

The Annual Cruise



THE ANNUAL CRUISE
OREGON STATE AGRICULTURAL COLLEGE
1924

To

Professor T. J. Starker

In appreciation of his deep interest
and ever helpful criticism in class-
room, club and field, it is our privi-
lege and a pleasure to dedicate this
new volume of *The Annual Cruise*







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THE ANNUAL CRUISE

PUBLISHED BY THE STUDENTS OF THE SCHOOL OF FORESTRY
OF THE
OREGON STATE AGRICULTURAL COLLEGE

FOREST TAXATION

By Dean G. W. Peavy

CLEAR thinking and wise legislation in forest taxation are necessary if the timber industry is to be perpetuated in the Pacific Northwest. Obviously, clear thinking is prerequisite to wise legislation. This very brief discussion has for its purpose the statement of certain facts and conditions peculiar to the forest industry and from these facts and conditions to indicate the lines along which forest legislation should proceed if this great business is to be dealt with in taxation matters on a parity with other industries and properties.

In the first place, there are certain forestry fundamentals which every Oregon voter and particularly every Oregon legislator should know. They should know that Oregon has 396,000,000,000 feet of standing timber. They should realize that this is 20 per cent of the remaining stand of the entire United States. They should know that the state has 23,000,000 acres of land good for nothing except to grow trees. They should know that the value of the annual timber cut is \$100,000,000 and that 43,000 men find employment in the industry. It is vital that they should understand that 65 per cent of the industrial payroll is met by the lumber industry. Together with these facts they should have firmly fixed in mind that the lumber industry of Oregon is just in its infancy, that the exhaustion of timber supplies in the east and in the south means that in the near future the value of lumber manufactured annually will be many times one hundred million dollars and that many times 43,000 men will find employment in the industry.

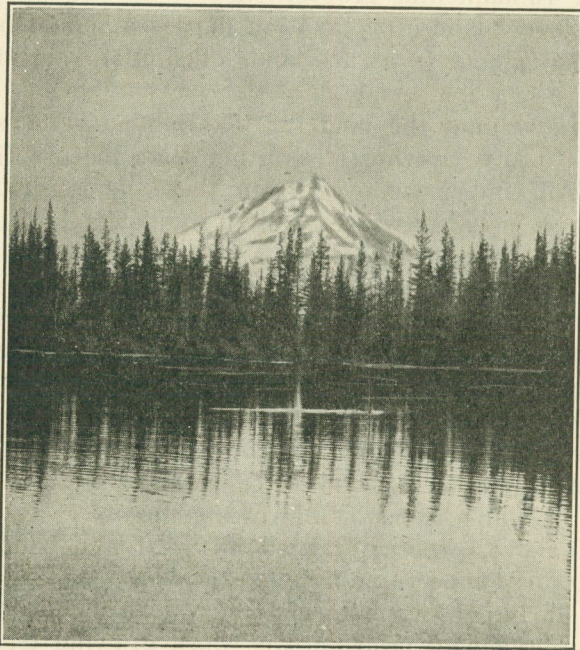
The reason every voter and particularly every legislator of Oregon should know the above quoted facts and the significance of them, is that they may be in a position in-

telligently to answer the question: How can an industry of this indicated and prospective magnitude be perpetuated? If the business of growing timber crops and of harvesting and manufacturing timber cannot endure without special treatment, without favoring legislation, there is something wrong with the business. If timber properties must be singled out for unusual legislation there is some discrimination for or against these properties and either is bad. Forest properties of all kinds should be treated as other properties are treated in all tax and other regulatory laws. To insure this treatment, however, one must know the peculiarities of the business of growing forest crops and of holding matured timber for the market.

To the owner of timber and to the owner of forest land who would like to put that land to growing a second crop of timber probably no single thing creates a greater element of uncertainty than the question of taxation. The holder of a piece of timber realizes on his property but once. This once may be next year or it may be in ten years. The producer of a crop of timber will not harvest his crop for forty or one hundred years. During these intervals the owners must pay interest on their investments, if they borrowed money, they must pay the annual charges for protection and they must meet the yearly tax bills. These payments frequently accumulate into formidable sums. Without income to meet them they frequently introduce elements of uncertainty into the business which make it decidedly unstable.

People commonly think of taxation in the light of the general property tax, a tax imposed on property capable of producing an annual income. Within the past few years, however, changed economic conditions have operated to bring the minds of thinking people more and more to the conclusion that income is the proper basis for taxation. It must be evident that without income at some time tax payments would be impossible. It must be equally evident that forest properties yielding income but once in varying intervals of years are at a decided disadvantage in the payment of taxes and other annual charges, compared with those properties which yield annual incomes.

Certainty as to future costs is the thing most desired by the owner of timber. He has a right to expect that his property will be treated no differently than other properties are treated. If he knows that his tax burdens will be fixed according to the same principles as are applied in establishing the tax burdens of other properties he will know that any change in value due to this added burden will affect



all properties alike and hence all will be in the same relative position.

Looking to the future, the great problem confronting Oregon's timber industry lies in keeping the timber lands growing timber. More than 100,000 acres are cut over each year. This land should at once be reforested since the greater part of it is good for nothing else except to grow timber. If the minimum time required to grow pulpwood is 40 years and to grow saw stuff is 60 years the man who goes into the business of growing these materials must know how much money he will be required to put into the business before he derives income. Owners of large

properties very frankly state that they will not be interested in the timber growing business until they are assured of a reasonably low taxation rate during the period of production.

Realizing the importance of the matter of taxation to the whole problem of growing new crops of timber, students of forest taxation have pretty well agreed upon the following fundamental propositions:

1. Forest lands for taxation purposes should be valued at the same rate as are lands of similar value in the vicinity.

2. In valuing the land for taxation no value should be given to any growing trees other than mature timber.

3. All timber removed from these lands should be subject to a yield tax which shall be equivalent to the business tax on other businesses.

4. If there is an income tax, forest incomes should be taxed in the same manner as are other incomes.

These propositions show a clear recognition of the income tax principle since the greater portion of the tax is not levied until there is an income from the property. This harmonizes with that fundamental principle of taxation that the tax should be levied at the time the person taxed is best able to pay. If growing forests are taxed as indicated above, owners of logged-off forest land, being reasonably assured concerning the charges which they will have to meet during the growing period, will be inclined to put their non-producing properties at work growing trees. If legislation covering the points indicated could be enacted in Oregon, it is reasonable to assume that a good portion of our stump land would be changed from barren wastes to producing properties.

The taxation of mature forests presents a problem quite different from that involved in growing timber. It appears to be pretty well settled that there is no equitable method of modifying the application of the general property tax to mature timber. The counties and the state have developed many activities, necessary for the welfare of the people, which depend for their continuance upon the income from taxes levied upon standing timber. Schools

must be maintained, county governments must be carried on and other proper governmental functions performed. To reduce the amount of the tax upon a property which in some cases represents more than fifty per cent of the taxable assets of a county would seriously interfere with community progress.

If men could be had for tax assessors who were competent to judge such matters, a difference in value for taxation purposes might be made between those stands which are marketable because they are immediately accessible for logging and those stands which are so remote from transportation that they cannot be marketed for several years in the future. To fix values of timber properties on the basis of accessibility, however, is the business of an expert. To impose this duty by law upon the average tax assessor would probably produce inequalities which would be more irritating than the present plan, lax and unscientific as it is. To repeat what was stated in the beginning, the forest properties of Oregon are of such vital interest to the state that every effort should be made to inform the people fully concerning their peculiarities as compared with other properties which are able to produce annual incomes. When these matters are understood, as they are understood in European countries which have well defined forestry laws and policies, we shall have no forestry taxation problem.

Remember The Mule

Would you have a gentle Mule
Then apply the Golden Rule;
If he's full of pep and vim
He'll do to you as you do to him;
Cuss him less and curry more,
He'll repay a hundred score;
Pet him more and pound him less,
He'll return each fond caress,
But kick him—and His Muleship waits
To land you through the Pearly Gates.

—Oregon Humane Society.

SHALL WE CONTINUE TO PAY THE TAX LEVIED BY FOREST FIRES?

By J. V. Hofmann,

*Director, Wind River Experiment Station,
U. S. Forest Service*

THE loss of timber, young growth, property, and life through forest fires has been among the nation's greatest items of waste. It has left its mark on the present generations through decreased resources and increased costs, and is still imposing great burdens on the future.

These losses were generally accepted as acts of Providence. Later they were attributed to their proper causes, although they were still in large part considered non-preventable.

As forest protection became the responsibility of the Federal government, States, organizations, and individuals, the causes were so definitely tabulated that responsibility for starting fires could be attributed to preventable and non-preventable causes.

The problem then resolved itself into a program of preventing unnecessary fires and preparing to combat the unpreventable ones.

The number of preventable fires can be reduced by education and law enforcement. The basic natural conditions that influence the losses due to non-preventable fires are forest types and meteorological factors, in other words, fire hazards.

The destructive conflagrations in the forest history of the Pacific Northwest date further back than the history of man. They were more or less local and occurred centuries, or more apart. This is the feature that has kept a large part of the forest lands producing timber. This condition also emphasizes the point that the combination of meteorological factors under which such conflagrations occur must be exceptional and of short duration.

Causes of Fire Hazard

That the fire situation is controlled by the climatic conditions is so obvious that any attempts to find the cause of serious fire periods naturally includes an analysis of me-

teorological factors. The studies of climatic conditions that have been made have shown that abnormal conditions invariably accompanied the serious fire seasons. Prolonged droughts, deficit in precipitation, low relative humidity, high evaporation, strong winds, high temperatures, vapor pressure, and barometric pressure, have all been linked in some form with exceptionally serious fire situations.

The moisture content of the humus and duff and other inflammable materials determines the fire hazard. At times when the forest floor is too moist to burn, the open areas are dry enough to burn readily, because the evaporation in the open is about three times as much as that compared to the adjacent timber.

This wide diversity in the rate of evaporation accounts for fires running in open areas such as old burns when they will not run in timber. It does not, however, explain why an occasional fire sweeps through the timber and destroys large areas of forest.

