.



THE FORESTRY CLUB



Top Row—Bernhard, H. Welton, Hancock, Harris, Wagner, Stephens, E. Welton, Rauma, Kirby, Buckhous. Second Row—Freeman, Wildschut, Sparrow, Hennings, Krueger, Robbins, Stein, Bauer, Lawrence, Dresskell, Roffler, Brierley, Hague. Middle Row—Fager, Nousianen, Peterson, Scheytt, Kingsbury, Mitchell, Williams, Lewis, Doyle, Winters, Erwin, Demorest. Lower Row—Forgey, Sheldon, Schramm, Watters, Pool, Pickens, Bosseler, Dobbs, Moody.

The Forestry Club

By Virgil Stephens

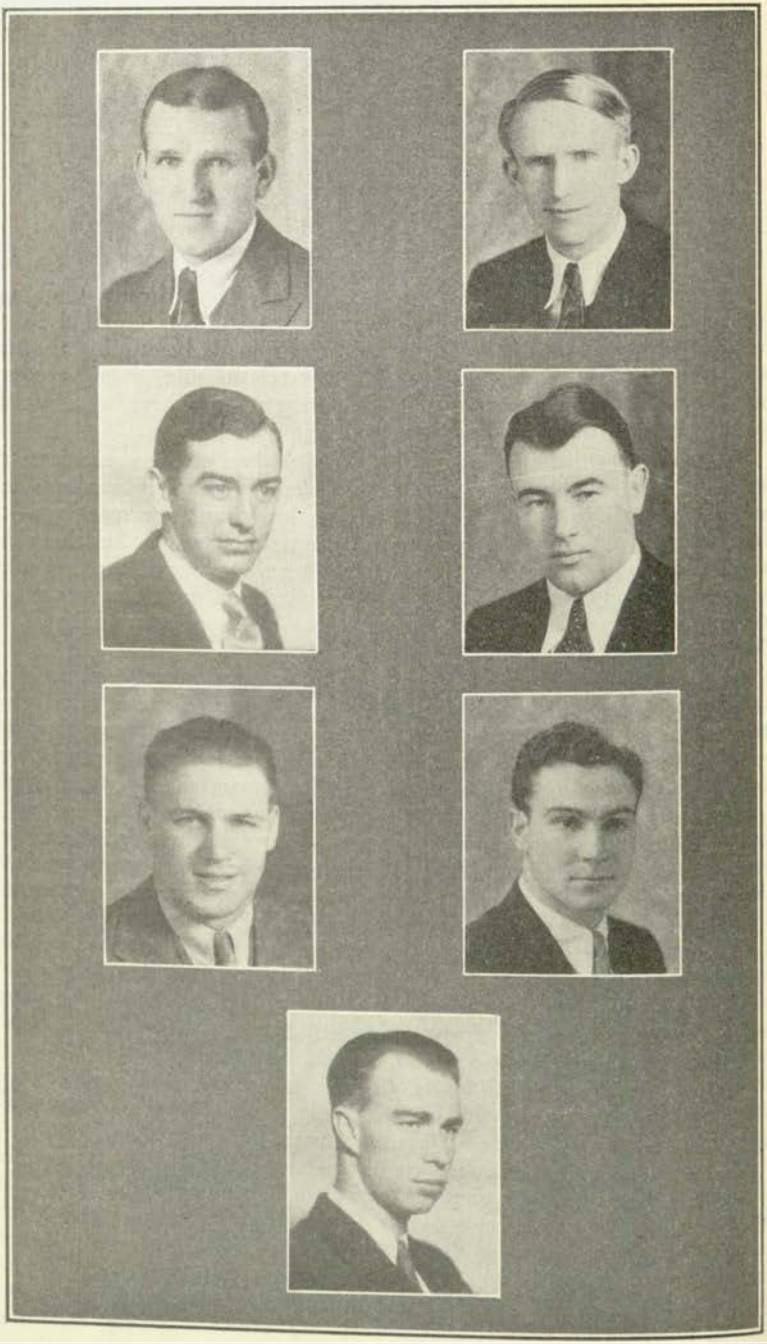
A score of successful years have passed since the Forestry Club was organized. Its membership is composed of the students enrolled in the School of Forestry and the forestry faculty. From its beginning, the purpose of the Club has been to bring a closer relationship among students and faculty members and form a common ground where all members might meet to further the best interests of the school.

Meetings are held the first and third Wednesdays of each month in the School of Forestry library, which is reserved for forestry students and professors only. No lines of distinction are drawn at these meetings—the newest freshman has the same right to express his views as has the oldest senior or faculty member. Hot arguments are the order of the day when some project is being decided upon, and decisions both important and trivial may honestly be said to represent the views of a majority of the Club's members.

An educational program or some form of entertainment is planned for each meeting. Several men from the U. S. Forest Service have given lectures during the past year, which have proven both interesting and beneficial to the members of the Club. Other forms of entertainment have consisted of slide or moving pictures. At least once each quarter a joint meeting has been held with another professional club on the campus, a practice which was begun several years ago. Through these social meetings with other groups, members of the different clubs become better acquainted and a closer contact is brought about, whereby co-operation within the State University as a whole is more easily realized.

The Forestry Club is known as one of the largest and most active clubs on the campus. Among the many activities sponsored by the Club are the fall hike, the fall dance, the smoker, the annual Foresters' Ball, the spring picnic, and the publication of the Forestry Kaimin. The Club also owns and administers its own loan fund, which has been built up from the proceeds of the Foresters' Balls of the last ten years. The spirit which exists among the members makes it possible for the Club to successfully sponsor its many activities with an enthusiasm which never lags.

The government of the Club is centered in an executive board, members of which include the duly elected officers and a representative from each class, and much of the success of the Club's activities is centered in this group. During the past year the officers were: Virgil Stephens, president; Ed Dobrinz, vice-president; Edwin Stein, secretary, and Earl Welton, treasurer. Others on the executive board were: Lester Harris, senior; Edwin Rauma, junior; Jack Oliver, sophomore, and Howard Doyle, freshman.



SENIORS

HALL, RUFUS H., *"Hall,"* Two Dot, Montana—Logging Engineering. Activities: Forestry Club 2, 3, 4, 5, 6; Druids 5, 6; Phi Sigma 6; Foresters' Ball 1, 2, 3, 4, 5, 6; Foresters' Ball Committee 6; Foresters' Basketball 1, 3, 5, 6; Rifle Club 3, 4; Forest Research 4, 5, 6; Student Assistant in Logging and Silviculture 6. Summer Work: Stillwater State Forest, '28; Jefferson National Forest, '29; Blackfeet National Forest, '30; Cabinet National Forest, '31, '32, '33.

HANCOCK, MORRIS O., *"Sandy,"* Glendive, Montana—Logging Engineering. Activities: Phi Sigma Kappa; Forestry Club 2, 3, 4; Druids, 4; Foresters' Ball Committee 2, 3, 4. Summer Work: Selway National Forest, Trail Crew, '31.

HARRIS, LESTER L., *"Les,"* Centerville, Indiana—Logging Engineering. Activities: Pasadena Junior College 1, 2; Forestry Club 3, 4; Druids 4; Foresters' Ball Committee 4; Forestry Club Smoker Chairman 4; Forestry Kaimin Staff 4; Executive Board 4; Student Assistant in Dendrology and Wood Technology 4. Summer Work: Blackfeet National Forest and Flathead National Forest, '33.

HINMAN, JOHN F., *"Jack,"* Rapelje, Montana—Grazing Management. Activities: Forestry Club 1, 2, 3, 4; Druids 3, 4; Executive Board 3; Foresters' Ball Committee 2, 3, 4; Assistant Push 3; Editor of School of Forestry News Letter 4; Forestry Kaimin Staff 3; Editor-in-Chief 4; Student Assistant in Forest Mensuration 4. Summer Work: Lewis and Clark National Forest, '32; Gallatin National Forest, '33.

QUINLIN, FRANK CARTER, *"Carter,"* Rahway, New Jersey—Logging Engineering. Activities: Phi Delta Theta; Forestry Club 1, 2, 3, 4, 5; Foresters' Ball 1, 2, 3, 4, 5; Lieutenant R. O. T. C. 4; Cadet Major R. O. T. C. 4; Scabbard and Blade 3, 4; American Military Engineer; Reserve Officers Association Winner — American Legion Scholarship Spring, '32; Duniway Prize in Military Science, '33; R. O. T. C. Merit Award Fall, '31, Fall, '32, Winter, '32, Spring, '32. Summer Work: Selway National Forest, '30, '31; Advanced R. O. T. C. Camp—Fort George Wright, Washington; Field Manouvers—Fourth Infantry, Fort Missoula, '32; Active Duty, Second Lieutenant, Fourth Infantry, Fort Missoula, '33.

STEPHENS, VIRGIL, *"Steve,"* Colo, Iowa—Logging Engineering. Activities: Iowa State College 1; Forestry Club 2, 3; President 4; Druids 3, 4; Rifle Club 3; Interscholastic Committee 3; M Club Tournament 3, 4; Silent Sentinel 4; Foresters' Ball Committee 2, 3, 4; Skating Rink 3; Forestry Club Smoker Committee 4; Student Assistant in Charge of Instrument Room 4. Summer Work: Lolo National Forest, '29, '30, '31, '32; Alternate Ranger, '33; Nebraska National Forest, '30.

WELTON, EARL, *"Red,"* Townsend, Montana—Logging Engineering. Activities: Forestry Club 1, 2, 3; Treasurer 4; Druids 4; Fall Hike Committee 2, 3; Fall Dance Committee 2, 3; Rangers Dream Chairman, Foresters' Ball Committee 3, 4; Rifle Club 1, 2, 3, 4; Forestry Club Smoker Committee 4. Summer Work: Lolo National Forest, '29, '30, '31, '32, '33.

Slide Rule Blues

By Richard Gallup

Every golf course has its hazards;
Every race has gauntlets, too.
The same holds true for wood hogs,
At good old Montana U.

Long about your Junior year, boys,
When you see the light ahead,
Feller by the name o' Clark, sir,
Knocks your fond hopes on the head.

No damn credit just for tryin',
Answers either right or wrong.
If you'd stand a ghost o' passin',
Bring your 'rithmetic along.

Make that slide rule smoke a little,
Know what's tangents and percents.
And above all use your heads, boys,
Commissions ain't as low as cents.

Clark is pretty good at thinnin',
Must a learned it in the woods.
For to get his blaze upon you,
You just got to have the goods.

Oh they say it's open season,
On his ornery hide.
Guess they got a bounty on 'im
Cause he took 'em for a ride.

Now I'll tell you boys a secret,
And it's mighty nigh a scoop,
Clark, the danged ol' buzzard,
Likes his tests knocked for a loop.

Scheytt—What's it a sign of when the sky gets pink early in the morning?

Harris—That's a sign that the sun's coming up.

Keilman—Do you think the flaming youth type of college student is passing?

Clark—No, flunking!

Swearingen—Set the vernier at zero or at random.

Krueger—Where's random?