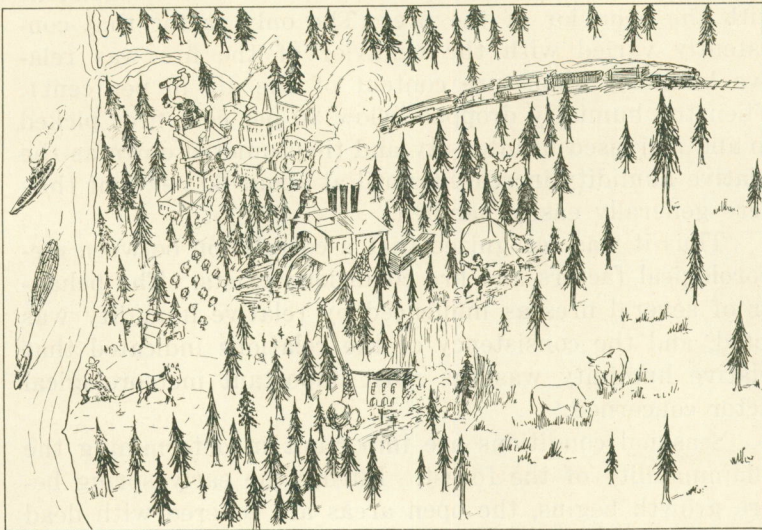
Studies of the atmospheric conditions and the behavior of fires showed that the fires as well as the conditions changed quickly and at different times of the day. The fire sometimes picked up when the wind decreased and vice versa, and the temperature variations were not consistent with the behavior of the fire. The only factor that consistently varied with the behavior of the fire was relative humidity (moisture content of the air in per cent). When the humidity dropped below 30 per cent fires picked up and increased in intensity and they quieted down as the relative humidity increased, until at about 60 per cent they were generally easily handled.

Thus it was recognized that a correlation between meteorological factors and fire conditions exists. The behavior of several fires as influenced by relative humidity was noted, and the consistency of the relations indicated that relative humidity was the most important meteorological factor concerned.

Seasonal conditions are important in determining the inflammability of the forest. During the early spring before growth begins, the open areas are covered with dead weeds, grasses and ferns, and the forest floor is wet. The

green needles also contain a high per cent of moisture. Under such conditions a day of low relative humidity causes the inflammable materials in the open areas to dry and become dangerous while it affects the forest floor very little. Fires will spread in the open areas but will neither creep in the forest floor nor spread through the crowns of green timber, unless the trees are covered with moss. This condition affords an advantage in spring slash burning. Fires are usually safe on sides bounded by green timber, and will not spread in open areas during periods when the humidity is high enough to make the dead weeds and other materials non-inflammable.

A prolonged period of low humidity, however, causes dangerous fire conditions. The forest materials that are exposed to the dry air become inflammable and large crown fires and rapidly spreading fires develop even when the forest floor is wet. As the season progresses into a prolonged drought, conditions change. The forest floor gradually becomes inflammable and the green trees are more susceptible to crown fires, because the moisture content of the needles is lowest in late summer. During this season a period of low humidity will cause extreme conditions and large forest fires will develop quickly.



The immediate fire hazard depends on the moisture content of the small inflammable materials such as fern and fireweed, also on outside layers of the heavy materials; but during the dry season when the heavy materials are dry throughout, the hazard is much greater. Only the light materials and the outside of the heavy materials respond readily to the humidity fluctuations. Consequently at the end of a dry summer when logs, poles and the forest floor are dry throughout, the fire hazard is low only because of the high moisture content of the materials in contact with the air during periods of high humidity. The moisture content changes quickly when the humidity becomes low and a serious fire situation develops within a day.

Showers or periods of rainfall influence the inflammability much as the seasons do only for shorter periods. A shower heavy enough to wet the forest floor insures a short period of safety in the forest but low humidity will cause fires to spread in open areas within a day after rainfall during seasons when the vegetation is dead.

To make the best use of all protection and control forces, a dependable record of the daily or periodic fluctua-



tions of fire hazard must be obtained. The regional fluctuations in fire hazard occur in exact accordance with the relative humidity conditions. Low humidity is a warning even before the materials are dry enough to burn readily, and the continuation of a low humidity period always brings trouble. Local conditions such as slopes, winds, and materials may cause the degree of fire hazard, or actual damage by fires, to vary but a great fire hazard cannot exist on account of these factors alone if the humidity is high.

Prediction of Fire Conditions

With these points in mind the need for advance knowledge of possible changes in humidity is obvious. Inability to foresee the conditions a few hours ahead has been the reason for many destructive fires. For example; a fire occurs and a crew, able to handle it readily in most cases is sent to take care of it. The humidity drops and twice as many men would be required to control the fire, with the result that the fire gets away. Again, a logger or road contractor may have some slash to burn. He decides that the weather is favorable and after ordinary precautions are taken the fire is started. If the humidity is low, there is a good chance that the fire will get away. If conditions can be forecasted for only a few hours, mistakes like these can be avoided.

Such a forecast can now be made. By having a continuous record of all of the climatic factors and a record of the relative humidity, a reasonably accurate prediction of relative humidity for the remainder of the day can be made at about 8:00 A. M. Exceptional conditions may be indicated further in advance by striking changes and a low night humidity.

Examples of such conditions are the low humidity during the night of May 27, and 28, 1922, which preceded the disastrous fire period in the Pacific Northwest during the last days of May, 1922, also the record of relative humidity that remained at about 30 per cent during the night preceding the destruction of Berkeley, California, by a grass and forest fire which ran into the city on September 17, 1923. During this same time fire conditions were extreme-

ly serious throughout California and the fire losses were the heaviest that have been sustained in years.

Since the prediction of relative humidity is more important than the current record, the Wind River Experiment station is trying to devise means for such prediction. Studies of the relation of atmospheric electricity and relative humidity show a definite relation between these two factors and indicate the possibilities of using readings of atmospheric electricity as a basis for predicting humidity.

It is important to note that fire periods have occurred only during periods of low humidity. A study of the records of the past two seasons is convincing to anyone who correlates the fire records with the records of the climatic factors. Periods such as May 27 to June 1, July 4 to 7, and July 14 to 17, 1922, stand out as the low humidity periods and include the dangerous fire periods of the season. During 1923 all organizations were congratulating themselves on their splendid fire record, and rightly so, but during September 4 to 8, and again on September 16 and 17, conditions changed suddenly and the consequent disastrous fire period for the Pacific Coast region left all of the fire prevention agencies with the thought that the absence of destructive fires perhaps was not entirely due to their organizations. These periods of low humidity came at the close of the season as if to show the possibilities of destruction had they occurred earlier.

This proved connection between relative humidity and fire hazard shows the application of relative humidity records in fire prevention and control.

Specific application to local conditions must be left to the individual, but the general humidity conditions are the controlling index and dangerous fire hazards may be recognized in advance through the regional conditions as indicated by the relative humidity.

S. S. Teacher—"Johnny, will you give the class a text from the bible."

Johnny—"And Judas went out and hanged himself."

S. S. Teacher—"And another one."

Johnny—"Go thou and do likewise."

THE CONSERVATION AND MANAGEMENT OF THE FORESTS OF INDIA

By D. R. Malhotra

THE area controlled by the forest department in British India at the close of 1921 was 245,612 sq. mi., of which 96,297 were reserved, and 8390, protected forests, the remainder of 140,925 sq. mi., being unclassed State forests. It is a striking fact that of the total area of British India, more than one-fifth is under the control of the forest department, and nearly one-tenth under regular protection.

In the matter of conservation and improvements, fire protection ranks high. The protective measures chiefly consist in maintaining cleared fire lines, external and internal; in organizing an efficient system of patrol; and in enlisting the cooperation of the local population in extinguishing any fire which may arise. At the same time it is an admitted fact that in certain cases fire protection, so far as natural regeneration is concerned, has been decidedly harmful, as the encouragement given to inferior species and weeds has wholly prevented the survival of the seedlings of the principal species. This result has been observed by the forest department in the moisture types of teak forests in Burma.

Indian forests are still free from beetle injury, but recently in Coorg in southern India over 20,000 trees affected with "spike disease" were uprooted. Although the intensity of the disease has not been reduced, it has not spread to areas previously unaffected. Among dangerous fungi pests in Himalaya forests may be mentioned the familiar *Trametes pini*, which attacks the blue pine.

Forestry in India is closely connected with grazing, the intensity of which varies in different provinces. As excessive grazing is harmful to young growth the question is unfortunately at times the cause of friction between the forest department and the people. In Central Provinces and in Berar the British government has adopted the policy of granting liberal concessions in the case of cattle kept for agricultural purposes, a higher fee being levied in other cases. In Madras in 1912 the grazing question became

so acute that a special forest committee was appointed to consider and report on this matter. The committee after due deliberation recommended that forests in which scientific working and control are essential should be classified separately from those intended primarily for the supply of village requirements and grazing.

The forest department later undertook the reforestation of denuded hillsides and ravine lands in Punjab and United Provinces. The government of United Provinces in 1916 announced a definite policy of reforestation which provided for the reclamation of ravine lands and the formation of fuel and fodder reserves in the drier tracts. In order to give effect to this policy an Afforestation Division has been established. A systematic survey of waste land was started, and that policy is still being pursued vigorously. In Andaman, an island near India, the plantation work is in progress and is being extended. In the Punjab excellent progress has been made with the scheme for the formation of irrigated plantations for the supply of fuel in the Canal Colonies. In Burma satisfactory progress has been made in the extension of teak plantations. Doubts have been expressed as to the wisdom of extending these plantations on the grounds that the staff and labor necessary for their upkeep is insufficient.

For the purpose of forest management under the general declaration of policy made by the government of India in 1894, the forests of India were broadly classed into:

- a. Forests, the preservation of which is essential because of their climatic or physical influence.
- b. Forests which afford a supply of valuable timber for commercial purposes.
- c. Forests which yield minor forest products.
- d. Pasture lands.

The system of management depends upon the object in view and necessarily varies with the class of forest. Hence in all provinces the prescriptions of working plans are generally adhered to, and sanctioned plans are generally followed explicitly.

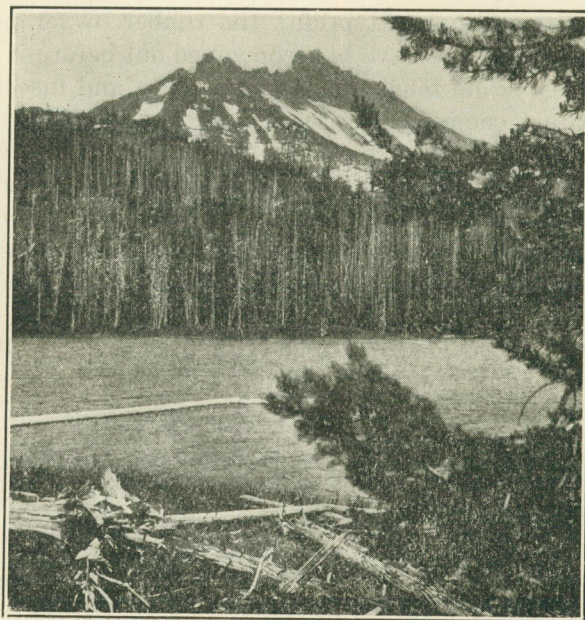
The systems of tramways and roadways used in the extraction and exploitation of timber have been widely ex-

tended in recent years; and a great deal has also been done in the erection of staff quarters and rest houses for officers. The use of mechanical transport in the extraction of forest products is becoming more important each year, and this question has been considered more than once by the Board of Forestry. They arrived at the conclusion that there was much scope in the use of narrow gauge forest tramways, but that experiments should be made with any other means of mechanical transport likely to cheapen extraction. At present the tramways are in use in Andaman, in Assam, and in United Provinces, and in all cases economy in transportation has been effected. In Burma skidders are now being successfully used instead of elephants to extract logs from forests and river beds. Another important device in this connection is the Weggi boom, which is designed to catch logs while the stream is in high flood, the logs then being conveyed to the railway by means of slipways, gantries, winches, and short lengths of tramline.

Experiencing many difficulties, the British government in 1913 appointed a Forest engineer, who has been engaged on various projects. But with the inevitable extension in the use of mechanical appliances for extraction and transport, one engineer for the whole of India will be insufficient, and the need is already keenly felt in various provinces for efficient and able logging engineers. Hence I can safely recommend to American students majoring in logging engineering the wide field offered by India in the construction of tramways and the extraction of heavy logs by means of donkey engines.

In recent years there has been an appreciable increase in the demand for forest products, and several industries dependent upon their supply have been established. One of the most important is the utilization of bamboos, savana grass, and firewood for the manufacture of paper pulp. Experiments have been conducted in the manufacture of paper pulp, which proved successful when carried out on a large scale, and concessions for the extraction of bamboos have been granted to two firms. At present the government is considering the grass pulp industry.

In conclusion I want to emphasize the fact that the improved methods of extraction now adopted in India and the new industries which have been started are sufficient proof that the officers of the forest department are fully alive to the importance of commercial development of the forests, and they realize that efforts to secure commercial success are a part and parcel of their duty in the scientific management of the forests properly entrusted to their care.



FOREST INSECT CONTROL

A Brief Survey of a Comparatively New Field in Forestry

W. J. Chamberlin, '15

THE seriousness of insect depredations to our forests and forest products is being realized more and more. Within the next few years this important phase of forest protection will undoubtedly receive far more attention than it has in the past. The national movement favoring reforestation will doubtless stimulate interest in this branch of forestry since it is becoming apparent that every possible means must be employed to assure a future and lasting supply of timber.

Stumpage values are increasing and will doubtless continue to do so, which means that more money may be expended in insurance. It profits the timber owner nothing to reforest and then have his crop wiped out before it reaches maturity so he must guard against fire and insects, the two greatest enemies of forests.

Much can be done by the silvaculturist in the way of protection if he has a thorough knowledge of insect enemies of trees. Certain species of trees can be given preference; mixed stands often ward off insect attack and many other points are worthy of consideration if the insect hazard is to be reduced to a minimum.

Forest insect control is conveniently divided into two major heads each with their subheadings as follows:

A. Natural Control:

(1) Parasites

- (a) Insects
- (b) Bacteria
- (c) Fungi

(2) Predators

- (a) Insects
- (b) Birds
- (c) Mamals
- (d) Mites

B. Applied (Artificial) Control

- (1) Control of external feeders
- (2) Control of internal feeders

- (a) Bark Beetles
- (b) Wood Borers
- (c) Enemies of rough and finished products.

Space will permit only of briefly touching on each of the points mentioned above.

NATURAL CONTROL

Parasitic Insects:

There are many valuable friends of the forests which are seldom or never seen by the ordinary woodsman. These friends are insects of various orders which are parasitic upon injurious insects. They range from tiny wasp-like creatures one one-hundredth of an inch long up to the large ichneumen flies which sometimes measure six inches in length. The tiny species deposit their eggs in eggs of other insects (the host) or in the body of some immature wood boring grub which will furnish food for the development of the parasitic maggot. The larger species may be observed about infested trees or logs where they drill through the bark and place their eggs in the mines of wood boring grubs. These eggs hatch into small worms which attach themselves to the wood borer and grow at the expense of the host eventually killing the latter.

To just what extent these parasites serve to keep forest insects under control cannot be stated in general terms. We have records of many serious infestations which were evidently broken by the work of these insects. It is evident to any close observer that much good is accomplished since it is not unusual to find whole broods of bark beetles and other borers killed by the parasites. The work of parasites in reducing epidemics of caterpillars is more easily observed and in many cases serious loss has been avoided by their timely interference.

Bacteria and Fungi:

That many injurious insects are killed by these two classes of parasites is not questioned, but to what extent they are benefactors is not known. We have only a very incomplete knowledge of the entomogenous fungi and but few serious attempts have been made to determine to what

extent bacterial disease affects insects. There are of course some well known examples of the work of both classes such as the Isle of Wight disease of Bees and the Wilt disease of the Gypsy moth caterpillar, both of which are apparently bacterial diseases. There are many species of parasitic fungi found attacking insects and some study has been made of the more common forms to determine whether they might be used in applied control. In at least one section of this country they are used at present in control work. The red fungus (*Aegerita aleurodis*) is being propagated and spread in Florida for the control of the citrus white fly and the red headed fungus (*Sphaerostilbe coccophila*) is being used to control various scale insects.

Predacious Insects:

Another class of insect which are very beneficial are those which capture and kill their prey consisting of injurious forms of forest insects. A very large number of species including, beetles, wasps and flies belong to this group and play a very important part in checking the ravages of forest insects of all types. Certain species of beetles have been introduced to prey upon bark borers and others have been introduced to combat the destructive Gypsy moth.

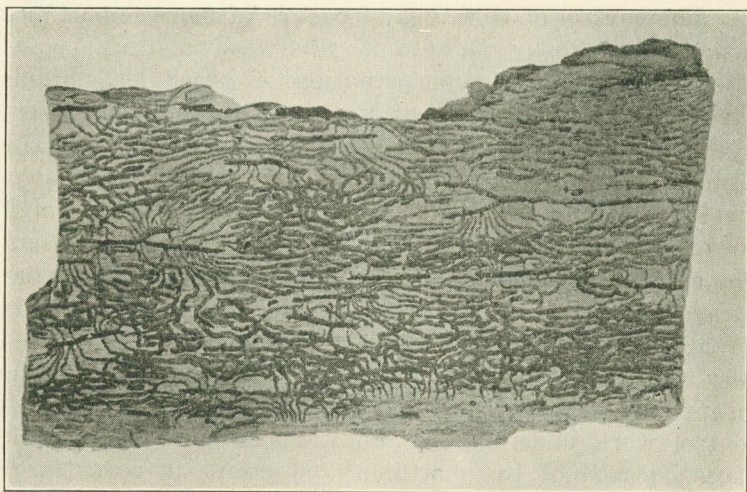
Birds and Mamals:

The work of insectivorous birds is too well known to need much comment here. It is to be regretted that the general public does not seem to realize the great amount of good that our feathered friends can and will do if left unmolested and allowed to multiply. It is already too late to inaugurate protection for some species—they have passed on. In many sections of our woods where birds, especially of the woodpecker type, were once common, one may travel a whole day and see scarcely a bird, so they are no longer the factor in natural control that they once were. Many of the small mamals are valuable in helping control certain pests. In the Klamath-Lake Country last fall it was observed that the chipmunks dug and devoured or stored large quantities of the pupa of the destructive pine moth (*Coloradia pondora*).

Predacious Mites:

In many instances insect tunnels are found containing immense numbers of tiny mites which are feeding on the immature stages of the borers and ultimately they kill their host. They are seldom numerous enough over an area to exert a great influence but do their bit towards keeping the balance of nature.

There are numerous cases on record where either parasites or predators of injurious forms of insects have been



Work of *Pseudohyalesinus grandis* Swaine on Douglas Fir.
Blue Mountains, Oregon.

introduced into various localities for the purpose of controlling pests. In many cases these introductions have succeeded beyond all expectations. With the exception of the introduction of certain clerid beetles to prey upon bark beetles in West Virginia and of a large ground beetle to feed upon the caterpillars of the Gypsy and brown tail moth in New England, little has been attempted in the way of introducing beneficial insects to combat forest pests. This type of work offers great opportunities and it is to be hoped that experimental work along this line as well as the breeding and dissemination of our native beneficial insects will be encouraged in the future.

Applied (Artificial) Control.

1. Control of external feeding insects:

This includes work against leaf-eating insects such as the destructive caterpillars of the Pandora moth, white pine butterfly, larch saw fly, spruce bud worm, elm leaf beetle, the Douglas fir web worm and numerous other foliage feeders. It also includes insects of the sucking type such as the injurious aphids and scale insects which although they seldom kill a tree outright often so weaken them that they are an easy prey for the most destructive internal feeders of the bark beetle type.

The control of this type of pest is of more importance east of the Rocky Mountains where silvacultural plans often contemplate the perpetuation of brood leaf stands and also in the parks and cities of both the East and West where shade and ornamental trees must be protected. The problem of control is not so difficult but is quite expensive, involving the investment of large sums of money for high powered spray machinery and expensive spray materials. The entomologists have ascertained for the most part what sprays will handle the various pests and when it should be applied. Spray machinery companies have designed very effective high power machinery to do the work. The disappointing feature of the whole plan so far as actual control work under forest conditions is concerned is the excessive cost of the machinery necessary to cover large areas during the comparatively short period when the spray will be effective; the high cost of materials and labor and lastly the difficulty, in many cases the impossibility, of getting the machinery through the woods.

The recent work of applying dust for the control of such insects, by the use of airplanes offers a solution to some of the difficulties mentioned above. In such tests as have thus far been conducted the apparent advantage of the airplane for such work are: The rapidity with which large areas can be covered. The thoroughness with which the trees have been coated with poison and the ease with which areas can be covered regardless of the actual ground topography or density of the stand.

Under this plan the use of large crews of men to handle thousands of feet of hose over rough ground is elimin-

ated. The actual cost of airplanes should not exceed that of the larger numbers of high power sprayers required to cover a given territory. The time element is important and in the Ohio tests an area of tall catalpa trees was covered at the rate of a little less than nine seconds per acre and a much more uniform covering of poison was obtained than could possibly be obtained by applying the dust from the ground.

2. Control of Internal feeding insects:

Under this heading may be placed such insects as normally feed in the bark or wood and because of their secluded habits are not ordinarily susceptible to any form of spraying.

We may consider here three groups of insects, classified according to the class of material attacked. In order of their importance they are the

- (a) Bark or Engraver beetles
- (b) Wood borers, and
- (c) Enemies of rough and finished products.

Bark and Engraver Beetles:

This group comprises all those insects which work for at least a portion of their life in the cambium of the tree. Their work results in stopping the sap flow and the consequent death of the tree where living trees are attacked. They constitute by far the most important group of forest insect pests in the West.

Control under our present system is slow and expensive and our methods seem crude; yet in many years experimental work little improvement in methods has been made. It has, however, been proven that large scale control operations can be conducted much more economically than it was thought possible a few years ago. It has also been proven that insect control work pays. Undoubtedly the number of insect control operations in the pine forests of the West will steadily increase and the demand for especially trained men to handle these operations will also increase.