The Foresters' Ball

By Orville Sparrow

ED DOBRINZ
Chief Push

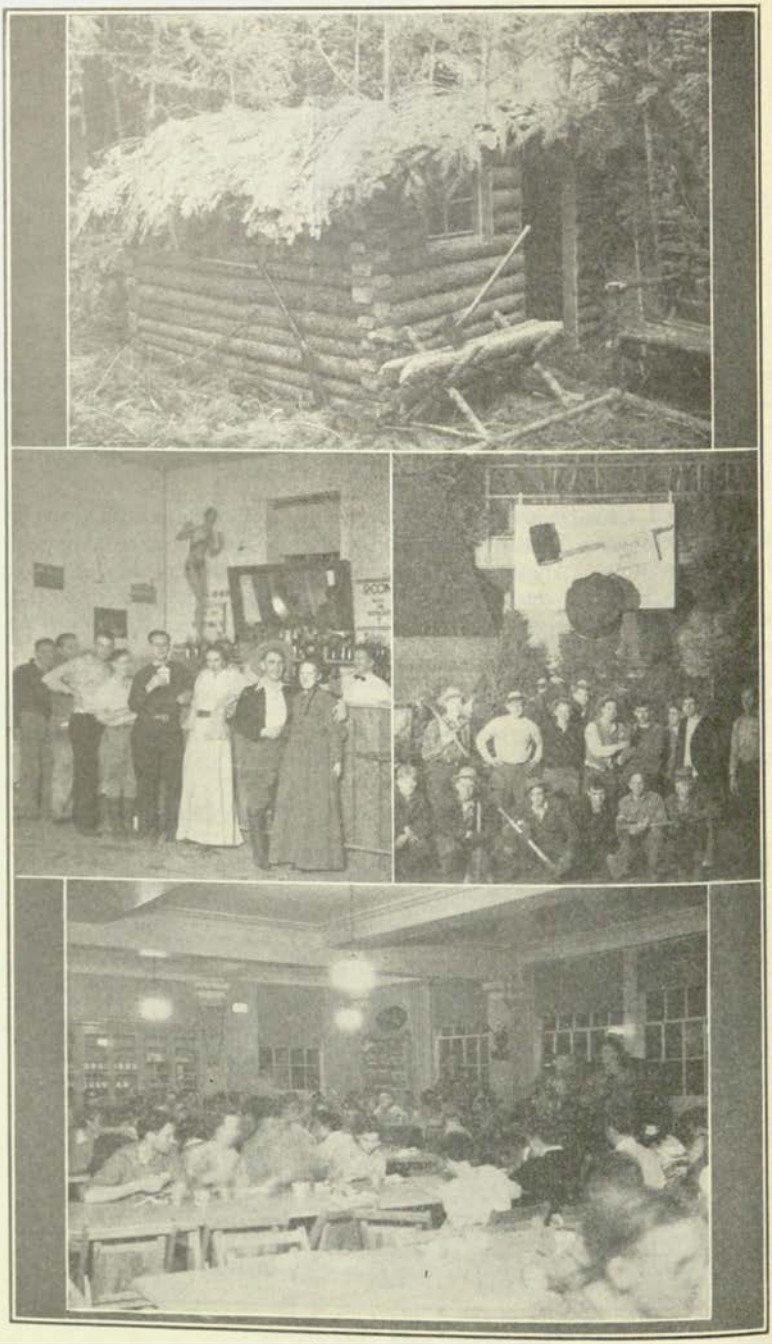
The Forestry Club had its difficulties this year in putting on the Ball. Some of these difficulties were caused by circumstances over which they had no control, while others were from conditions within the Club. Several new problems that had never come up before threatened the success and continuation of the dance. In addition, the success of the 1933 Ball was a high mark at which the Club felt it should aim.

Undismayed, Chief Push Dobrinz selected his committees and proceeded with arrangements. The first trip after boughs was made during the Christmas vacation. A large crew turned out and in one day all of the cedar boughs were cut and hauled in from Hayes Creek. Soon after the winter quarter began trips were made up Pattee Canyon for fir boughs and trees.

As the date of the Ball drew near, many of the bug-a-boos that had been staring the Club in the face evaporated. Outside of the forestry school everyone seemed interested in the Ball, and the ticket sale was highly successful. Within the school, there were always plenty of foresters on hand to take care of jobs as they came up.

Needless to say, there was plenty of work. Welton had from one to a

FORESTERS' BALL COMMITTEE



dozen men working in the "Cat" shed. A young sawmill was set up in room 309, where the logs were sawed up for the favors. Paul Bunyan himself would have envied the speed and accuracy with which Sandy Hancock and his crew turned out one thousand pairs of skidding tongs. Curly "Man-about-town" Robbins returned to his old haunts to personally pick a crew of good-looking waitresses. He had a lot of explaining to do, but when it was over he had enough telephone numbers to last him until spring.

Besides the work done on the campus, Joe Wagner was all over town as property man, and Jack Oliver required a secretary to look after his correspondence with the better-known orchestras of the state.

Doc Schreiber turned the gym over the Club at noon Thursday, which gave the crews an early start. Those who could make up their Thursday afternoon classes beforehand, did so and there was a large number of men on deck. By eleven o'clock that evening the ceiling was covered with cedar boughs and many of the fir trees were in place along the running track. Friday morning practically the whole Club was out. Decorations were put up, cabins built, floors swept, chairs moved, tables put up, sandwiches made, and the music stand built. Between hauling pictures, cider, tables, cabins, the Blue Ox, sawdust and other odds and ends, Jack Hinman had hardly time enough to eat lunch, which was served as usual in the forestry building at noon. Nearly as many sandwiches were eaten then as at the dance in the evening. (It seems Landall could not get started at the dance.) Only the finishing touches remained to be taken care of during the afternoon before the dance.

The dance started at nine o'clock. The entrance to the Ball was constructed as a chute, with a squeeze gate at the door. Here each entry was caught, inspected and branded with P. B., the "iron" carried by Babe, the Blue Ox, and also used by Paul to end mark his logs. After being branded, the entries were turned loose on the Foresters' Ball National Forest, where the main attraction, of course, was the dancing. Music was furnished by Hugh Dunlap and his orchestra of Butte, Montana. Their music was very good, and thanks to Bob Myers and his crew, it was reflected on a sounding board and could be heard all over the hall.

The gym as a whole was decorated after the accustomed manner. The ceiling was covered with cedar boughs; a row of fir trees reached from the running track to the ceiling, and another row from the floor to the running track. The soft lights and smell of the coniferous decorations created an atmosphere that only a Foresters' Ball can hope to attain.

Paul Bunyan did not feel like watching the dance from his usual seat on the running track, but his shirt, boots, hat and pipe were there to give strangers some idea of his size. Babe was there and caused the decorations committee some concern by browsing on the ceiling decorations. To add to the forest atmosphere, there was a new hitchrack with a few saddles and a halter or two draped across it.

The Dream was the usual haven of refuge, where couples could go and ponder on the wonders of nature without too much interruption. Though it detracted nothing from its secluded beauty, the handiwork of the forester was apparent in the Dream. Instead of the old tepee and its campfire,

the Dream had a new log cabin with a fireplace. Also the trees that grew haphazardly along the sides of this forest nook had been expertly pruned among the lower branches.

"It's beauty we want, not silviculture," moaned Johnny Morrison, when this took place.

In the New Deal bar three husky bartenders "set 'em up" and waited on the card tables. Here the decorations appealed to the aesthetic sense, and the cider and root beer to the senses of more material individuals.

The first dinner period was announced at the beginning of the eighth dance. The Forestry Club library and the assembly room on the second floor of the forestry building were arranged to seat 200 persons each. The lunch was served in four periods, and three dances were allowed for each group to eat. The food was plentiful, sustaining, and well served. Due to the well planned arrangements and abundance of "bouncers," there was very little of the customary disorder in the dining rooms.

After lunch periods, dancing lasted until one o'clock. The dean of women allowed late permission, something that happens but a few times each school year.

Saturday morning those that could "take it" were out in force, and the job of tearing down and cleaning up was taken care of in fast time. By eleven o'clock, the gym was turned over to the janitor's scrubbing crew, and by one o'clock a basketball game was in progress.

At four o'clock Chief Push Dobrinz passed around the cigars to about ten men, who had stayed to the bitter end. Everything had been returned or put away, and another successful Foresters' Ball was history.

The "Cat"

In November, 1933, a welcome addition to the equipment of the School of Forestry was secured in the form of a thirty-five horsepower Diesel Caterpillar tractor. The tractor is loaned to us through the courtesy of the Westmont Tractor and Equipment Company of Missoula.

The Diesel tractor which we have is a relatively new model, and being one of the first in this region, it naturally became a source of great interest to all of those who witnessed its operation. To the students it has offered a chance to learn the care and operation of the machine, information and experience which will be of great value to them. This opportunity has by no means been overlooked, for at times standing, sitting and hanging-on room has been non-existent on any part of the "Cat." Where there were at first none, we now have several good "Cat skinners," and a few of the boys have become familiar with the tricks of a grader. The grading and leveling of the skating rink, however futile due to lack of cold weather, furnished experience on the grader.

The Diesel tractor which the School now has is one especially designed for logging and woods work. Extra heavy guards protect its vulnerable spots and wide tracks provide greater safety for side-hill work. The most interesting fact about the machine is that, like all Diesels, it uses oil in place of gasoline as a source of power, and as a result is much cheaper to operate than a gasoline engine.

1933 Senior Spring Trip

By Joel Frykman, '33

So strong was the idea of a spring trip rooted into the minds of the senior class last spring, that no thought of adversity or of financial embarrassment could change the resolve that the trip should be undertaken. Forthwith nine seniors, Fred Benson, Frank Curtiss, Bill Davis, Millard Evenson, Joel Frykman, Larry Neff, Walter Pool, Dick Whitaker and Jack White, and two professors, Jerry Ramskill and Fay Clark, arrived at the School of Forestry building early on the morning of April 28. Jerry Ramskill, the pilot of the cruise, furnished his sedan for transportation and the Forest Service had obligingly loaned us a three-ton truck for our trip. Into this truck went all baggage, including Fay Clark's and Bill Davis' hats, and kapok beds, also furnished us by the Forest Service. Fay Clark was the pilot of the truck and demonstrated to the passengers his competency in driving over down grades and around hair pin curves.

The scramble begun that morning settled priority rights to certain prized seats in the truck. After we had started on our journey we appreciated the thoughtfulness of someone in furnishing us a heavy tarp which we used to cover the end of the truck body and over as a shelter from wind and rain. It began to rain when we reached Perma and rained thereafter nearly every day for two weeks.

Our first stop was at the Priest River Experiment Station where Thompson gave us a warm welcome and permitted us to initiate his new bunkhouse. In that bunkhouse was also initiated a ritual followed religiously each day of the trip. Several members brought out stationery and pens to considerately tell the folks at home (?) of their daily experiences.

The following morning Gisborne lectured to the class on his fire studies. He gave a very interesting talk on the studies being made of the classes of fire danger and the variables entering into the causes of danger. He also showed the class some of the new instruments devised, such as the fire danger meter, duff hygrometer, a new anemometer and new rain guages. Thompson then took us to his experimental thinning plots in white pine. Other experiments shown were the seed traps and the yellow pine experiment, now 22 years old, conducted to determine the effect of seed source upon tree growth.

From Priest River we drove to Spokane stopping first at Hillyard to inspect the treating plant of the Washington Wood Preserving company. On entering Spokane, Curtiss and Davis were handed the keys to the city by some very buxom maidens. Here, too, the boys found out the high cost of post-prohibition beer.

The drive from Spokane to Seattle was a long uneventful trip except for the beautiful scenic drive over Snoqualmie Pass and stops to view the Canyon of the Columbia and Snoqualmie Falls. Our stop in Seattle was brief, as we moved on to Everett the following morning to visit the Weyerhæuser mills there. From Everett we drove to Edmonds to embark on our first ferry ride, across to Port Ludlow. From Port Ludlow it was a short ride to Port Angeles for a closer view of the Sound and its shipping.

At Port Angeles we were afforded an excellent inspection of a pulp and

paper plant of the Olympia Forest Products company. The plant was then shut down so that we did not see the actual operation but obtained a better understanding of the mill plan from our very efficient and accomodative guide.

The same day we had more surprises, as we got our first view of the stupendous logging operation in the Douglas fir region at the camp of the Bloedel-Donovan company at Forks. The class stood open mouthed as it watched the donkey engines handle the huge fir logs like matches. The class is indebted to this company and to the camp superintendent for the courtesies shown us. At this camp, Evenson, one of the group of conk hunters, got a good-sized specimen of *Fomes pinicola.* That evening we had our first view of the not so peaceful and quiet Pacific.

Neah Bay then drew our interest as the headquarters of Ray Bitney, superintendent of the Indian Agency, and as the headquarters of the Washington Pulp and Paper company's new operation. We spent a day inspecting their logging system and making a trip back to Sekiu to see the building of ocean log rafts.

Tacoma, with Buck Merrill as our guide, was our next stop. Buck tried to get the boys a yacht ride but was not successful. Though we did not get a yacht ride, we were given a real treat by a beetle-browed Norwegian skipper of an ocean freighter. He proudly showed us the whole ship and its workings and then gave us a ride from one dock to another. We also visited the Defiance Lumber company and Peterman's mills. In the evening we had dinner at the Tacoma hotel and were favored with a visit and talk by Mr. C. S. Chapman of the Weyerhæuser company.

Longview, with its large lumber mills, was our next point of interest, followed by a trip to the Wind River Experiment Station. At Wind River we sloshed through the mud and downpour to listen attentively to Mr. Isaacs' discussion of his work at the Station, both in nursery and other experiments. He amazed the members of the class by showing us some very tall and large white pine in the experimental forest. The Montana gang will soon have a poor reputation at Wind River unless it ceases to hit people on the head and carry away their boots.

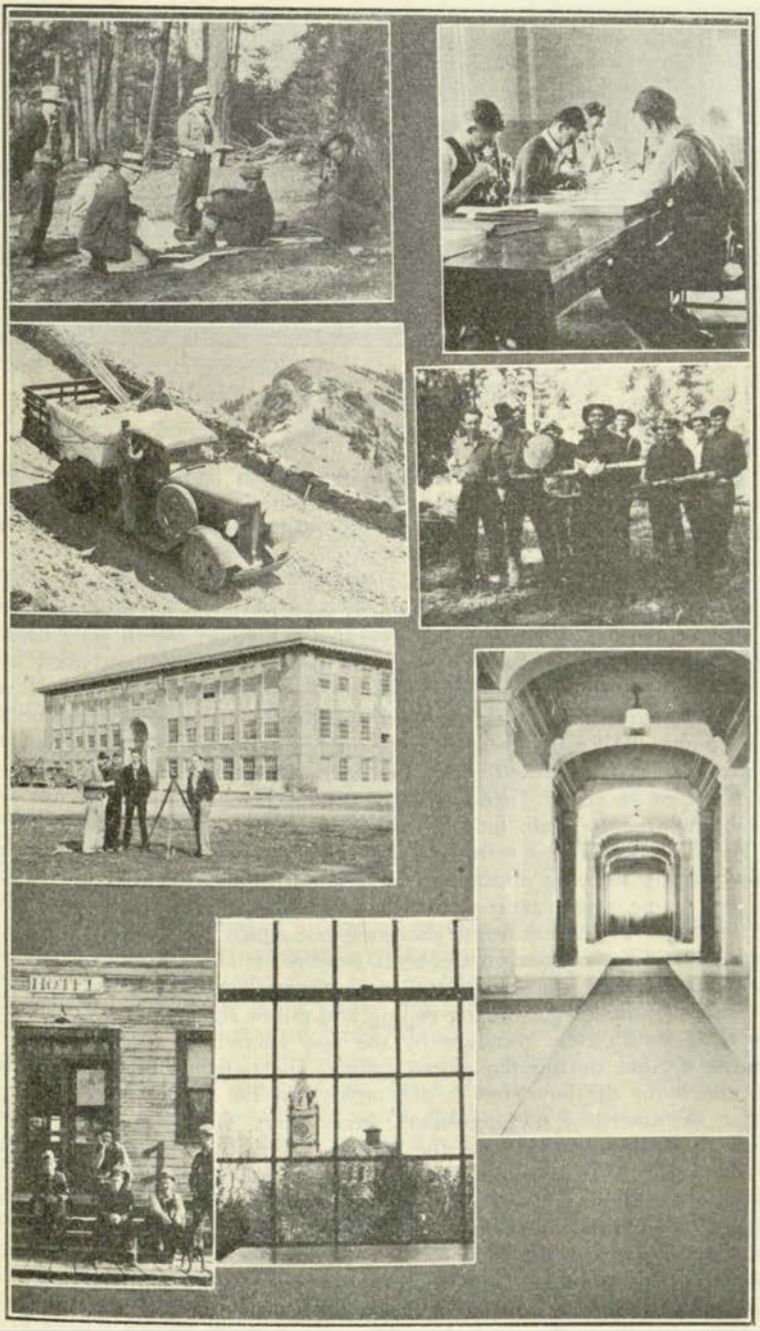
From Wind River we drove southward across the Bridge of the Gods for a brief stop at the Multnomah Falls. It was raining so hard it was difficult to discern which was the falls and which the rain.

At Oregon City we visited the Crown-Willamette pulp and paper plant, affording us an excellent opportunity to see a plant in operation. Corvallis, our next stop, will always be remembered by Curtiss for his famous night ride.

Marshfield, Eureka and Scotia followed in quick succession, with the class initiated into a new timber and different logging methods in the Port Orford and incense cedar, and the redwood timber. We were very considerately treated by the Evans Products company at Marshfield and by the Pacific Lumber company at both Eureka and Scotia.

We left the rain belt behind to welcome California's sunshine and San Francisco. The day spent at San Francisco was one of much interest to everyone—the Golden Gate Park, Chinatown, the harbor and just the city. What kept Fay sleepless from Friday afternoon to Sunday morning

(Continued on Page 41)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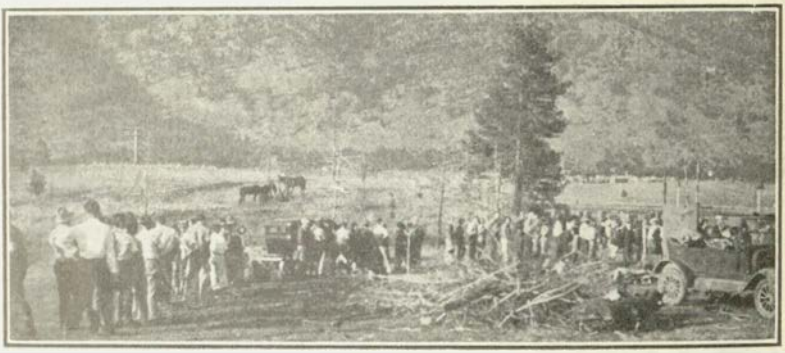


The Spring Picnic

By Lloyd Hague

"Change—fair to warmer." Those few words had a meaning, a big meaning to those sons of Paul who had been scanning the calendar anxiously for a brief respite from the late cold spring, waiting until it was warm enough to hold the annual spring picinc.

Saturday morning found the sun climbing over Mt. Sentinel as scheduled when the crowd left the School to prepare the picnic grounds above the Milwaukee tunnel across the river from Bonner. With good nature and enthusiasm, everyone "fell to" and before mid-afternoon wood had been gathered, barbecue pits dug, horseshoe courts built, backstop replaced and logs for the log rolling cut and awaiting in the emerald pool below the grounds. All was in readiness for the big day to follow. Early Sunday morning "Dad" DeJarnette was on hand with what looked like enough food to feed an army. In no time the meat was roasting over the fire and the beans—regular bean hole beans—were baking below the coals.

The sun was shining warmly down upon the grassy meadow when the crowd began arriving about two o'clock. In almost no time a red hot baseball game was organized between the Forest Service and the School of Forestry. In the meantime the horseshoe courts were doing a rushing business and the transits on the bluff were never idle. About three-thirty corked boots and stagged shirts made themselves evident as the boys prepared themselves for the log rolling and pillow fighting events. "Snake" Stephens justified the moniker by the way he twisted and squirmed to remain upright during the pillow fight. The twisting log proved to be too much for the boys, but it did prove that the School is turning out better swimmers, if not log-rollers, every year. In the packing contest Howard Welton easily took the honors. The tug-of-war between the grazers under Walter Pool and the engineers under Millard Evenson went to the grazers, due to the coaching by "Heave-Ho" Wagner. Stan Larson and Al Spaulding successfully defended their "push-pull" crown when they decisively beat the time of all other contestants. The nail driving contest, a new event, brought forth some keen competition from women. Vivian Bower hit the nail on the head and won with no smashed fingers.

About five-thirty the odor of freshly roasted meat and coffee became so

strong that forgotten appetites were revived. A rapidly forming line soon spread the news that supper was about to be served. With a "let her go" from "Dad," hungry foresters and friends were helped to generous portions of barbecued beef and pork sandwiches, steaming bean-hole beans, coffee and doughnuts.

As the evening sun neared the western horizon, the campfire was built and the crowd gathered around and sang favorite songs. Dean A. L. Stone of the School of Journalism was called upon for a story and gave a very interesting account of the historical events which have passed in the valley below the picnic grounds, the famous Hell Gate canyon, scene of much early western Montana history as the opening to fertile valleys for travelers from the East. When the fire burned low and the hour grew late, a few last songs were sung, and the crowd piled into cars for town, and the spring picnic of 1933 was but a memory.

Water Boy

By Millard Edgmond

Our bags were filled. We swung a two-gallon sack to each shoulder and started the long hike up the mountains to the fire line on our first trip as water boys. All set? Let's go! As we started out, I turned and glanced back. Only a small stream with black particles of burned wood and bark floating on the surface. Diagonally it cut across a jumbled, blackened mass of brush and fallen trees. Here and there a thin spiral of smoke indicated a stump or rotten log which was still smoldering. Desolation where only yesterday there stood a heavy forest. The pungent odor of burning wood permeated the atmosphere, and the biting tang of burning pine and fir needles seemed to sear our lungs at every breath.

The sun was a fiery ball suspended above the hazy horizon. It looked a long way to the dense gray pillar of smoke rising in the air until it surmounted the majestic, snow-capped peaks of the Mission Range, shrouding their outlines in mystery. Slowly we toiled up the rough mountain side, skirted the edge of the burn, and gradually worked our way to the fire line.

After what seemed eons of torture we reached the immense conflagation. It was a relief to rest a moment before plunging into the smoke of that raging inferno. We started along the fire trench. The smoke blotted out the sun and seared our lungs. Our eyes smarted and burned until we could hardly see. We staggered on. Ashes were sifting down all about us. A sharp pain in my arm roused me. I slapped out the smoldering flame on my shirt and stumbled on. Here and there were small glowing areas marking spot fires, started by sparks carried by the light breeze.

We finally reached the main crew and started to dispense our precious fluid. In almost no time the bags were emptied, and we stumbled back the way we had come. The smoke thinned and we straggled out into the free air again. The first breath of pure air was so good we could not get enough of it. Back in the smoke we could hear the sullen roar of the flames with now and then a crash as some monarch of the forest tumbled to earth. A rest, all too short, and we started down to the stream after another load of water.

Highpants Junior Comes to School

By Richard Gallup, 35

Ol' man Highpants bites off a chaw,
Chews a while, then looks at maw,
That Young 'un's gettin' big on us
Fust thing we know he'll be in a muss.