Briefly the method followed in large control operations is to cruise the area, spotting all infested trees, numbering and locating the marked trees on a map so that

the treating crews will have no difficulty in finding them.

The treating crew re-locates the trees marked; fells them, strips the bark and burns* it if necessary to destroy the brood and thus prevent its attacking other trees. Plans for controlling insects over large areas usually contemplate covering the entire unit intensively in two to four years and then keeping up what it termed a maintenance control. The latter control usually consists of two men crews who have definite areas to cover once or twice each season. They scout out any recently infested trees and treat them at once. The area such a crew can cover naturally varies with topography and type of stand. In open yellow pine where a light car can be used such a crew can cover a surprisingly large area once it has been thoroughly cleaned up.

The trap tree method of protection may prove valuable, especially in maintenance control. This method is based upon the principle that beetles are attracted to recently cut timber. Crooked and defective trees are cut and left in attractive position to attract the beetles and later the crew returns, examines them and if they are infested the broods are destroyed.

Owing to the fire hazard during the drier months of the year it has not been advisable to carry on control work after late June. In some sections, however, this may now be overcome by using the solar heat principle of control. Under this system the procedure is the same except instead of burning the bark it is placed so that the inner surface is exposed to the direct rays of the sun. A 100 per cent mortality of the brood will result in less than one hour of exposure when the inside temperature of the bark reaches 110 to 120 Fahrenheit. Such a temperature results when the outside temperature in the shade reaches 80 to 90 degrees.

Wood Borers:

Under this group may be classed all those insects whose activities result in the so-called "worm holes" in timber. Such holes are due to the tunneling of the grubs of a wide variety of insects.

*It is not necessary to burn the bark in order to destroy the broods of certain species.

Little can be done in the way of control of these pests once they are well started in their galleries, except to get the logs through the mill as soon as possible and reduce the loss to a minimum. Many preventative measures are available which will help to prevent attack by such pests. Clean forest conditions or "Forest Sanitation" is important especially following logging operations, clearing right-of-ways, etc. Cull logs, damaged trees, and fire scars invite this class of insects and such conditions should be avoided. However, the damage to standing timber by this class of pests is small in comparison to the damage inflicted to cut timber and logs. Material which is cut should



Cocoon of parasite, showing emergence holes.

be removed to the mill yard or placed in water as soon as possible. Where it is impossible to remove material, it should be so placed as to allow a free circulation of air, hence a rapid seasoning which lessens the probability of attack. Material used for construction of log cabins, bridges and rustic work may be rendered more or less free from attack by removing the bark since the majority of the insects found in this group require bark for depositing their eggs.

Insects injurious to raw and finished products:

Two classes of insects may be listed here, the powder post beetles and the termites or white ants.

The powder post beetles attack only seasoned wood products either rough or finished. Such materials as tool handles, furniture, hardwood flooring, museum specimens, tanbark and stored lumber are favorites. Hard woods are preferred and it is only occasionally that a species is found to attack coniferous products. Attack is usually confined to the sap wood. The work is mostly hidden and consists of innumerable small galleries traversing the wood and reducing it to a powder, hence the name of powder post beetle.

Control consists of destroying the pests and also in preventing attack.

Material should be examined often and all infested portions cut from rough stock and burned. Where cutting must be avoided as in certain finished material, it may be subjected to a liberal application of pure kerosene, benzine, gasoline or formalin.

Another method is to subject the material to 130 degrees Fahrenheit for a period of from two to fourteen hours depending upon the size of the pieces to be treated.

Methods recommended to prevent attack are:

1. Careful examination of all incoming material to see that it is free of worms.
2. Use oldest stock first.
3. Scatter liberal quantities of flake naphtholine where materials are stored indoors.

Termites or White Ants:

These insects which live in colonies and somewhat resemble our ordinary ants are very destructive to certain classes of wood products, especially in the south. Such things as telephone and telegraph poles, railroad ties, bridge stringers, under-pinning of buildings, wharf timbers, piled lumber, silos and water tanks, besides various stored materials such as pulp and paper products are attacked.

In order to survive, these insects must have access to moisture and from a study of their habits certain procedures have been worked out whereby much damage may be prevented.

Control:

Prevention is much simpler than control. In localities where Termites are common every means possible should be employed to prevent wood from coming in direct contact with the ground. Use concrete pillars between wood and ground where possible. Where wood must come in contact with the ground it should be thoroughly impregnated with coal tar creosote prior to setting. In the case of attack on structural timbers it is often feasible to find the entrance to the subterranean passage of the insects and cut it off from the building or fumigate with carbon bisulphide. In cases of some infestations, especially on stored products, relief may often be obtained by fumigation, using carbon bisulphide or hydrocyanic acid gas.

We have, in the Northwest, the major portion of the remaining standing timber of the United States. Climatic and soil conditions are ideal for the growth of some of the finest and most useful species of trees. Much of our topography is such that the land is of little value for other purposes. A very large percentage of the activity and industry of the Northwest is bound to be closely associated with forestry and continued prosperity will, in a large measure, depend upon a continuous supply of timber, which in turn depends upon reforestation. The keynote to reforestation is protection against insects and fire.

Much attention has been given to fire protection and with our forest area decreasing and our organization for fire protection becoming more and more efficient, the menace from fire should steadily decrease.

On the other hand, the menace from insect pests would naturally increase, since there is a more or less constant number of insects present and their food supply (timber) is being steadily cut away. They will be forced to more and more concentrate on smaller areas, hence their work will be more evident and the proportionate loss will probably be greater each year.

Of the various classes of forest pests discussed above, only one presents a really serious problem with us at the present time; that is the "Bark Beetle" situation. No doubt the forester will, in the near future, be confronted

with other insect problems. We have present in various sections many species of the external feeders which, although they have up to the present time existed for the most part only in a endemic state, they represent a potential force capable of great destruction: witness the large acres of defoliated hemlock along the Tillamook coast due to the hemlock looper; the devastated areas of Douglas fir, Abies and pines in Oregon, Washington and Idaho due to the White pine butterfly; the steadily increasing area of stripped yellow pine of the Upper Klamath Lake country where the pandora moth will be seen in countless thousands during the coming summer.

More attention should be given these problems. Since these pests are practically all native, the chances of handling them with parasites is not promising. Parasitic fungi and bacteria would seem to offer a much more promising field for investigation with the view of controlling the internal feeders as well as the leaf eaters.

Spraying under western forest conditions is impractical with land machines but dusting with the use of airplanes would appear feasible when conditions are such as to demand treatment.

Forest insect control is a new field and offers wonderful opportunities to the investigator. The reward will be great for those who can develop more efficient and economical means of destroying any of the serious insect enemies of the forests.



A SOJOURN IN LOUISIANA

Earl G. Mason, '20

THE train stopped and we stepped on the station platform of a typical sawmill town in Louisiana. At the cross roads was the company store. Across the creek was the sawmill and extending along the roads, were the humble cottages of the workers. The town pump was a cistern into which was drained the rain water that fell on the company store building's roof. The electric lights were the one resemblance to a modern town. The town's growth could be measured by the varying colors and degree of fading of the paint on the uniform size and style of workmen's cottages. Scattered here and there were animals that proved to be the skinniest cows that were able to walk. More numerous was the town's sewer system—hogs built on the general proportion of a foot board. The town's supply of chickens were busily engaged in masticating their food supply as furnished by the ticks on various hogs and cows. Full-fledged specimens of the famous "hog hounds" were lazily existing in the various portions of shade formed by the buildings.

Soon we and our luggage were aboard the outgoing "logging special," and after a ride over the wobbliest, snakiest, and "what not" track, we stopped at the village of Horton which proved to be the logging camp. The combined church and school house was the largest building and together with the company store and hotel formed the unit of the town buildings which was not made up of two box cars with a porch between. The usual supply of hogs, dogs, sows, and chickens were present.

Shortly the men returned from the woods, the married men retiring to their respective homes and the few bachelors to the Horton Hotel. About 6:30 the dinner bell rang and we proceeded to the dining room only to learn that it was essential to wear a coat to gain admittance. The meal progressed and ended midst a profusion of sweat, I mean perspiration. Albeit, we are now firmly convinced of the reason the southern woods-worker marries. Why the women marry we have never been able to determine.

The next morning we were off for the operation on the "buckinest" galloping goose we ever rode, or rather attempted to ride. We heaved a sigh of relief as we reached the "Clyde Skidder" and once more felt a solid and non-wobbly earth under our feet. The skidder was mounted on a railroad car and merely dragged the logs to the railroad track and piled them up. Later a loader, also mounted on car trucks, would come along and load them onto the cars. Out around the outside edges we found oxen being used to log such areas as could not efficiently be reached by the power machinery.

The woods boss started out by teaching us how to "lay out a railroad." The technique seemed to be to start at a certain point and go straight ahead approximately parallel to the other spur, and about 400 feet away from it. Later this would be cleared out and the track laid by merely laying the ties on the ground and spiking the rails thereto. Grading and curves is nearly a lost art in southern logging railroading.

Having some mapping to do in an outlying section of the country, we decided to "put up" for a week at one of the "hillbillie" houses. A "hillbillie" is one who exists in a house in the woods on a small farm or clearing and who works in the "public works" or logging camp or mills as the urge for food and clothing becomes pressing.

Arriving at our temporary abode we were greeted by our host, and shown to our room, a large airy one (emphasis on the airy, as there were no windows in the frames and no chinking of the log walls). At one end was a mud chimney fire place, the top arch being more or less artistically formed by the use of an old cross-cut saw. The beds, disregarding our previous fears, proved to be of that soft easy-resting variety so seldom found in the modern world.

After having washed our face and hands in the family hand basin and wiped them on the community towel, we were escorted into the dim interior of the back part of the house. In the center of the dark room stood an oilcloth covered table of home construction. For chairs they had stools made of half a log and similar in design

and construction to those we used to read about when studying Abe Lincoln's early life. The dishes were of the purest unbreakable variety as often found in "greasy spoon" restaurants; the silverware of the best of iron, and the victuals well mixed with razor-back grease—fried greasy



potatoes, soggy corn pone, bacon without a streak of lean, and coffee blacker than the blackest negro. Our first mouthful convinced us of the need of grease in the said food, otherwise we doubt if our swallowing apparatus would have worked.

The chimney-less kerosene lamp on the table bespoke of our host's standing in the community. "Hillbillies" are of three classes: those having lamps with chimneys; those having lamps without chimneys; and those having no lamps. Later in the evening our host told us that, as chairman of the school board, he had hopes of getting a six month's school in a year or so. Evidently opposition to such a scheme was great among some of the "settlers." Next day on our way we stopped to talk to another of the

backwoods settlers and received his viewpoint on the education question as follows, "I never went to school over 6 months in all and I hain't never had any use for what I did learn."