I seed ol' Johnson t'other day
Cleaning his shotgun and lookin' this way.
The kid likes licker too dern well
And I have me doubts if he can spell.

Let's turn him loose on another range
Where the licker and the she stock's strange,
Besides he might turn out some good,
The damn hell driver really should.

Ma lights her corn cob unconcerned
An' looks to see if the beer kegs turned,
Says she, He ain't much good at tendin' still
An' he ain't made one out-of-season kill.

He's too derned smart for this here ranch,
And he kind o' likes the Forestry branch.
Let's send the whelp away to school,
That's what he wants; the danged young fool.

Young Highpants, armed with boots and hat,
Came to school on a N. P. flat,
Sidled up to his books with a grin,
Earns board and room and a little gin.

He finds his way around, you bet!
And lessons ain't so hard to get.
He worked and drank through four different Balls,
Went out each summer at Uncle's calls.

He slips by the Iron Duke in the night,
Makes Silvertip think black is white.
I Work'em holds him down for a while
'Till he catches on to the old boy's style.

He became a surveyor like those before,
Mapped Marshall Gulch from the Forest School door.
He studied the history phase in logging
And the use of a light when it comes to fudging.

In spite of all these handicaps
Young Highpants earns his graduation wraps.
He knocks the C. S. exam for a loop
And sends in his marks to hear them whoop.

He got his sheepskin one fine June,
And hits for home with his gal an' moon.
He's runnin' the still for Ol' Highpants now,
And the Johnson gal is feedin his sow.

Which goes to show that four years of school
Don't turn a man into no dern fool.
An' Ol' Highpants says the licker he makes
Is the best ever drunk down thar in the brakes.

1933 Senior Spring Trip

(Continued from Page 36)

is a deep, dark secret. Anyway, Sunday morning he relinquished his hold on the wheel to Walt Pool and climbed into the rear of the truck to sleep.

On our return from San Francisco, we stopped at Hilt to see, in two hours, the mill of the California Fruit Growers and then hurried on to Klamath Falls to spend a day at the Klamath Indian Reservation with Floyd Phillips, obtaining a very good concept of a well-named forest.

Our side trip to Crater Lake the following day was a venture into a canyon of snow and a snowstorm. Our view of Crater Lake was similar to that of a North Dakota farmer scanning his farm in a blinding blizzard.

At Lewiston, Idaho, we met another of our graduates, Clyde Baker, who guided us through the labyrinth of the Lewiston mill of Potlatch Forests, Inc. The class was particularly interested in the size of the timber sawed, the lumber piling machine, and the new briquetting machine making "Prest-Wood."

After three weeks of wandering through four forests types, viewing large and small logging and milling operations in the white pine, fir-larch, Douglas fir, incense cedar, redwood and yellow pine regions, after viewing the Pacific ocean from Puget Sound to San Francisco, after riding in truck, car, train and ship, the wheels no longer said whither but home. But after all, this story could be written tersely and mean as much to the members of the class in these words:

"Hey, move over, you've got my seat."
"What d'ya mean! Your seat! I've been sitting here since we left Perma."
"Watch me hit that top. Whrish-splash! Bullseye!"
"Hurry up there bo', and get our cottage."
"What a dump, not even a radio. Let's go back to Seattle."
"Whose got my toothpaste?"
"Look at that suit! Neff must have been sitting on my suitcase."
"Well, boys, where will it be tonight?"
"Any mail?"
"Bus drivers, taxi drivers and bell hops are all———."
"Tra la! The world is a bowl of cherries."
"Get up! We've got to be rolling, it's six o'clock."
"What? I just got to bed."
"Kong! Kong!"

It's Not All in Books

By Mark Lawrence

Taking forestry at Montana is not all "book learning" by any means. The motto around the School of Forestry has always been, "Work hard and play hard." But best of all is the wonderful playground built for the students during the past ages.

Only a step from the campus are Mount Sentinel, Pattee Canyon and Spring Gulch. These provide not only a natural laboratory but rugged recreational grounds where any adventurous soul may get a good workout under the pine and firs and over rough trails. Often, however, these have proved too mild for the more hardy sons of Bunyan, and they have sought more distant places.

A never-to-be-forgotten trip is the one to the snow-covered dome of Mount Stewart, where one may glide swiftly over the crusted snow on skis or trudge among the snow-covered tree ghosts on snow shoes. Lofty

Mount Lolo, which towers nine thousand feet above Missoula's southern gateway, succumbed to Millard Evenson's party, when they climbed to the summit in the dead of last winter. And Joe Hessel, Jim Kirby and Bob Holgren crossed through Lolo Pass and spent Christmas at the Powell Ranger Station, when the snow was breast high. The lofty Mission Range, which rivals the Alps with its towering cliffs and yawning chasms, is a playground the year round.

Hiking, skiing and snowshoeing, however, are only a part of the fun. Every fall the boys spend hours cleaning their Winchesters, telling of the hunting trips they have taken and planning new ones until the hunting season opens. Opening day, often in spite of school work, finds many of them trudging the woods in search of the bounding whitetail or swift blacktail. Perhaps before night there will be another notch on the battered stock of a favorite deer gun.

Last, but not least, are the silver streams and glacial lakes that lure the followers of Ike Walton. Many are the fish stories that are told in the library after a week-end spent in pursuit of trout, bass or whitefish.

Through the four seasons, night and day, through snow, sunshine and rain, mountains, lakes, streams and woodland trails are calling. Put on your boots and grab your packsacks, boys, let's go!

The School of Forestry News Letter

By Jack Hinman
Published by the Montana Druids

A definite need of closer communication with the graduates of the School of Forestry has been felt for a long time. Although each graduate would like to keep in touch with his former classmates and the School, it is a difficult thing to do. Addresses change so frequently and time flies so swiftly that it is next to impossible for each individual to keep up such a large correspondence. With these things in mind, the Montana Druids decided to publish a News Letter that would form a connecting link between the graduates and the School.

The first News Letters were published during the '31-'32 school year with Evans Hawes as editor. The next year Walter Pool was chosen editor, and this year Jack Hinman took over the job. During the first two years of its publication, the News Letter was headed with a mimeographed picture of a forest ranger on horseback. However, at the beginning of the fall quarter this year, the Druids found it financially possible to have a letterhead printed for use on the News Letter, and consequently this year the Letter has goen out to the graduates under a neat, printed letterhead, featuring the Druid emblem.

The News Letter is a ten page mimeographed pamphlet that is published twice each quarter. It contains articles on the Druids, Forestry Club, School activities, news of graduates, changes of addresses, and any other items of interest. Every graduate is invited to use the News Letter as a medium to exchange ideas with other grads or as a means of reaching former students as well as those enrolled at present, with any announcement he wishes to make. The Druids have tried to make the graduates feel free to use the publication as their own, because it was with this principle in mind that the News Letter was started.

It was quite a job at first to locate all of our graduates, who are spread all over the United States and its possessions as well as several foreign countries. By asking the aid of the graduates and by steady, untiring work, all of them had been located early in the second year of the News Letter's existence. And although at times even now graduates move and fail to let us know their new address, others have always been quick to respond to any call for help in locating those missing, or to help in any way possible. It is gratifying to receive a postal card or a short note from a graduate giving us his or another's new location, indicating that they want to keep in touch with the school.

The Druids are never too busy to write an article when it is needed, or to help address envelopes or staple the papers when they come from the mimeograph machine. With such splendid co-operation, there could be no other outcome but success for the enterprise.

Judging from letters received, the News Letter is appreciated and fills a long felt want as a connecting link between the School of Forestry and its graduates. The Druids plan to continue publishing the News Letter and look forward to receiving it after graduation.

Orville Sparrow will be editor of the News Letter for the coming year.

The School of Forestry Nursery

By Rufus H. Hall

There has been considerable change in the School of Forestry nursery from the old one of less than a quarter of an acre, back of the R. O. T. C. building, to the present nursery of approximately twenty acres, north of the heating plant. The old nursery is now used by the School of Pharmacy for a drug garden.

The original nursery, with its few trees, was used for class demonstration purposes. The present nursery, a Clarke-McNary co-operative project, was established under the provisions of the Clarke-McNary Act, passed in 1924, whereby part of the expenses are paid by the federal government, and the rest by the state and the returns from the sale of the nursery stock.

For every dollar that the state spends, the federal government will pay an equal amount, not to exceed $2,000 per year. In return for this the nursery is to produce trees, under the provisions of the Act, for farm woodlot and shelterbelt planting in the state of Montana. The distribution of the trees is carried on through co-operation of the State Extension Service at Bozeman and the county agents with the School of Forestry.

The most important reason for the location of the nursery at the State University, under the direction of the School of Forestry, is that since its purpose is the raising of trees, the faculty silviculturist better understands its needs and management. At the same time it affords a splendid training field for the forestry student, in nursery practice, silviculture and research. At the present time two experiments are being conducted by students. The grazing students have begun an experiment with grasses and forage plants, looking toward future regeneration of range lands. The other experiment is concerned with the effects of different fertifizers upon the growth and foliage color of Colorado blue spruce, which is being carried on by the writer.

The arboretum is among the newest improvements in the nursery. It is located along the John street sidewalk and includes about twelve hundred trees and shrubs. There are about sixty species in the collection at present.

The Kirkwood Memorial grove, located between the arboretum and the main entrance to the nursery, is in fine condition. There has been very little change from the original plan of the grove since its inception. After several attempts, there is now a large Douglas fir tree growing behind the memorial rock, and a lawn has been planted between the rock and the John street sidewalk.

At present there are about half a million trees in the nursery, including the following species grown for distribution: Western yellow pine, Mugho pine, Norway spruce, Colorado blue spruce, Black Hills white spruce, Douglas fir, juniper, box elder, caragana, green ash, American elm, Chinese elm, Northwest poplar, Russian willow, golden willow and Russian olive. There are approximately three thousand feet of box elder hedge, five hundred feet of Russian olive hedge, five hundred and fifty feet of caragana hedge and six hundred feet of Norway spruce hedge in the nursery. Also there are several shelterbelts and many shade and ornamental trees, as well as the nursery stock.

During the past year, there have been many improvements. These have come largely through the labor that was made available by the RFC and other public programs. An overhead sprinkling system replaces the old garden hose and whirling lawn sprinklers. All of the water pipes have been buried under ground. The roads have been improved and cindered. The entrances have gates and automobiles are only allowed in the nursery during the day and then only when the roads are dry. The nursery buildings now consist of a root cellar and storehouse, and the packing shed is now a packing shed and garage combined, with a brick chimney and stove in the building. This building is about twice the length of the old packing shed. A grease rack has also been built, since the nursery and the School of Forestry have a new Ford truck. Elliott hall, the small music house located south of the Science hall has been moved north of the packing shed to be used as a residence for the nurseryman. The newest project is the fencing of the block west of John street to raise forage plant seeds. This is done in co-operation with the United States Forest Service.

With all the changes and improvements, the rough piece of ground that was chosen in 1927 for the nursery site is now a beautiful and well-managed forest nursery and park.

Excerpts from Summer Diaries

Trail Creek Ranger Station, July 24, 1933.—More office work. Spent ten minutes playing dummy for two wood sawers.—Lester Keilman.

Star Meadows Ranger Station, August 20, 1933.—Baked two pies. Washed me and the cabin in the same water.—Dusty Sparrow.

Skinners Meadow Ranger Station, July 5, 1933.—Woke up in Harden's Kapok with my boots on. Two miles between section corners today.—Johnny Morrison.

Hells Canyon Ranger Station, June 20, 1933.—Just 14 days until the Fourth of July. Hope I can get to Missoula.—Bob Myers.

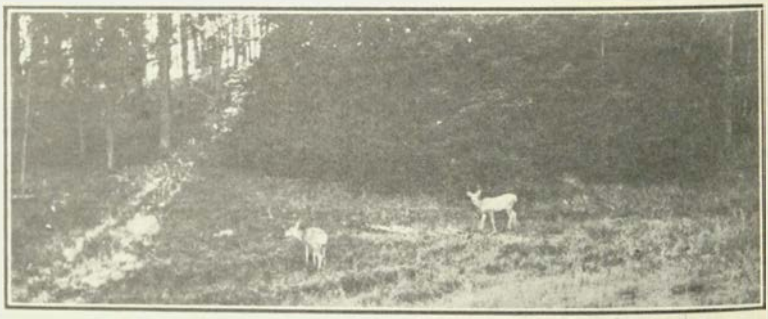
A Hike Through the School Forest

By Jack Hinman

Hello, Freshman, want to go for a hike, do you? Slip on your boots and come along.

We'll start from the forestry building and climb over the shoulder of Mount Sentinel southeast of the campus, drop down through Crazy Gulch, then up the other side and there we are, right in the center of the school forest.

How far have we come? Scarcely three miles. It doesn't seem possible that we can be 'way out in the woods in such a short time, does it? Let's stop here and look around. See that smoke, 'way over there against the far side of the valley? That's the Hayes Mill; it's just at the edge of the south boundary of the school forest. Notice all the trees up here, big



gnarled old yellow pine, is all that's left now. What good timber there has been here was cut long ago when Fort Missoula was built. All of the best timber is south of the creek now. Look, down a little lower there where the color changes; that's where the Douglas fir begins to be thick under big mature yellow pine.

What's that noise? Why, only a pine squirrel; there's lots of 'em up here.

Notice farther down in the bottom of the canyon. That's Pattee Creek down there. There's a pretty good road runs up to the head of the canyon, too, just six miles from that place where the creek forks to the campus.

South of Pattee Creek you can see another change in color. That's due to another change of type. Larch and Douglas fir cover most of the area south of the creek.

Well, let's step along. We can probably get a ride back to town with some of the boys who are doing lab work down near the road.

Stop, look! There's some deer, two of 'em.

Never saw any deer before, eh? Well, you'll see lots of them out in this country.

Yeah, there's other game, too. I've seen quite a few blue grouse and willow grouse and snowshoe rabbits in here, too. Of course there are some porcupines but the boys keep "open season" on them all the time so there aren't as many as there used to be.

We must be about down to the experimental plots now. See the thinned

area just ahead there. That's where thinning experiments are being carried on to see how much thinning our native species can stand.

Well, here we are, plenty of cars but no drivers. We'll just wait here and mooch a ride in. They ought to be coming soon now.

You like the place, eh? You'll see lots of it before you've spent four years in the Forestry School. What with silviculture, mensuration, logging engineering and other courses to say nothing of all the trips up here for decorations for the Foresters' Ball and the fall hike or Sunday afternoon rides, you'll know every foot of the area.

Here come the fellows! Hey, how're chances for a ride to town?

Good, glad you have plenty of room. My dogs are barking, these new boots aren't broken in yet.

A Lesson

By Dick Gallup

I was up along the snow line
Just the other day.
And I see somethin' that tells me
Life up there ain't just all play.

I hikes me up a hogs back,
An' I drops into a draw.
Nature's lookin' awful pretty;
I can't spot one single flaw.

I butts me through a thicket,
An' I rams into a mess.
Two big Bucks is there a fightin',
Started days ago I guess.

Fer the ground is mighty trampled,
Sprinkled here and there with gore.
An' their flanks is lean an' fallen,
They was tuckered out fer shore.

One ol' buck has broke a horn off,
Nothin' left but a bloody stump.
An' t'other has an eye out,
Both are red from nose to rump.

From the looks of them two fellers,
I would say they're dang near dead.
Bucks is awful stubborn critters,
Won't give up or lose their head.

But I drew a little lesson
From the scene in that there draw.
Be prepared to fight it out,
If yer gonna snort an' paw.

The Rifle Club

By Tom Brierley

Officers: *President*—Lincoln Landall
Secretary—Forrest Bauer
Treasurer—Tom Brierley

At the opening meeting of the Rifle Club last fall, in addition to some old members, about eight new foresters attended. They proved to be old hands with a .22, however, as they shot scores with the best.

We continued this season to use the Forest Service range in the Chamber of Commerce building. We had anticipated shooting in the new R. O. T. C. range, but due to the necessity of having an army man present whenever in use, it was not possible. However, we appreciated what we had, and made good use of it.

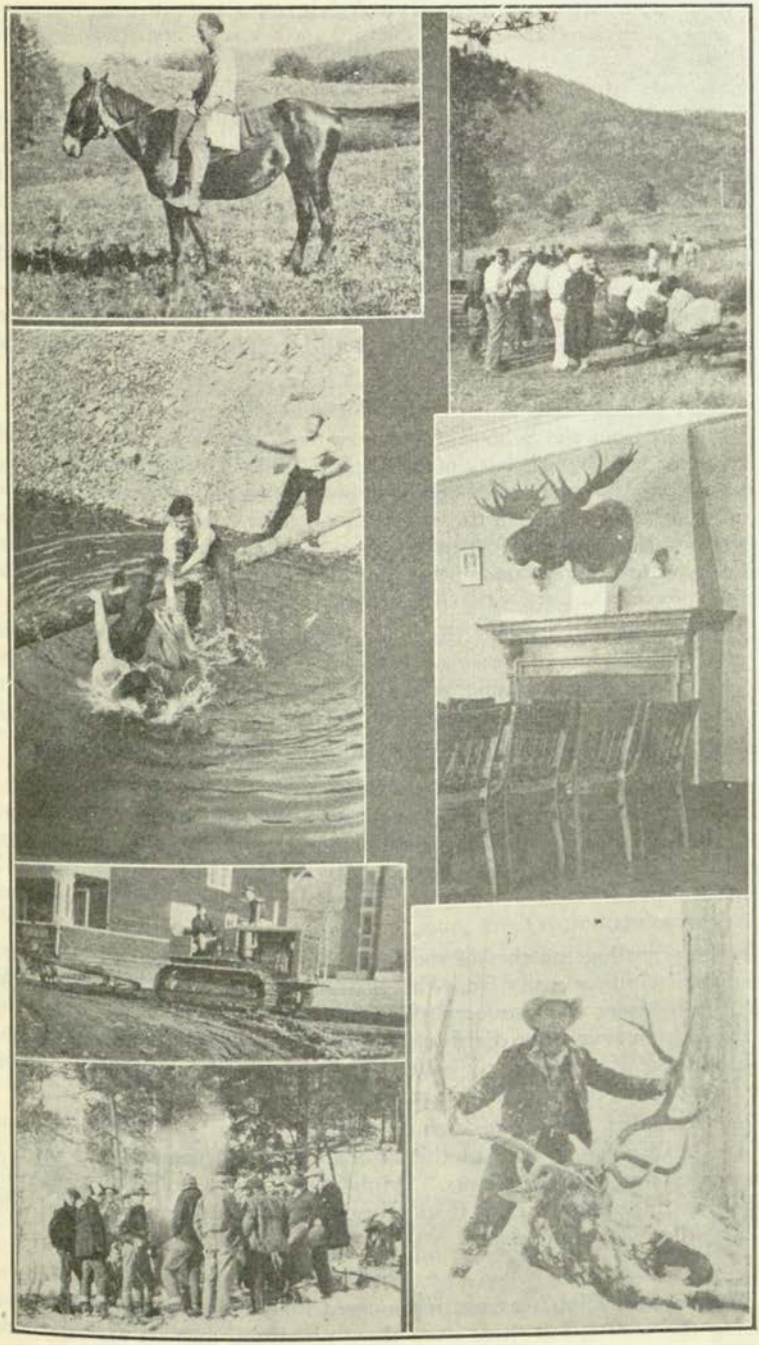
For a few weeks we took it rather easy down at the range, and used last year's ammunition while we were waiting for our new quota. When it did come, we began practice in earnest.

Several of the members of the Rifle Club qualified for membership on the R. O. T. C. Rifle team. These men put over some very good scores, due to their steady practice as well as their steady hands.

We held two competitive matches this year. One was with the University of Washington Forestry Club, which they won by about a hundred points. The other, with the Iowa State College Forestry Club, we won by a good margin. Prone, sitting, kneeling and standing positions were shot. Five of our Club members, who are also on the R. O. T. C. Rifle team, have the credit for the latter decision.

Wasn't It Awful When

Prof. Little ..... Lost his match box
Red Welton ..... Saw his cabin fall to pieces
Linc Landall ..... Climbed the flagpole for his pants
Bill Krueger ..... Stopped a right with his chin
Bill Wagner ..... Staggered through a window
Jack Hinman ..... Busted the tires on the truck
Les Robbins ..... Played policeman at Foresters' Ball
Dusty Sparrow ..... Lost his roller skates
Bob Myers ..... Got a black eye
Prof. Cook ..... Wore burlap golf pants
Fay Clark ..... Learned to use a slide rule
"Georgia" Doyle ..... Was called "General Sherman"
Virg Stephens ..... Sat down on a balloon
Terrill Stevens ..... Got a "C"
George Gable ..... Got lost in Pattee Canyon
"Howdy" Welton ..... Decided to buy a "car"
Steve Wilkie ..... Tried rollerskating
Jack Oliver ..... Checked in his DMD's in Spring Gulch
Stan Miller ..... Tangled with a wildcat
Jerry Ramskill ..... Got all messed up
Les Harris ..... Turned sheepherder



Forestry Athletes

By Lloyd Bernhard

Football

The Forestry Club was represented on the varsity football squad by two lettermen of prominence. Lief Anderson, junior, and "Hub" Zemke, sophomore, saw a lot of action during the fall of 1933, and at the end of the season Anderson was chosen guard on the all-state team selected by Professor Scott of the State School of Mines and the Montana Standard of Butte, Montana. Bill Wagner, sophomore, was also on the varsity squad.

Forestry freshmen who won numerals for their work on the Cub squad last fall were Fred Baker, Howard Doyle, Norval Bonawitz, Herbert Wheat, Solista Pickett, Ray Whitcomb, Ed Leipheimer, Ray Fritzen and Howard Keimig.

M Club Tournament

Five men from the School of Forestry took part in the annual M Club tournament held in February of this year. "Hub" Zemke, amateur boxing champion of Montana, easily retained his title in the 160-pound class, and in addition was awarded the tournament trophy as the best individual fighter on the card. His performance was outstanding. Bill Krueger, sophomore, lost in his try at the light-heavyweight boxing crown of the campus.

In the wrestling matches three foresters were winners of their bouts. Virgil Stephens, senior, retained his middleweight title, and Bob Myers, junior, followed his example, easily keeping the light-heavyweight crown for himself. Harold Lewis, freshman, gave a good performance to win the welterweight championship, thereby acquiring the nickname of "Strangler."

Minor Sports Meet

In the swimming meet of the minor sports tournament with the Montana State Bobcats, James Hennings, sophomore, won the 40-yard free style, the 100-yard free style, and helped win the 180-yard relay, to score 12 points for the Grizzlies. However, the Bobcats won the swimming meet by a few points.

In the wrestling matches of the meet, Harold (Strangler) Lewis upheld his name, winning easily from the Bobcat contender for the welterweight title. Bob Myers was unsuccessful in his match with the Bobcat opponent in the light-heavyweight division, and Virgil Stephens was unable to compete because of a wrenched back. The Bobcats also slightly outpointed the Grizzlies in the wrestling matches.