Our evenings were spent before a pitch pine knot fire in the fire place talking to the host while the "wimmen folks" banged away on an organ and wailed away at hymns in some distant part of the house. Of particular interest was the discussion on the grazing question. We learned anew that the hogs and cattle had always "run wild" through the woods, that in the old days there had always been enough forage for them, that nowadays it was getting so about half the "critters" starved during the winter and that firing the woods every year made better grass and forage. In discussing the decrease in the carrying capacity of the range we very "learnedly" explained that repeated fires had the effect of gradually killing the roots and that although a fresh "crop" of grass came in after the fire, in reality the repeated fires were lessening the carrying capacity of the woods range. We felt a glow of pride at thus being able to put our technical knowledge to use in the proper place, consequently we were ill-prepared for the shock when our host settled the entire question by saying, "I got an idy—understand I don't really know, but then I got an idy that the woods just won't support as much stock as it used to."

Having thus "scientifically" solved the grazing and "light burning" question the conversation drifted onto snakes, ticks, and other human pests, including neighbor Brown over the hill.

After suffering ourselves to be called at 4:00 A. M. every morning, which we were assured was a rather late "rising hour" for the family, Saturday and our last day arrived. As the family were going over to Brother John's that day so as to be able to get to church on Sunday, we asked for our bill. "Well, said our host, I always figure that if a man can put up with our grub he is welcome to what he eats." Ye shades of southern politeness, we had worn coats on the hottest of days, and here we were ac-

tually begging a man to take pay for that which we would have left any Northern hotel without giving notice.

Returning to Horton we continued to enjoy such life as a Southern logging town has to offer, we were also able to note a few things of technical nature. Aside from the odor calling attention to the fact that a "critter" needed a much-too-long-delayed burial, the effect of fencing cut-over land was an outstanding feature. On the inside of the fence, where fire and hogs had been kept out, was fine reproduction, outside was devastation and waste land.

Shortly we returned to the "city" as they called the mill town. Here we enjoyed the towns social whirl and were able to see the movies on Saturday nights. Those movies will always remain in our memories as none other are like them. Invariably the plot would be of a Western cowboy and his episodes, about the time the villain had the heroine in his grasp, there would be a sputter and flicker accompanied by rather unchristian-like talking. Soon the light would go on and a disgusted voice would announce that the show was over. Such are the movies of the Southern mill towns.

At last wanderlust began to tickle our feet, fox-hunts became a thing of the past, even the hog hounds were failing to keep the razorbacks off the village green. Truly summer had arrived and with it a call to the Northland. Soon we left the Sunny South, the Piney woods the turpentine operations, the swampy hardwood bottoms and the hog infested woods. We had left behind the interesting exciting foxhunt of our "hillbillie" friends, the stuffy motion picture shows with the premature ending, the lovely dances with the elite of the town which were always accentuated by a real fine meal that was enough to tempt any bashful bachelor from boarding house stew. Never shall we forget those balmy Southern days in the piney woods, the people, the critters, and the sawmill and the logging operation. Albeit the sands of wanderlust are already beckoning us to return to the Southland, perhaps again we can visit our friends in the backwoods, who live in log houses without windows, furniture, and modern conveniences but with a wonderful bed and a mud chimney fire place, and eat once more the food so richly flavored with razorback grease.

MEXICO'S OPPORTUNITIES FOR THE LUMBERMEN

Philip Gilbert, '24

TO THE average American who sees no more of Mexico than the country near the border towns of Tia Juana or Nogales, it is known as a treeless, desert waste, inhabited only by pigs, naked, brown-skinned children and lazy peons. From the American newspapers the mental picture of a bandit behind every clump of cactus is given. With no little pride at his own bravery this American has himself photographed at the international boundary monument with a Mexican sombrero on his head eating an American made "enchilada." After this experience he is greatly relieved to step back over the line into "good ole U. S. A.," more confident than ever that no good can ever come from investments in Mexico.

Before anyone can begin to realize what a vast fund of natural resources is stored in Mexico, he must travel some two hundred miles south of the border across the desert of rocks and sand dunes which characterizes the valleys of the northern Mexican states. A day's travel southward from El Paso, Texas over the line of the National Railways of Mexico takes one to the heart of a high plateau, beautiful with the green of irrigated cotton and corn fields and picturesque with the medieval Spanish architecture of the aqueducts, ranch houses, and old stone churches which can be seen scattered among the fields and trees.

West of the main line of the railroad are the Sierra Madre mountains, a continuation of the American Rockies, and in this range are found the coniferous forests of Mexico. These mountains are more or less timbered from a few miles south of the American border to the Isthmus of Tehuantepec and the writer is conservative in saying that there are ten million acres of merchantable pine timber throughout the range.

This timber consists of two species of pine similar to the short leaf and loblolly pines of the southern United States, with red fir, white oak and red cedar occurring in small, though merchantable, quantities. The trees range from two to six feet in diameter and from 40 to 80 feet

to the first limb. Practically no evidences of tree diseases or insect attack can be found. The stand will average 4000 feet to the acre over the entire timbered area, but in many sections a cruise would show more than 20,000 feet to the acre.

The best of the timber lies in the states of Chihauhau, Durango, and Michoacan, and, although it is found at elevations of from five to ten thousand feet above sea level, it is not at all inaccessible as can be seen by comparing certain of these tracts with California or Inland Empire



conditions. In Chihauhau and Durango the timber is situated similarly to the sugar and yellow pine stands of California and can be placed at the railheads with about the same amount of railroad construction—anywhere from 25 to 75 miles. From these points it is a haul of from three to five hundred miles to the distributing points of

the Central United States market with freight rates considerably less than on American railroads.

In northern Chihuahua, the Pearson Lumber Company is already firmly established with several large logging and milling operations on the Mexican Northwestern railroad, and, along with other operators in that vicinity, is successfully competing with American pine in the American markets. There are countless other tracts in this state lying idle, which are just as advantageously situated as the Pearson property.

The bulk of the timber in the state of Durango is equidistant from the Southern Pacific railroad on the Pacific coast and the Mexican National in the interior. There are many streams adjacent to the timber which are tributary to the Pacific ocean and which are capable of transporting logs eight month out of the year to the Southern Pacific main line along the coast of Sinaloa. From here lumber may be transported either by rail or water to the California or Arizona markets at a very low rate. Branch railroads running west from the main lines of the interior are building farther and farther west into the mountains to handle ores for the great mining operations and in some places are within twenty five miles of the timber country. A very small amount of railroad construction would thus make this timber accessible to both the coast and the central markets.

The timber in Michoacan will never be available for United States trade until a considerable amount of railroad construction connects the timber belt with the Pacific coast of that state. There is, however, direct connection with Mexico City which affords an excellent market for all grades of pine lumber and construction timbers. Several small mills now operating along a branch of the Mexican National railway are shipping to Mexico City, Toluca, Queretaro and other large cities within a radius of one hundred miles by rail and are selling at a profit which would bring envy to the eyes of the most successful American sawmill men. There is also a constant demand for fir and oak railroad ties. Thus far these small mills have been unable to supply the railroads with more than half

the ties and timbers required. In many cases the railroads have been forced to resort to the use of such woods as ebony, mahogany and mesquite for ties because of the prohibitive cost of imported ties and the inability of the local mills to fill their orders. The timber in this vicinity is somewhat larger than that of the northern states, the trees averaging 30 inches in diameter with very little taper, will cut out a very large percentage of upper grades..



Another vast reservoir of coniferous timber is found in the range of the Sierra Madre del Sur mountains which parallel the coast in the state of Guerrero. The timber in this district is of the same species as the northern Mexico forests and, like those forests, embraces all of the qualities contained in similar woods found in the United States both in quality and extreme length of clear body. The stand is much heavier than is usually found in American pine forests and careful investigations show that an estimate of 700 feet as an average per acre is very conservative and there are thousands of acres which will cut 30 and 40 thousand feet. The timber occurs at elevations from 5000 to 7500 feet on a plateau sloping gradually to the coast and is situated so that in not place will more than 50 miles of railroad be required to place logs or lumber on the docks in the port of Acapulco or on the beach at certain good lighterage ports along the coast. The fact that many

steamers passing through the canal from the east coast are in ballast, a low freight rate can be obtained from this port to the Pacific coast points, a haul of 1400 miles. Steamship companies also quote a rate of eighteen dollars per thousand on pine lumber from Acapulco to New York and Baltimore.

Due to the easy logging conditions and the extreme cheapness of Mexican labor, lumber can be placed along side ship at a cost of nine dollars per thousand, figuring every cost up to this point except the cost of stumpage. This ranges, in this vicinity, all the way from a dollar an acre to a dollar per thousand, depending upon the location and upon the mood and the financial condition of the Mexican owners.

Throughout the entire pine forests of Mexico, logging costs are remarkably low. Gradual slopes and smooth ground prevail and tractors, teams or big wheels can be used in almost every instance. Mexican laborers, unlike their brothers found in southwestern United States, are trustworthy and ambitious and will work conscientiously for a wage of from fifty cents to one dollar per ten hour day, either in logging, milling or railroad operations. Good railroad mainline can be run in and graded in almost every part of the pine country costing from two to four thousand dollars a mile. The cost of railroad and mill equipment would, of course, be somewhat higher than in the states as it would be necessary to import almost everything from this country.

The coniferous forest resources are but a part of the total timber stand of Mexico. Its hardwood forests practically cover the region of coastal plains along both coasts from Central Mexico south to the Isthmus of Tehuantepec and the entire country south of this point. These forests are more generally known to Americans and are rich with such timbers as true mahogany, primavera, aromatic cedar, jinizero and various other valuable cabinet woods known, more or less to the American hardwood trade. Several American firms are established in southern Mexico and are importing hardwood logs from those forests to the United

States. Among these American firms operating in this district are William Hawes and Co., The Otis Manufacturing Co., Talge Mahogany Co., and the American Trading Co. H. A. Browning, logging engineer and timber appraiser of Los Angeles, who has made appraisals of timber properties, both in this district and in the northern pine belt of Mexico, has compiled accurate data on the best logging and milling propositions of the country and is cooperating with the Mexican Company, S. A., of Mexico City in the selling of these lands in the United States. Comparatively speaking, however, these hardwood resources are practically untouched and many fine logging and milling chances are lying idle awaiting the hum of American industry.

It is surprising that with pine stumpage and hardwood lumber prices advancing at the rate they now are in America, more of these opportunities have not been grasped. This is due almost entirely to the fact that American capital fears for the stability of the government of Mexico and has no confidence in the ability of Mexican law to enforce the validity of land titles. Fortunately, this period of instability is now at an end. The government of the United States realizing that President Obregon of Mexico, in organizing his extensive educational system, in revising laws for the protection of foreign and domestic land titles, and in proving his ability to enforce such laws, has made Mexico safe for foreign investments and activities, recognized the Obregon administration in September 1923. This recognition assures Mexico of the assistance of the United States government in the enforcement of these laws.

With this in mind, the American who knows conditions is convinced that what the patriotic Mexican hopes for will come true. This is that Mexico's natural resources will be developed by foreign capital and the next decade will see Mexico one of the world's lumber producing centers.

Starker—"What is the technical name of that tree?"

Begue—"I don't know."

Starker—"Evidently you didn't get much out of my course in tree ident. last term."

Begue—"I sure did, I got a B out of it."

A BALLAD OF THE TIMBER CRUISER

Yoho! Yoho! Yoho!

You whistlin', bristlin' blizzard,
A-sweepin' timber low;

You Buckin', blust'rin' roarer,
With your whirlin', burlin, snow!

You're snatchin' at my whiskers,
And you're rippin' at my clothes;
You're pawin' at my duffle-bag,
And you're bitin' at my nose.

You've swallowed up the balsams
With your blindin', grindin' drift;
You've sheeted up the rapids,
And you're workin' double-shift.

You've bluffed the lop-eared rabbit;
Squirrel's prayin' for his soul;
Doe's shiverin' in the tamaracks;
Mink's popped into his hole.

Tho' you've scared the whole blamed outfit,
I'll call your brawlin' bluff—
Here's to you! Blast and Bluster!
Man's made of tougher stuff.

Yoho! Yoho! Yoho!

You hawlin', growlin' Norther,
A roarin' as you go;
You rippin', tearin' bully,
With your icy clouds and blow!

—Lew R. Sarrett.

INFLUENCE OF FORESTS ON CLIMATE, SOIL AND STREAM FLOW

"More and more oaks were cut down—mark that; for the stories of nations are so intricately bound up with trees—until all the plain were cleared and tilled; and then the foot hills were denuded, and the wave of destruction crept up the mountain sides, and they too were left naked in the sun and the rains. At first these rains swept torrentially, unhindered by the lost forests, only enriched the plain with the long hoarded sweetness of the trees; but by and by the living rivers grew heavy and thick, vomiting mud into the ever shallowing harbors, and the land soured with undrained stagnant water. Commerce turned more and more to the deeper ports, the mosquitoes began to breed in the brackish soil that was making fast, between the city and the sea. Who of all those powerful land owners and rich merchants could ever have dreamed that the little buzzing insects could ever sting a great city to death? But they did. Fevers grew more and more prevalent, the malaria population went more and more languidly about their business. . . . The little winged prisoners of the night struck again, until grass grew in the streets, and wharves crumbled where they stood. Finally the wretched remnant of a great people wandered away into more wholesome hills, the marshes rotted in the heat and grew in coarse reeds where corn and vine had flourished, and the city melted back into the wasted earth." This is a contribution to civilization from Greece.

France had a similar experience. At the end of the eighteenth century and the beginning of the nineteenth century France deforested the French Alps. Floods followed, villages were destroyed and others abandoned because the fields were covered with steil gravel and boulders, two yards deep. France started to remedy the situation by reforestation at an enormous cost.

Long ago China cut off the forests where her people now live. Now her people are seen diving to the bottom of the rivers to bring up the fertile soil to make gardens on the land. Disastrous floods are frequent. These take

thousands of lives in their sweep, leaving thousands more to perish from hunger as the result of famines caused by these floods. The cause of it all can be traced back to the removal of the forests on the headwaters of the streams which controlled the flow and held the soil intact.

In our own land, in the country of the Appalachians, steep slopes have been cleared that should have remained in forests. With the steep slopes and the compact soil that prevail and the heavy rainfall descending in frequent thunder storms, erosion and flood inflict heavy toll. The damage is not only inflicted where the slopes have been denuded by the flood waters, but they submerge fertile bottom lands in the Piedmont region and often render them useless by covering them with layers of sand and gravel. For years the farmers have had their lands submerged by disastrous floods, due primarily to the combination of over-cutting and the forest fires on steep slopes of the headwaters. To remedy this condition the Federal Government has purchased over 1,000,000 acres as provided by the Weeks Act, on which it is planned to create National Forests. In the Rocky Mountain region, too, the Government has purchased thousands of acres, primarily for the purpose of protecting the watersheds of the many streams that have their source there, lumber production being a secondary purpose. Many of our cities have purchased the forest lands in the vicinity of the source of their water supply. In the case of some cities, for example the city of Portland, Oregon, these lands have been set aside by act of Congress. Thus it will be seen that our own government is awake to the value of the forest and our people are becoming rapidly aware of its need for posterity.

Yet in our own Oregon country we are not free from the scars caused by the removal of forests both by fire and man. On the headwaters of streams where huge forests have left the mountains bare, we find wide jagged, and torn stream beds as the results of rushing torrents that come from the mountain sides where they are no longer slowed down by the forest cover as in days before the devastating fires. On the Zigzag and Sand headwaters this condition may be found. In one case only the sign board,

where once stood a beautiful, summer cottage, remained. Only the wagon tracks on either side of the river remained of what was once a bridge. Thousands of acres, in this vicinity, have been deforested by huge forest fires. Now the bare rocks crop out where the thin soil has been eroded and the ugly, black partially-decayed snags stand as witness of what used to be.

In the past great credit has been claimed for the forest



for its effect on the climate. Forests affect climate in so far as they affect temperature and atmospheric conditions. That this effect is measurable to any great extent is yet a much debated question. S. B. Green maintains that forests do affect climate by way of affecting wind, wind storms, hail storms and the like; while Schwocppach states very emphatically that it is a mistake to make this claim for the forest. The mean temperature, he maintains, in the forest and out of the forest amounts to about one degree Fahrenheit which is not enough to cover the amount of error in the instruments used. Granting that the forests do not affect the climate of a large area there are none who will not agree that there is a vast difference in the climate in the forest and out of the forest. In the forest the ground is covered so that the direct rays of the sun do not come

through, hence it is cooler in the forest during the day. At night the cooling of the forest is retarded, hence it is warmer in the forest at night. The forest does break off the wind in the forest and for the vicinity near the forest. This latter fact has been appreciated by those who have lived in a windy country where a wind-break of trees has afforded them partial protection. But so far as the forest having a material effect on the climate of a whole section of the continent there is much question.

However there is no question as to the effect of the forest on the soil, since it is sanctioned both by scientific experience and expert opinion. The forest enriches the soil, of the rock particles in the soil. In connection with this it holds the soil particles together, and aids in the oxidation. It is interesting to note the manner in which soils are built up over centuries of time. Plant associations succeed each other upon extensive areas of bare rock, a succession that depends upon the ability of each plant group to live under the hard conditions which excludes the next higher group. But each group through the action of roots and the formation of humus forms more soil for the next higher group to obtain footing, until finally a forest or climax type is the result. Nor does the soil-making stop with the coming of the forest. In fact the depth and richness is added to at a more rapid rate. The roots forge deeper with each year of growth. Each year a greater amount of the lower layers of mineral matter finds its way through the roots to the leaves of the tree, part is converted into food for new growth and part is stored in the leaves and twigs that fall to the earth beneath the tree. The latter finally becomes the organic layer of the soil found in the forest. Thus the soil making process goes on, the forest enriching rather than exhausting the soil.

That the forest does enrich the soil is well shown by the pine barrens of the South. Fields deserted for agriculture, because they no longer produced profitable crops, have produced splendid forest crops. On clearing the land good crops were raised for 4 or 5 years because of the richness deposited by the forest. At the end of that time the crops began to decrease in value, and when finally abandoned, the

forests again took the ground and the cycle was again on its way.

The roots of the trees, in foraging in the soil allows the air to get to the rock particles. These become broken down or oxidized and more mineral matter is released—material that is used by plants as foods. Thus, beside the organic matter added to the soil through the decomposition of leaves, the soil is further enriched by releasing the food stored in the parent rock of the soil. At the same time



the roots form a great new work through the soil by which the soil particles are held together.

This vast network of roots in the soil, together with the tree trunks and branches, and the great carpet of dead leaves, moss and twigs, and other partially decayed material covering the soil in the forest are the great factors in the control of stream flow—one of the greatest reasons for forestry. Besides holding the soil particles together and thus preventing erosion, to a great extent, the roots form basins in which small pools of water collect; these act as miniature storage reservoirs running off to the next basin farther down the hill when the upper one becomes full. In short, heavy showers much of the water is caught by the limbs and a great deal runs down the trunk of the tree thus extending the time and reducing the force with which the precipitation reaches the soil. The carpet of leaves and moss in the forest has the capacity for absorbing water at

the rate of millions of cubic feet per square mile in a few minutes.

Since many of our streams have their sources in the mountains and these mountains are snow-covered for many months in the year, any effect that the forest may have on the snow will affect stream flow. In this regard the late B. F. Fernew wrote, "Snow will be in the forest more evenly and continuously than on unprotected surface. This element of conservation not only increases the amount finally remaining for drainage but also prevents the soil from freezing, keeps it open for percolation when the snows melt in the spring. In the open fields snows are not only apt to become incrustated with an impermeable surface stratum which would turn over the melting snow waters into surface drainage. It is these snow waters, preserved to the substratum drainage, which above all account for the continuity and equality of flow in springs far away from the catchment basin, the waters that fell in the winter and melted in the spring, reappearing in the summer."

It may be said then the forest protects the stream flow by holding the water that falls in the form of rain and snow, like a huge sponge, and allowing it to ooze out gradually. In some cases springs have entirely disappeared after a nearby forest has been cleared, but have commenced their regular flows since the trees were allowed to grow. Springs in turn influence the flow of rivers. This becomes the more important when we consider that the source of stream flow precipitation comes at irregular intervals during the winter months of the year and very little during the summer months of the year. Hence we must look to the forest as the great controlling device, for the solution of the stream flow problem, to obtain a continuous and more constant stream flow.

The disastrous effects of variable, erratic stream flow is well known and well explained by one geologist who says, "The corrasive power of a current varies as the square of the velocity with equal size and distribution of the particles; thus if the velocity of a stream is doubled the corrosive power is not twice—but four times as great. What is still more surprising is that the moving power of a cur-

rent varies as the sixth power of the velocity; so if the current of a stream is doubled the moving is not only doubled but becomes sixty four times as great, and seven hundred twenty nine times as great if the current increases three times.

In modern times we attempt to profit by the experience of others in government, science, art and in making conditions for our posterity at the same time leaving the way open for further development. Assuming this we cannot close our eyes to the experience abroad, in France, in China, at home; in the Appalachians, and our own Oregon country. Judging from the experience of others, although there is some difference of opinion as to the effect of the forest on climate, the effect of the forest on the soil and stream flow is enormous. Judging from the opinions of men who have made this subject their life's work they are agreed upon the fundamentals set forth here.