The Grizzlies came from behind with almost a landslide of decisions in the boxing bouts, to win the minor sports tournament, and again a forester was among the victors. "Hub" Zemke won decisively against an opponent 15 pounds heavier than himself, thus retaining the amateur state title in the 160-pound class.

Basketball

The Forestry Club was not represented on the varsity basketball squad during the winter, but there were three promising men on the Cub team.

Those winning numerals for their work with the Cubs were Leonard Noyes, Walter Keithley and Tom Mitchell.

Track

Varsity men representing the Forestry Club on the cinder path during the spring of 1933 were Joe Hessel, Lloyd Bernhard and Ed Simons. Hessel was outstanding in the 200-yard dash, while Bernhard and Simons ran for the Grizzlies in the 880-yard run.

Foresters who earned numerals for their work on the freshman track squad were Bill Wagner and John Price, who are both developing into promising varsity material this year.

The Forest Planting Problem of Region One

(Continued from Page 14)

acre at less cost than two pounds of seed required for direct seeding work. In the past twenty years, practically all artificial reforestation has been done with nursery-grown stock.

The greatest single planting problem in this region is overcoming the loss in survival from summer drought so typical in July and August. The newly planted seedlings extend their roots very little or none at all the first season and they are pretty much dependent therefore upon moist soil remaining around the roots the first summer. Transpiration exerts a heavy drain on the plants during these dry months and without sufficient available moisture, they soon succumb. To meet these problems efforts from various angles have been directed.

First the source of the seed is stressed, to get stock of suitable parentage. In the nursery, a fibrous root system and a diminishing crown is developed on the young trees. This gives a better balance between the transpiring surface and the system of absorption, and is accomplished by fertilizing at certain levels in the ground to obtain stimulation of lateral root growth where desired, and through transplanting and underground root pruning.

On the planting site, aspect is of greatest importance to the survival of the tree. Southerly slopes are naturally driest and on such sites the more drought-hardy trees, such as ponderosa pine, are favored over the white pine or spruce. The hole must be at least eight inches deep and the roots of the tree placed to that depth to insure moist soil around the tips of the roots the first season. Planting within the shade of logs and brush reduces transpiration, and while brush competition may retard growth for a few years the benefits from the shade is greater. Eventually the trees overtop the brush.

Once the plantations have passed the first summer there is but little subsequent loss. Plantations have been quite free from diseases and insect depredation. Blister rust looms as a real menace to the planted white pines, but the present program of ribes eradication should be adequate to protect them. However, this threat restricts the planting of that species to areas that are, or will be protected and no new scattered plantings of white pine, of less than a thousand acres, are being made because smaller blocks would increase the protection of the area out of all proportions to the values at stake.

The Foresters' Fall Hike

By Edwin Rauma

One Sunday in October was chosen as the day for the annual fall hike of the Forestry Club. Leaving the brown and gold of the hardwoods in town behind them, the foresters and their companions met under the evergreens on the school's own forest in Pattee Canyon for an evening of forestry fun. The idea of having the hike on the school forest was an innovation this year, and the Club plans to make it a permanent plan, since none of the Club's activities have formerly been held on the forest grounds.

Bob Holgren acted as master of ceremonies around the campfire, where stories were told and songs sung by everyone, before and after the annual contests, which were entered into with real energy. In the tree-climbing contest, Earl Welton, senior, after a bit of practicing during the past summer, climbed a sixty-foot tree, untied and lit a cigarette and descended to earth in less time than the other competitors. The sophomore team, Jack Buckhous and Forrest Bauer, pulled a saw through a 16-inch log in quick time, to win the honors in the sawing contest. Howard Keimig, freshman, chopped through a 14-inch Douglas fir log in the shortest time to win from all contenders in the chopping bout.

When Jack Fager, who performed the duties of cook, called "Come and get 'er," a hungry crowd was ready to thoroughly enjoy hot dogs, coffee, apples, doughnuts and cider. With everyone satisfied, the boys and their guests settled around the big fire again for entertainment until 10 o'clock, which marked the end of another foresters' fall hike.

The Forestry Club Smoker

By Lester Harris

In December of this year the Forestry Club introduced a new event in their yearly program, which the members plan to make an annual activity. This was a smoker, honoring the Club's friends, the Forest Service men, the lumbermen in the community, and the Forestry Kaimin advertisers.

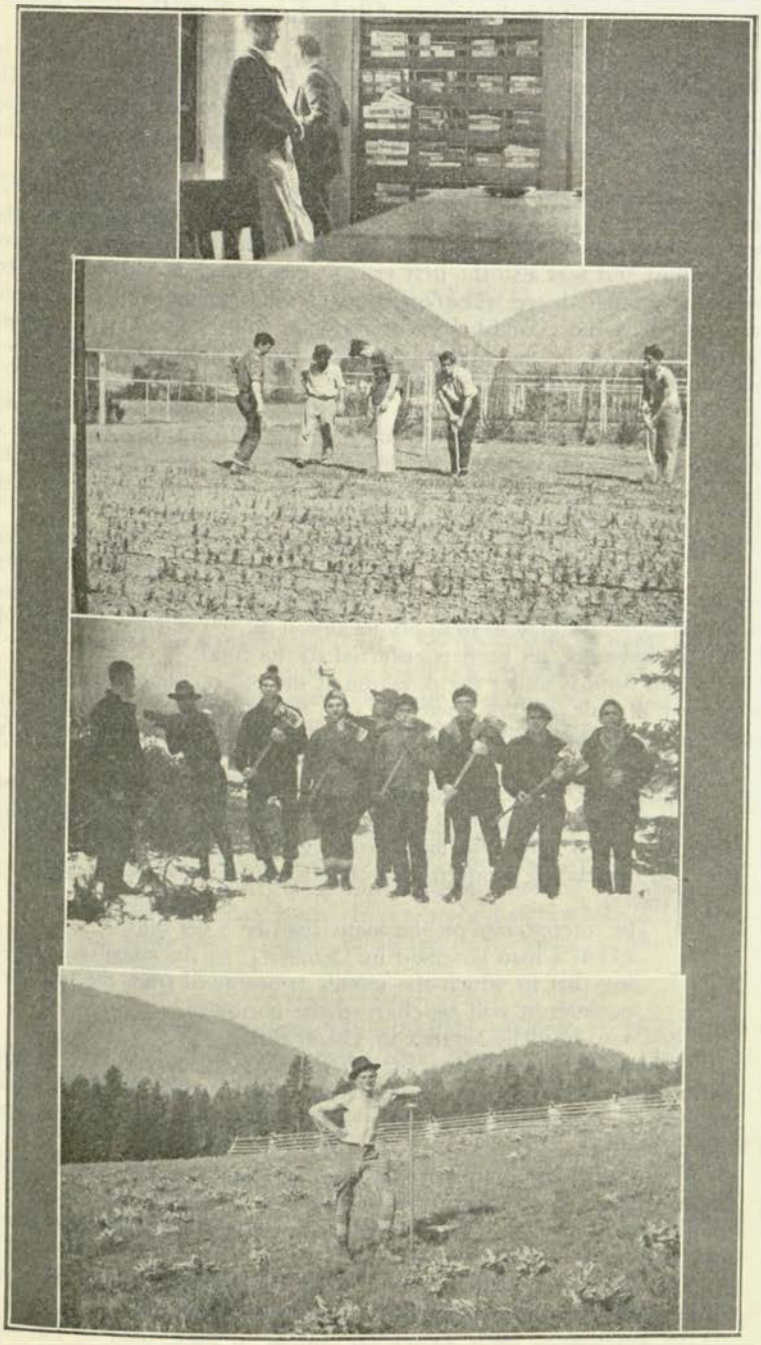
The evening's entertainment started at eight o'clock in the School of Forestry assembly room. Bleachers were placed at each end of the room and a boxing ring was constructed. No-decision bouts between Club members entertained the crowd, as follows:

Boxing: Howard Welton vs. Oliver Kinonen; Ted Falacy vs. Lester Robbins; Lloyd Hague vs. Hubert Zemke.

Wrestling: Jack Stockman vs. Harold Lewis; Fred Benson vs. Bill Browning; Virgil Stephens vs. Bob Myers.

After these bouts a "free-for-all" was held in which Earl Welton, Dick Gallup, John Fager and Wesley Pickens fought blindfolded with a glove on one hand and a pink baby rattle in the other. No casualties resulted. At the close of this bout cigars were passed and a lunch of hot dogs, buns and coffee was served in the Club's library.

About one hundred and fifty friends of the Club attended. The members of the Club feel that the smoker was a success in every way, and in a measure helps to repay the men who were their guests for the cooperation they have always given to the Club's activities.



The Forestry Club Loan Fund

The Forestry Kaimin has never, during the years of its publication, included an article on its pages regarding the Forestry Club loan fund. The loan fund has been one of the most worthwhile projects ever undertaken by the Club, one which brings direct benefits to the members of the Club themselves.

As nearly as the history of the loan fund can be traced, it started in 1924, the first deposit coming from the profits of the Foresters' Ball given that year. That was the first year the Ball was held in the then new Men's gymnasium and was also the first year that any large profits were realized from the annual dance. The question of what to do with these profits was settled by the establishment of the loan fund. The first money was deposited in one of the Missoula banks, and Professor Dorr Skeels was put in charge of loans and collections.

During the early history of the loan fund, some donations were made to increase the amount available for men needing financial aid while attending the School of Forestry. However, it soon became apparent that the growing popularity of the annual Foresters' Ball could take care of the needs of a growing enrollment in the School of Forestry.

In 1928 the fund was withdrawn from the local bank which had taken care of it, and since that time it has been handled through the State University business office. At the end of the year of 1928-29, the fund contained $700.00. Today it amounts to almost $2,400 and the profits of the 1934 Ball have not yet been transferred to the fund.

The loan fund is under the direction at the present time of a commiittee composed of one faculty member and two students. The regulations governing the fund, which have been adopted by the Forestry Club, are as follows:

1. Loans shall be restricted to juniors and seniors in good scholastic standing, who are members of the Forestry Club at the time of application for a loan, and who have been members of the Forestry Club for the three preceding quarters that they were in attendance in the School of Forestry.
    a. The interest rate on the loans shall be 8 per cent.
        (1) If a loan is repaid by October 15 of the school year following that in which the money is borrowed from the loan fund, no interest will be charged the borrower.
    b. Loans shall be limited to $50.00 each.
2. Those juniors and seniors on our roll who obtain that rank by transfering from some other institution shall be in residence in this institution at least one academic year before being eligible to receive benefits from the loan fund.
3. The student borrowing money from the fund must be able to clearly show the loan fund committee his need for this financial assistance; in other words, that he could not remain in school without the benefit of a loan.
4. This loan fund shall not be used until the general loan funds of the University open to all students have been exhausted.
5. An application form somewhat similar to those used by the other

loan funds of the State University, shall be used. Further, each loan shall be passed on by the loan fund committee, whose decision can be over-ruled only by a vote as provided in regulation No. 6.

6. Any of the rules, except those pertaining to the rate of interest and eligibility of the applicant, may be waived by a vote of a committee composed of the loan fund committee and any other two faculty members.

The members of the loan fund committee at the present time are Professor J. H. Ramskill, Richard Gallup and Edwin Rauma.

State Forestry in Montana

(Continued from Page 7)

possible to remove most of the slash, with a minimum loss to the residual timber stand.

Every one who frequents our forested regions forms a preference for certain localities. It may be a lake shore for swimming or boating, a stream for fishing, or any one of numberless places which nature has perfected to suit the individual taste. Regardless of our human differences in selecting favorite recreational areas, there is one common requirement of all and that is, there must be timber.