Then the Judge Swore

In the court room a nervous witness was once heard to say, while taking the oath—

I swear to tell the truth; the whole truth; and nothing like the truth.

Oh Death, Where Was Thy Sting?

A man was run over by a truck the other day.

Well.

He wasn't injured.

How come?

He was killed.

When a Ball is a Blow-Out

It will be blown up tomorrow.

What?

A basketball.

He Needs Training

Passenger—"Can't you go any faster than this?"

Conductor—"Yes, but I'm not allowed to leave the train."

THE LOG OF THE "HUD"
as chronicled

Saturday, May 19, 1923.

Left Corvallis 8:10 a. m., loaded to gunwales with Dunham's blankets and rations for six. Arrived at Roseburg at noon. Visited Car Neal and took a meal at Royal Grill. Arrived at Grants Pass with T. J. hanging onto the door knob, 4:00 p. m. no stop at Kirby but Dizzy donated a dime for the lacteal fluid. Made camp at Gray back campground, and ate first camp meal. Dizzy made a mess of frying the eggs, and P. G. Kelly was called to rescue, and delivered. It wasn't bad. Plenty of strawberries. Dizzy felt pretty down hearted—Saturday night and no dance. This wasn't right so we left T. J. with the baby; washed our faces and with Tony in pajamas holding down the rear, drove down to Holland to the skid. The price "two berries" sort of took the wind out of our sails but we're happiest when broke so here goes six of us for four of us. Right away Dizzy starts cultivating a swanska flika with an obvious purpose. Pinky Bell Wright and Red Wood Duncan had better ideals due to their early training and thereby cut out the beloved's of Rita and Alta the pick of the broods. About midnight after a few miles of cat racing we took on a real chicken dinner. Hot lava! After such encouragement the competition increases and lord how the pace goes! The orchestra weakened and squeaks its last with the three dirtiest ones in the arms of their darlinks. Exit at 3:20 a. m. all sober, virtuous and headed for home.

Sunday, May 20, 1923.

Prof. was sleeping with one eye open but that didn't last long. We rolled him out for breakfast and started up the mountain for the Oregon Caves where everybody was asleep. The Hon. Mr. Sabin said nothing doing till 9:00 but we did get a guide at 8:00 and accompanied by the beauteous ones and their impedimenta and a leaky carbide lamp apiece we oozed into the bowels of Mother Earth. We saw it all even the quietness from the Devil's own Cauldron to Paradist Lost and it wasn't bad except that P. G. Kelly committed a loud social error in a narrow passage.

Dirty Dora! We ended 3399 feet underground and sought the light of day from the upper entrance. I guess it was worth the 50 cents a head that we donated to Marian's father. Driving down was easier than up and we took on our baggage at Camp continuing to Holland and out on to the main road. The Oregon mountain was the screaming "A" grade and the "Hud" had to do her stuff about 11 miles in 2nd. We did manage to get to Crescent City and kept on till we passed through Brookings still minus the festive campground. Prof. reconnoitered and found one hell of a camping place just in time to keep Chief Kelly from dropping dead from starvation. Supper was served at 9:00 or thereabouts and we sought repose on a springy half acre of thoroughly packed earth.

Monday, May 21, 1923.

This morning we went through the C. & O. mill. Mr. Nutting not around being out at the camp. The mill itself wasn't bad but oh what ignorant help. In the afternoon, we went down to the loading docks and inhaled a sight of the pure ocean breezes, "just like we had in the navy" according to P. G. After decending upon the ice cream parlor we had more substantial food and leaving Grandma Dunham in camp went down to the beach to do the Mary Ann McCarthy stunt. The bloody clams didn't respond to our siren call so we watched the sunset from the point until dark. Starker went back to camp with Grandma while the four dirty ones enjoyed a beach party and swim by the moonlight. The water was fine and we returned home by way of the mill greatly refreshed.

Tuesday, May 22, 1923.

We were rudely awakened from our peaceful slumber by a light rain. Upon the main drag we met Mr. Nutting, proud papa of a Brother "Chung." Unfortunately, he was to be busy unloading a donkey so could not go out to the woods with us. We arrived at the camp just after the husky loggers had taken on a meal preparatory to a day's labor in Nature's Temples. "Hud" was left in camp and we hiked up the R. R. till we met Bill Stewart, the logging enginness who took us in tow. A few yards from the first side, a loud cry went up when some observant brother discovered the absence of kodaks in the party. So after an exchange of clever repartee, Pinky Wright and Dirty Duncan ambled the many miles to camp and return loudly proclaiming their motto, "Dont cry little boys we'll get your ——d ——d cameras." By that time the fog had lifted a bit and much abused kodaks were brought into play while looking over the two sides that were in operation.

Noon came at 12:00 o'clock as usual and we were guests of the company at a regular logger's luncheon. The boys did quite well, except the dear professor who only eats a sandwich and an orange for lunch. With the aid of our —— we steered a course down hill to the hack. The rest of the afternoon we spent on the road to Eureka. Passing through Crescent City we did look over the celebrated haywire mill located there. Muchly amused we drove on till we found a camp site in the sequoias where we made early camp for a change. Prof. Starker starts a purity campaign till we traveled ——miles per.

Wednesday, May 23, 1923.

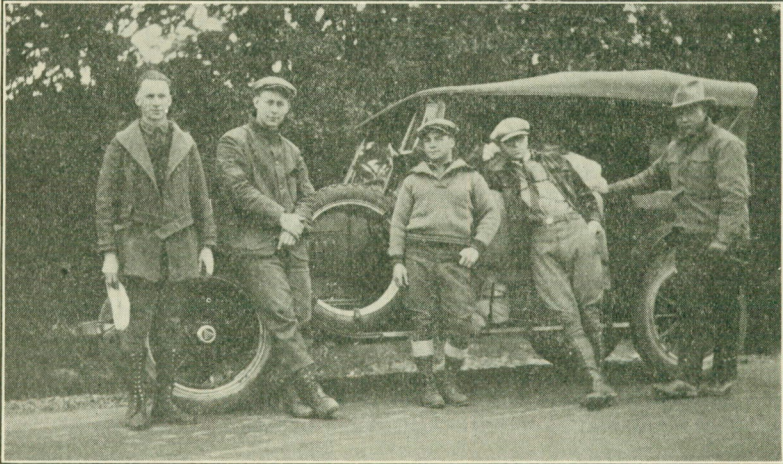
We woke with Tony leading the sacreligious element and then denying his right to have us eat at his expense. The road through the redwoods was cool and pretty especially along the lagoons near the edge. The three songbirds in the front seat distured all of the wild animal life as we passed through and only let up when gasket trouble brought the "Hud" to a stop. Then we grabbed a photo of

Dizzy Dunham with his arms encircled lovingly about an 18 foot redwood.

Pulled into Eureka just before noon and put "Hud" in hock for needed repairs. Tony headed a foraging party and brought back a choice of Italian viands. Pinky Wright also distinguished himself by getting money out of a band.

The Eureka auto park made a fine place to cook so we threw a big spread, chief among which was the big fruit salad, the pride of Dirty Duncan's culinary career. At 2:00 p. m. we caught the launch for Hammond lumber Co.'s plant at Samoa, across the bay and landed in the arms of one gent who steered us for the employment office. Nice howdeedoo.

They gave us the assistant office boy for a guide but in spite of him we saw a great deal of the plant. No lives were lost, and we



saw the fastest double cutting shot gun band saw cutting redwood cants of our career. Several altercations were noticed when Prof. invited Mr. Kelly to smuggle out 1 gutter 18 balusters, 1 window frame completed and a curly plank for the new house back home. If it hadn't been for the leaks that we ate for supper we chasers would have attended the midweek hashers hop but instead had to content ourselves with writing letters at the community house. T. J. got mixed up with some native sons from southern Cal., and in boosting O. A. C. mentioned one of the college attractions; the Hud Trio, Kelly and the two Pink ones. In spite of their dumb protests, he insisted on their performing their stuff for the edifications of the aforementioned native sons. Well, after the smoke of battle had cleared away it was a terrible sight. Words cannot describe the horror of the scene for the trio was awful when minus its accompaniment of corduroy road and a super six exhaust. Prof. felt

so bad over his proteges that he hardly got a wink of sleep. My Alma Mater, where hast thou led me.

Thursday, May 24, 1923.

In the morning we started on our long trek inland to Redding. Passed through some very pretty country, and sighted another four legged deer. At noon we camped on a creek that flowed down a deep canyon; an ideal place for fish. It was all right the only difficulty being that they refused to leave their happy homes; anyway Dirty and Tony returned with their sterns wet and hungry. More driving brought us to the town of ——— and the famous salt creek which we crossed and recrossed 14 times, no foolin'. The road seemed without end and nearly everyone who was ever over it is about to abandon ship. When we came to, it was on the main drag to Redding where we hit for the nearest food dispensary. Had a substantial midnight lunch and then sought a place to flop. Picked out one auto park down by the dirty Sacramento and lay our weary hulks down upon the unyielding ground for a couple of hours for the evident purpose of securing sleep.

Not so, however, for before the ribs of the sleepers had bent to the contour of the earth we were rudely awakened at the first peep of dawn by an unseemly racket overhead, "tweet tweet twoot twoot" it went first in solo then in chorus, till with daylight came the grand ensemble of the farfamed California Fillyloo birds. We thanked our lucky stars, elephants don't fly. Needless to say we lay there no longer but rolled our blankets uttering maledictions on California in general and her birds in particular. Brother Dunham being in a particular cheerful mood served the hotcakes.

Friday, May 25, 1923.

From Redding we took the highway northward turning off on the McCloud road. It was noon when we pulled in and the superintendent was out. As usual everybody had a different idea about food, but when the miserable steward couldn't even buy bread at the town store, we were impelled by the cold blast to enter the company dining room.

The first thing that attracted our attention was a little head line on a card that read "Lunch \$1.00" "Stuck" says we, all so, dove into make the best of it, at the same time casting sorrowful glances at the Chancellor of the Exchequer. The grub was rotten, we ate as much of it as possible and filed out leaving the poor C. of E. holding the sack. What happened when he passed the desk cash register has been deleted by the censor.

The afternoon was spent in dodging from one part of the McCloud Lbr. Co. mill to another to miss the rain drops. A goodly shower too. After we had seen 42 dry kilns, chinned with the superintendent, and waited for Pinky Wright, we pulled freight for Weed. Here the Chief Engineer distinguished himself by sweetening our dispositions with some excellent cream puffs, An irrigation ditch

north of Weed made a fine camp ground and many miles of worms were consumed in the meal that followed.

Saturday, May 26, 1923.