It is the business of this department to assist in analyzing the public's recreational requirements of our forested areas, and to make every effort that this may be permanently satisfied. We have already made a start by reserving from cutting all timber on state land bordering lakes. Similar action will be taken on state lands bordering streams, which are frequented by the public. It is further intended to retain a border of virgin timber along highways and main traveled roads.

Since most of our forested recreational areas are now in private ownership, a program for acquiring these lands by the state should receive full public support. We now have the legal authority for timber land exchange by which these areas can be acquired, but public sentiment must furnish the motive. There should be nothing unconstitutional in making these timber reservations on state lands. It is simply a recognition that some of our timbered areas have a higher value for recreational purposes than for the sawtimber they contain.

Trail Creek Ranger Station, July 20, 1933.—(Sunday) Hiked to the Rocky Crags at head of Sourdough Creek. Such a gorgeous view.—Lincoln Wilson Landall.

Bear Creek Camp, August 25, 1933.—Set up camp. Wrote up 28 days of diary.—Curley Robbins.

Cook to his silviculture class: Did any of you fellows notice the Swedish sap running from the Norway maples after pruning?

Clark to Curley Robbins—There's some difference between white fir and yew.

For Sale or Trade

Anonymous

One haywire Sawmill,
Nice location
Ten mile haul
To the shipping station.

Half mile of plank road,
Rest of it mud,
Six bridges, condemned,
But otherwise good.

Timber strictly yellow fir,
Very few knots,
Awful sound
Between rotten spots.

Fire box boiler,
Flues leak some,
Injector patched
With chewing gum.

Darn good whistle,
And Carriage track,
Nine feet left
Of the old smoke stack.

Belt's a little ragged,
Rats ate the laces,
Head saw is cracked
In a couple of places.

The engine knocks,
And is loose on its base,
And the fly wheel's broken
In a couple of places.

There's a pile of side lumber,
And a few cull ties,
But they've been attached
By some rough-necked guys.

There's a mortgage on the land,
That's now past due,
And I still owe
For the machinery, too.

But if you want to get rich
Here's the place to begin,
For it's a darn good layout,
For the shape it's in.

Alumni Directory

1904

Bunker, Page S. ..... State Forester, Montgomery, Ala.

1906

Jones, John D. ..... 2139 East Coal Ave., Albuquerque, N. Mex.

1907

Bonner, James H. ..... 3420 E. First St., Long Beach, Calif.

1909

Farmer, Charles ..... Sales Engineer, 415 N. Benton St., Helena, Mont.

1911

Bishop, Arthur E. ..... Native Sons Bldg., Sacramento, Calif.

1912

Hubert, Ernest E., (M.S. '14) ..... School of Forestry, Moscow, Idaho
Thieme, Fred E. ..... U. S. F. S., Missoula, Mont.

1914

Whitaker, Jocelyn ..... 14 Pin Pin, Manila, P. I.

1915

Ade, Harry G. ..... U. S. F. S., Missoula, Mont.
Whisler, Fred H. ..... 741 Woodford St., Missoula, Mont.

1916

Lansing, Harold ..... (Deceased)

1917

Brooks, James F. ..... U. S. F. S., Kooskia, Idaho
Kent, Hugh ..... Consulting Engineer, 328 S. Clifton Ave., Park Ridge, Ill.
Richardson, William D. ..... 723 Wall St., Los Angeles, Calif.
Simpkins, Edward ..... Shell Oil Co., Los Angeles, Calif.

1918

White, Wellington I. ..... U. S. F. S., Louisville, Ky.

1919

Hayes, Henry F. ..... Potomac, Mont.

1920

Butler, Everett F. ..... Draftsman, Ill. Terminal Co., 256 Madison, Alton, Ill.
Dacanay, Placido ..... Bureau of Forestry, Manila, P. I.
Ireland, Russell A. ..... 108 E. First St., San Dimas, Calif.
Kohner, William G. (M.S.) ..... 111 Hamlet St., Los Angeles, Calif.
Whisler, Harold ..... 741 Woodford St., Missoula, Mont.

1921

Baker, Clyde P. ..... Clearwater Timber Co., Lewiston, Idaho
DeJarnette, George M. ..... U. S. F. S., Missoula, Mont.
Dirmeyer, Earl P. ..... Inkster, Mich.
Franco, Felix ..... Bureau of Forestry, Manila, P. I.
Hendron, Harold H. ..... U. S. F. S., Helena, Mont.
Radtke, Leonard B. ..... U. S. I. S., Hoopa, Calif.
Williams, Ross A. ..... School of Forestry, Ann Arbor, Mich.
Wolfe, Kenneth ..... U. S. F. S., Kalispell, Mont.
Zeh, William H. ..... U. S. I. S., 221 Rosenwald Bldg., Albuquerque, N. Mex.

1922

Dexter, Albert K. ..... Perrin-Curtin Lumber Co., Koscuisko, Miss.
Hutchinson, Frank E. ..... Canterbury College, Christchurch, New Zealand
Laraya, Sixto ..... Bureau of Forestry, Manila, P. I.
Valderrama, Felipe ..... Bureau of Forestry, Manila, P. I.
Warner. Neil G. ..... 2207 Jackson St., Spokane, Wash.

1923

Allan, William S., Jr. ..... 319 W. Hill St., Louisville, Ky.
Brady, Paul G. ..... 1409 North Dearborn St., Chicago, Ill.
Fry, W. E. ..... U. S. F. S., Ennis, Mont.
Hoyt, Harrison H. ..... U. S. B. S., Washington, D. C.

Madsen, Edward G.	U. S. F. S., North Fork, Calif.
McDonald, Charles H.	U. S. F. S., Wilson, Wyo.
Sandvig, Earl D.	U. S. F. S., Dillon, Mont.
Shull, Theodore J.	C. W. P. Co., State Camp, Cathlamet, Wash.

1924

Colville, Leslie L.	U. S. F. S., Lakeview, Ore.
Crowell, Ralph E.	U. S. F. S., Superior, Mont.
Daproza, Juan D. (M.S. '25)	Bureau of Forestry, Manila, P. I.
Grahan, Donald	1032 Stratmore Ave., Crafton, Pa.
Koziol, F. C.	U. S. F. S., Weiser, Idaho
Lambert, Lahman	33 West King St., Chambersburg, Pa.
Myers, Remley	B. P. I., 618 Realty Bldg., Spokane, Wash.
Nickolaus, Charles A.	McClure, Va.
Nickolaus, Howard M.	22 East North St., Bethlehem, Pa.
Painter, Wayne	B. P. I., 618 Realty Bldg., Spokane, Wash.
Riley, Marvin	B. P. I., 618 Realty Bldg., Spokane, Wash.
Zamansky, Allan	614 F. St., S. W., Washington, D. C.

1925

Bitney, Raymond H.	U. S. I. S., Bemidji, Minn.
Brown, Walter L.	State Highway Commission, Missoula, Mont.
Caguioa, Vincente	Bureau of Forestry, Manila, P. I.
Cramer, John Arthur	U. S. F. S., Livingston, Mont.
Fields, Ralph E.	U. S. F. S., St. Maries, Idaho
Hicks, Harold W.	U. S. B. S., Washington, D. C.
Lee, Bernard	U. S. F. S., Pendleton, Ore.
Rowland, Thomas E.	U. S. F. S., Missoula, Mont.

1926

Baggs, John T.	Clearwater Timber Co., Pierce, Idaho

Beall, Carl F. (M.S., '30)	U. S. I. S., Fort Defiance, Ariz.
Bowers, Raymond	U. S. F. S., Jackson, Mont.
Burtness, Allen C.	U. S. F. S., Rolla, Mo.
Canfield, Roy H.	Jornada-Range Res., Las Cruces, N. Mex.
Lukens, Stanley	U. S. F. S., Wisdom, Mont.
Merryfield, Leroy	Hodges Ranch, Ennis, Mont.
Preston, John C.	U. S. Park Service, Estes Park, Colo.
Russell, Harold	U. S. F. S., Eddysville, Ill.
Thompson, John B.	U. S. F. S., Priest River, Idaho
VanMeter, Thomas	U. S. F. S., Boise, Idaho

1927

Bischoff, Paul	State University, Missoula, Mont.
Bloom, Charles W.	Syracuse University, Syracuse, N. Y.
Darlington, Josephine	812 Cherry St., Missoula, Mont.
Kumler, Charles G.	Lewisburg, Ohio
Logan, Jose B.	Bureau of Forestry, Manila, P. I.
Richards, Everett E.	U. S. F. S., Missoula, Mont.
Roemer, Alban A.	Chief Ranger's Office, Yellowstone Park, Wyo.
Rubottom, Carter B.	U. S. F. S., Livingston, Mont.
Shaw, Donald E.	U. S. F. S., Denver, Colo.
Spencer, Mattison	E. C. W. Camp Superintendent, Morristown, Tenn.
Tennant, Earl	U. S. F. S., Lolo, Mont.
Van Winkle, Harry H.	U. S. F. S., Mackay, Idaho

1928

Adams, Barkes L.	Weyerhaeuser Timber Co., Longview, Wash.
Anderson, Homer E.	Principal of Schools, Rosebud, Mont.
Bonner, Frank E. (Honorary)	100 Manor Drive, Piedmont, Calif.
Campbell, Lloyd S.	Intermountain Transportation Co., Missoula, Mont.
Davis, Kenneth	U. S. F. S., Missoula, Mont.
Emerson, John L.	Central Great Plains Expt. Sta., Cheyenne, Wyo.

Matthew ,Lewis S.....North Dakota School of Forestry, Bottineau, N. D.
Merrill, Lee P.....509 Tacoma Bldg., Tacoma, Wash.
Schwan, Herbert E.....U. S. F. S., Billings, Mont.
Spaulding, Clarence K.....U. S. F. S., Darby, Mont.
Tennant, Raymond.....U. S. F. S., Orofino, Idaho

1929

Ashbaugh, Leonard J.....U. S. F. S., Munising, Mich.
Averill, Clarence.....Rocky Mt. Exp. Station, Federal Springs, Colo.
Cornell, Gordon T.....U. S. F. S., Missoula, Mont.
Dix, Howard.....Interstate Lumber Co., Stevensville, Mont.
Ernst, Emil F.....Yosemite National Park, Yosemite, Calif.
Flock, K. D.....U. S. F. S., Great Falls, Mont.
Fritz, Nelson H.....519 McCabe Ave., Wilmington, Del.
Frost, Levi M.....U. S. F. S., Glenwood Springs, Colo.
Jackson, Chester W. (M.S. '33).....U. S. F. S., Albuquerque, N. Mex.
Johnson, James W.....E. C. W. Camp, Morristown, Tenn.
Krofchek, Andy W.....C.C.C. Camp F13A, Fort Huachuca, Ariz.
Luer, Elmer E.....U. S. F. S., Missoula, Mont.
Nelson, Donald W.....1000½ Seventh Ave., Dodge City, Kan.
Rouse, Charles.....Nome, Alaska
Staat, Fred F.....B. P. I., 618 Realty Bldg., Spokane, Wash.
Vierhus, Louis M.....415 E. Main, Missoula, Mont.

Yochelson, Albert.....Calif. Exp. Sta., 331 Giannini Hall, Berkeley, Calif.

1930

Aiton, John F.....U. S. Park Service, Yellowstone Park, Wyo.
Dahl, Jerome.....U. S. F. S., Missoula, Mont.
Fallman, John Arthur.....Cheyenne Agency, S. D.
Grove, Joseph.....U. S. F. S., Rollo, Mo.
Jost, Edwin J.....U. S. F. S., Missoula, Mont.
Joy, Charles.....U. S. F. S., Butte, Mont.
Leavitt, Roswell.....U. S. F. S., Naples, Idaho
Lommasson, Tom.....U. S. F. S.,Missoula, Mont.
Mass, Fred.....U. S. F. S., Missoula, Mont.
Mathews, J. Thomas.....U. S. F. S., Kemmerer, Wyo.
Park, Barry C.....U. S. F .S., Butte, Mont.
Phillips, Floyd.....U. S. I. S., Klamath Agency, Ore.
Rudolph, Rosser.....U. S. I. S., Poplar, Mont.

1931

Brown, William J.....Box 190, Route 3, Vancouver, Wash.
Calkins, Raymond.....U. S. F. S., Missoula, Mont.
Carlson, Sture.....Box 24, Yosemite Park, Calif.
Centerwall, Willard.....U. S. I. S., Lame Deer, Mont.

Clark, Ellis	718 Birch St., Kingsport, Tenn.
Murchie, Archie	U. S. F. S., Kemmerer, Wyo.
Oren, Eugene	615 3rd St., New Cumberland, Pa.
Rector, Charles M.	U. S. F. S., Prineville, Ore.
Redding, Hugh	U. S. F. S., Alexandria, La.
Sadasuk, Jacob Jack	State Forest, Belleplain, N. J.
Smith, Howard S.	1801 Market St., Harrisburg, Pa.
Tucker, David M.	Box 55, Lytle Cr., San Bernardino, Calif.
Walker, Carl S.	E. C. W. Camp, Alberton, Mont.

1932

Beechel, Kenneth	U. S. F. S., Missoula, Mont.
Centerwall, Bruce	E. C. W., Deer River, Minn.
Chapin, Wilbur	School of Forestry, Missoula, Mont.
Cooney, Robert F.	U. S. F. S., Missoula, Mont.
Flint, Alfred	U. S. F. S., Missoula, Mont.
Fobes, Eugene, W.	E. C. W. Camp, Brown Branch, Mo.
Guntermann, William F.	U. S. F. S., Thompson Falls, Mont.
Hawes, Evans C.	E. C. W. Camp, Danbury, Conn.
Hoye, Oliver	U. S. F. S., Lutsen, Minn.
Ibenthal, William A.	U. S. F. S., Missoula, Mont.
Larson, Stanford H.	Camp SP7, Fort George Wright, Spokane, Wash.
Love, Iver B.	B. R. C., Noxon, Mont.

O'Neil, Charles	509 First Ave., W., Kalispell, Mont.
Renshaw, James	E. C. W. Camp 103, Laquin, Pa.
Shields, John	U. S. F. S., Missoula, Mont.
Spaulding, Alfred E.	U. S. F. S., Orofino, Idaho
Stillings, Warren	U. S. F. S., Coeur d'Alene, Idaho
Woolfolk, E. Joe	U. S. R. L. Experiment Station, Miles City, Mont.
Young, A. E.	Chatteroy, Wash.

1933

Benson, Fred	U. S. F. S., Missoula, Mont.
Curtiss, Frank	U. S. F. S., Missoula, Mont.
Davis, William	U. S. F. S., Hot Springs, Ark.
Evenson, Millard	E. C. W. Camp, Alberton, Mont.
Frykman, Joel	U. S. F. S., Missoula, Mont.
Matsen, Robert	U. S. F. S., Irons, Mich.
Neff, Lawrence	U. S. F. S., Missoula, Mont.
Pool, Walter E.	U. S. F. S., Equality, Ill.
Whitaker, Dick	U. S. F. S., Missoula, Mont.
White, Jack	U. S. F. S., Camp F13, Munising, Mich.

Student Enrollment

Name and Address	Class	Quarters Attended
Aley, William, Big Fork, Mont.	So.	1,2,3
Anderson, Lief, Dillon, Mont.	So.	1,2,3
Baker, Fred, Wyola, Mont.	Fr.	1,2,3
Bauer, Forrest, Polson, Mont.	So.	1,2,3
Berg, Jacob, Missoula, Mont.	So.	1,2,3
Bernhard, Lloyd, Napa, Calif.	Jr.	1,2,3
Bonawitz, Norval, Lewistown, Mont.	Fr.	1,2,3
Bosseler, John, Dutton, Mont.	Fr.	1,2,3
Brierley, Tom, Glendive, Mont.	So.	1,2,3
Buckhous, Jack, St. Ignatius, Mont.	So.	1,2,3
Campbell, Alastair, Camas, Mont.	Jr.	1,2,3
Clemow, Joe, Billings, Mont.	Fr.	1,2,3
Coombs, Robert, Missoula, Mont.	So.	1,2,3
Cram, H. Stanley, Missoula, Mont.	Fr.	1
Demorest, Louis, Chicago, Ill.	Gr.	1,2,3
D'Ewart, William, Wilsall, Mont.	Fr.	1,2,3
Dobbs, Ralph, Brookline, Mass.	So.	1
Dobrinz, Edward, Mapleton, N. D.	Sr.	1,2,3
Dominek, Julian, Westby, Mont.	So.	1,2,3
Doyle, D. James, Monida, Mont.	Fr.	1,2,3
Doyle, Howard, Atlanta, Ga.	Fr.	1,2,3
Dresskell, Wilfred, Rosalia, Wash.	So.	1,2,3
Dunahay, Earl, Miles City, Mont.	Fr.	1,2,3
Edgmond, Millard, Missoula, Mont.	So.	1,2,3
English, Lloyd, Alder, Mont.	Fr.	1,2,3
English, Thurman, Alder, Mont.	Fr.	1,2,3

Ennis, Max, Missoula, Mont.	So.	2,3
Erwin, Orval, Charlo, Mont.	So.	1,2,3
Fager, John, Durango, Colo.	So.	1,2
Falacy, Ted, Schenectady, N. Y.	So.	1,2,3
Forgey, Louis, Miles City, Mont.	Fr.	1,2,3
Freeman, Howard, Bristol, Conn.	Fr.	1,2,3
Fritsen, Ray, Lewistown, Mont.	Fr.	2
Gable, George, Rocky Boy, Mont.	Sr.	2,3
Gallup, Richard, Sunburst, Mont.	Sr.	1,2,3
George, H. Welby, Missoula, Mont.	Fr.	3
Hague, Lloyd, Missoula, Mont.	Jr.	1,2,3
Hall, Rufus, Two Dot, Mont.	Sr.	1,2,3
Hamilton, William, Missoula, Mont.	Fr.	1
Hancock, M. O., Glendive, Mont.	Sr.	1,2,3
Hanson, Oscar, Forsyth, Mont.	So.	1,2,3
Harden, E. Wesley, Whitehall, Mont.	Jr.	1,2,3
Harris, Lester, Centerville, Ind.	Sr.	1,2,3
Harvey, Don, Brea, Calif.	Fr.	1
Hennings, James, Evanston, Ill.	So.	1,2,3
Herweg, F. W., Jr., Missoula, Mont.	Jr.	1,2,3
Hinman, George, Rapelje, Mont.	So.	1,2
Hinman, John, Rapelje, Mont.	Sr.	1,2,3
Huser, Stanley, Whitefish, Mont.	Fr.	1,2,3
Johnson, H. Ray, Nashua, Mont.	Fr.	1
Keilman, Lester, Hobson, Mont.	So.	1,2,3
Keimig, Howard, Torrington, Wyo.	Fr.	1,2
Keithley, Walter, Miles City, Mont.	Fr.	2,3
Kingsbury, Robert, Denton, Mont.	Fr.	1,2,3
Kirby, J. V., Everett, Ohio	So.	2

Krueger, William, Bozeman, Mont.	So.	1,2,3
Landall, Lincoln, Brockton, Mass.	Jr.	1,2,3
Leipheimer, Edwin, Butte, Mont.	Fr.	1,2,3
Lewis, Harold, Lavina, Mont.	Fr.	1,2,3
Lumby, Robert, Missoula, Mont.	Fr.	1,2,3
Marcyes, Hiram, Missoula, Mont.	So.	1
McCarty, Marion, Wilkensburg, Pa.	Sr.	1
Miller, Stanley, Missoula, Mont.	So.	1,2,3
Mitchell, Tom, Dayton, O.	Jr.	1,2,3
Moody, Robert, St. Ignatius, Mont.	So.	1,2,3
Morrison, John, Livingston, Mont.	Jr.	2,3
Myers, Robert, Missoula, Mont.	Jr.	1,2,3
Nash, James, Crow Agency, Mont.	So.	1,2,3
Nousianen, Arne, Florence, Mont.	So.	2
Noyes, Leonard, Butte, Mont.	Fr.	2,3
Oliver, Jack, Anaconda, Mont.	So.	1,2,3
Peterson, Leonard, Missoula, Mont.	Fr.	1,2,3
Peterson, Vaughan, Missoula, Mont.	Fr.	2
Petsch, Walton, Spokane, Wash.	Jr.	1,2,3
Pickens, Wesley, Huntley, Mont.	Fr.	1,2,3
Pickett, Solista, Spokane, Wash.	Fr.	1
Pool, Clifford, Torrington, Wyo.	Fr.	1,2,3
Price, John, Missoula, Mont.	Fr.	1,2,3
Quinlin, F. Carter, Rahway, N. J.	Sr.	1,2,3
Rauma, Edwin, Eveleth, Minn.	Sr.	1,2,3
Robbins, Lester, Brockway, Mont.	Jr.	1,2,3
Roffler, Hans, Hebron, N. D.	Jr.	2
Roskie, George, Billings, Mont.	Jr.	1,2,3
Ross, W. James, Fromberg, Mont.	Fr.	1,2,3
Scheytt, Julian, Maudlow, Mont.	So.	1,2,3

Schramm, Charles, Cedaredge, Colo.	Fr.	1,2,3
Sheldon, Marcus, Lamont, Iowa	Fr.	1,2,3
Simons, Edward, Dillon, Mont.	So.	1
Sparrow, Orville, Anaconda, Mont.	Jr.	1,2,3
Stephens, Virgil, Colo, Iowa	Sr.	1,2,3
Stephenson, John, Butte, Mont.	Fr.	1, 3
Stevens, Terrill, Los Angeles, Calif.	So.	1,2,3
Stockman, Jack, Los Angeles, Calif.	Jr.	1
Trosper, William, Ronan, Mont.	Fr.	1,2,3
Valiton, Richard, Missoula, Mont.	Fr.	1,2,3
Wagner, Joe, Missoula, Mont.	Sr.	1,2,3
Wagner, William, Missoula, Mont.	So.	1,2,3
Walworth, Maurice, St. Ignatius, Mont.	Fr.	1,2,3
Watters, Ronald, Missoula, Mont.	Fr.	1,2,3
Welton, Earl, Townsend, Mont.	Sr.	1,2,3
Welton, W. Howard, Townsend, Mont.	Jr.	1,2,3
Wheat, Herbert, Dillon, Mont.	Fr.	1,2,3
Whitcomb, Ray, Baldwin Park, Calif.	Fr.	1
Wildschut, Hugo, Los Angeles, Calif.	So.	1,2,3
Wilkie, Stephen, Rosebud, Mont.	So.	1,2,3
Williams, Dick, Missoula, Mont.	Fr.	1,2,3
Winters, Bruce, Bonner, Mont.	Fr.	1,2,3
Zadra, Jim, Missoula, Mont.	Fr.	3
Zemke, Hubert, Missoula, Mont.	Fr.	1,2,3

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