Morning found us on the road at an early hour ,and none too early at that for, the road to Calamity Falls was a fright, and jack rabbits so thick Tony couldn't shoot them fast enough to keep the passage clear. We ran into a couple inches of snow which didn't help matters any. Here Pinky spent all his loose change buying gum drops at country stores when asking directions. Poor Youth!

Shortly before noon we sighted the lake and entered the camp grounds. The first person to bid us welcome was a member of the state police who eyed Starker and the motley crew with suspicion. There were no good camping spots in town so in desperation we chartered the Hall Annex. About this time our friend the cop steered us to a all you can eat for Four Bits restaurant. Now most of us are heavy eaters and we did noble, but to tell of what a light lunch T. J. ate would be sacrilege.

In the afternoon we rambled out to the Pelican Bay Lumber Co. where Mr. Evans showed us through the mill. Coming back early there was a mad rush for the royal baths which stood up well under the strain. Several of the pure, not to mention any names, bathed themselves again and again, not from necessity particularly but from the pleasure derived therefrom.

It being Saturday night in Calamity Falls the chasers as a matter of course sallied forth to the "Laundry Queen's Scud," headed by the redoubtable Dunham, hero of many similar encounters. Sad to relate however although our acquaintances from Tubs 8 and 9 were there, they gave us the cold and icy, and a good reason too for all their week's earnings had been lavished on their backs, while we were not able to show much in the way of clothes. We yearned for Holland and its "feemes!" Even so, the ice was finally broken but it was a heart breaking process, and the batting averages of such shieks as Pinky Wright and Well Fed Kelly took an awful slump. The purity squad scored a moral victory after noses were counted in the morning for no one was inebriated and all the girls were the cream of the town.

Sunday, May 27, 1923.

Sunday morning saw us homeward bound towards Ashland via Keno. We were till afternoon crossing the divide. Made Ashland at ——— and Medford at ——— where we stopped to take on more food and give Dizzy a chance to visit his sister. Here Kelly and Duncan got into dispute with the S. P. they being such rough looking characters that the brakie was afraid they would steal his train.

At six we were on the move again and made our last camp south of Canyonville about 10:30.

It was no small job to pry us loose from our downy cots for the idea of being out last was too great. Then came the joy of

cleaning up the kitchen which ended the miserable steward's responsibilities. That just about finished the works for all that remained was to head for the barn which we did in short order landing in the Heart of the Valley at 1 p. m. little the worse for our 1200 miles and with the addition of a set of fine callouses apiece.

For the "Hud," notwithstanding a fire going down grade which Dunc and Tony were fortunately able to put out, it caused no trouble whatever; not even a puncture. Long live the "Hud," and may it and its faithful driver Kelly when through with this vale of tears find a happy resting place in the great beyond the pale. Amen!

Without fear or favor I have done that which was wished on me

Pro pons publico——

Gordon (Dirty) A. Duncan

Grand Histogrammer.

THE CREW OF THE HUD

- T. J. Starker: Commodore
Light Luncher
Leader of Purity Squad
Campsite Picker.
- M. W. Dunham: Miserable Steward
Dizzy
Marcus Aurelius
Chaser.
- A. D. Cannavina: King of the Worms
Brown
Pajamas
Feather Bed.
- W. C. Kelly: Chief Engineer
Heavy Feeder
Chaser
P. G.
- G. A. Duncan: Second Engineer
Doctor
Chaser
Dirty
Histogrammer.
- E. Wright: Third Engineer
Pinky
Chief Chaser
Sunbonnet Baby.

The Jews Harp or Real

Der vedding invitation says R. S. V. P. at the bottom. Vot do it mean?

Such ignorance, dot means to bring Real Silver Vedding Presents.

PAUL BUNYAN

Kingpin of all Loggers

and

Prof. Starker's Assistant

During the Winter of the Blue Snow







Staff of the 1924 Annual Cruise

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George Spaur	Assistant Editor
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FOREST CLUB ACTIVITIES

BEFORE we can understand and appreciate thoroughly the place occupied in the life and activities of the student of forestry, by the forest club, we must know a little of its history.

The forest club has existed since the early years of the school. During the first few years a great deal of personal effort on the part of those most interested was necessary to keep the organization together. The thing was done, however, and to those responsible we owe a great deal.

The next decade was more or less of a formative period during which time the policies, which are now beginning to bear fruit, were worked out. There were ups and downs in the development of the club and at times it seemed that it was destined for a failure. Again, there were strong and loyal boosters who stepped in and revived the work.

Today the forest club is an organization which has come to stay. Its influence in the upbuilding of the forestry and logging professions among young men has stamped it as a necessary institution. The prime purpose of the club is to promote a fraternal feeling among those,

today, who are to rub shoulders in the development of their professions, tomorrow. Another vital purpose of this organization is to discover and develop methods of raising scholarship by encouraging the highest type of work on the part of the students of forestry and the taking of an active part in the activities of the school.

The past year has been a fruitful one for the forest club. In the first place it has been largely through the efforts of the forest club that the arboretum fund has been made a reality. Another work undertaken by the school and directed mainly by the club was that of putting on a show for the educational exposition which was both a decided credit to the school and to the individuals who made it possible. These accomplishments form the basis for judging the worth of the organization. However, we must not overlook the vital factors which make these things possible. To get students to rise on their feet and join in the discussion of the little problems which come up is no easy task. Very often they feel that such a discussion of apparently unimportant matters is a waste of time. The value of such training is made evident, however, when it becomes necessary to solve the more weighty problems. Those who are accustomed to getting on their feet find it not a difficult matter to place their own views before the club for consideration.

We feel that such training fits a man admirably for the solving of the problems which he will be called upon to handle when he gets out into the world. If the forest club can do this one thing, and we firmly believe it can, it should rightfully hold the place in the forest school work that it now holds.

XI SIGMA PI

IN EVERY undertaking there must be a goal, an ideal, some definite, tangible thing toward which to work. There must also be a guiding hand pointing out the way to achievement and keeping ever before those who strive for that goal the principles they must uphold. Xi Sigma Pi might well be classed as just such a guiding hand.

Some see in it merely a sort of reward for diligent work. Such it is but it is also more than that. It stands as a charge, to those who have been chosen because of high qualities of leadership, to devote their lives to the unselfish furthering of the ideals of the forestry and logging professions.

Xi Sigma Pi, national honorary forestry fraternity, though less than four years on the O. A. C. campus has filled the need which was expected of it. It is not an ideal



The Dirty Dozen on the Spring Trip

but rather the instrument which serves to hold high the ideals of forestry students.

To become a member of Xi Sigma Pi a student must have maintained a high standing of scholarship. He must have taken an active part in the affairs of the school. He must possess qualities which make him respected among his fellow students. He must have done active work in some recognized branch of forestry, logging, or lumber manufacture. Above all he must possess those qualities of leadership which will make him a leader among the men of his profession. Membership is open only to junior and senior men.

At the beginning of the school year the membership

included Dean G. W. Peavy, Professor T. J. Starker, Professor Harry Patterson, W. J. Chamberlain, Earl Mason, Clarence Strong, Edgar Kenyon, Edwin Mowat and Percy Melis.

The circle has been enlarged twice during the past two terms. On November 8, 1923, Warren V. Benedict, Willett E. Griffie, Philip Begue, James Mielke and Kenneth Murdock were welcomed. On February 28, 1924, Harold Peterson and Clayton C. Morse were admitted.

Once each month the entire membership lunches together at the Home Economics tea room, spending the hour together in brotherly fashion and discussing some of the every day problems. There is also a business meeting once a month where the more serious matters are tackled.

It cannot be doubted that Xi Sigma Pi has been of inestimable value in bringing the standards of scholarship to the present high plane. Not only this but the organization has been of beneficial influence in many other ways. For these reasons we believe that it has made itself an indispensable instrument in our activities.

THE SPRING TRIP

By W. V. Benedict, '24

ONE Wednesday evening, a week before the trip was to be "pulled off," the forestry club gathered at Avery's woodlot to have a last talk over the fire in preparation for the coming spring cruise. The Dean emphasized the importance of the trip in the education of the forester. He pointed out the necessity of a broad practical training to fully develop the necessary experience of the forestry school graduate, and outlined just the nature of the work to be done in the next ten days. Each man was to consider the job as a commercial one and to work all the time with this in mind. In closing his talk the Dean, as in years before, ordered, "I want to find no man bringing firearms to camp," and for the first time in the history of the spring trip these orders were carried out to the letter. Are the new foresters becoming meeker, or is the Dean actually

having his orders carried out? With some lively songs and yells the meeting disbanded, the rest of the week to be used in making preparations for the hills.

Getting eats enough for a four man mess crew proved to be quite an undertaking, especially when each one wanted his own pet diet along. We finally agreed, went down to



1923 Headquarters Staff

Skaggs, bought out the store, put it in boxes, and moved it up to the forestry building ready for the trucks in the morning. Long before time to pull out, fernhoppers dressed in all the old wood's clothes of the summer before congregated in front of the forestry building, each man carrying a pack with a ten day's supply of Bergman's shoe oil and climax. The army furnished trucks to transport the foresters to the hills, and they must have been shy a couple for we were packed like logs in a jam. At 1:35 o'clock Fri-

day afternoon we were started on our journey, amidst the envy of everyone on the campus. Waldo hall was given a last serenade as we rolled down the hill.

Lucky were the men in the front truck. Our driver was still used to driving in a smoke screen and the dirt road to Philomath became the scene of such a good barrage that, though we were right behind the front truck, we couldn't see it. When we hit camp, each man looked like a woman in a clay mask.

Camp was located on the south side of Mary's peak in a grassy oak grove. The trucks pulled within half a mile of the camp site and dumped our junk. It really wasn't far to pack, but it required the remainder of the afternoon to get all of the outfit up. To make matters worse it began to rain and everyone knows the joys of pitching camp in the wet. Some wise boy cracked the remark that he would like to be back at Poling hall amidst the comforts and luxury of his room, but an answer that this wasn't Valsetz shut him up. Every crew started pitching camp in its own secluded spot but the Dean intervened. Now the Dean has some funny ideas on how to place tents. Everyone had to be in line, and in such a position as to form an ellipse. The Dean must have been a top cutter in the army during his younger days. Later it was disclosed why the Dean was so particular, but this discovery will be explained later.

When darkness fell, the camp took the appearance of a real forester's home. A few old circular saws from a near-by abandoned mill furnished dandy fireplace tops, and in a few minutes supper was sizzling and many hungry foresters fed. As soon as each camp was in shape for the night the Dean's voice roared above the crackle of the fire, and announced that all be present at the chief's tent. Plans for the next day, and days following were outlined.

The crew was given two sections of land to cruise and map. In ordinary work a 10 per cent cruise is usually considered sufficient, but the Dean in order to save breaking camp, for he was always looking out for our welfare, concentrated the work on sections 21 and 22 demanding a 20 per cent cruise. This meant that each 40 had to be run

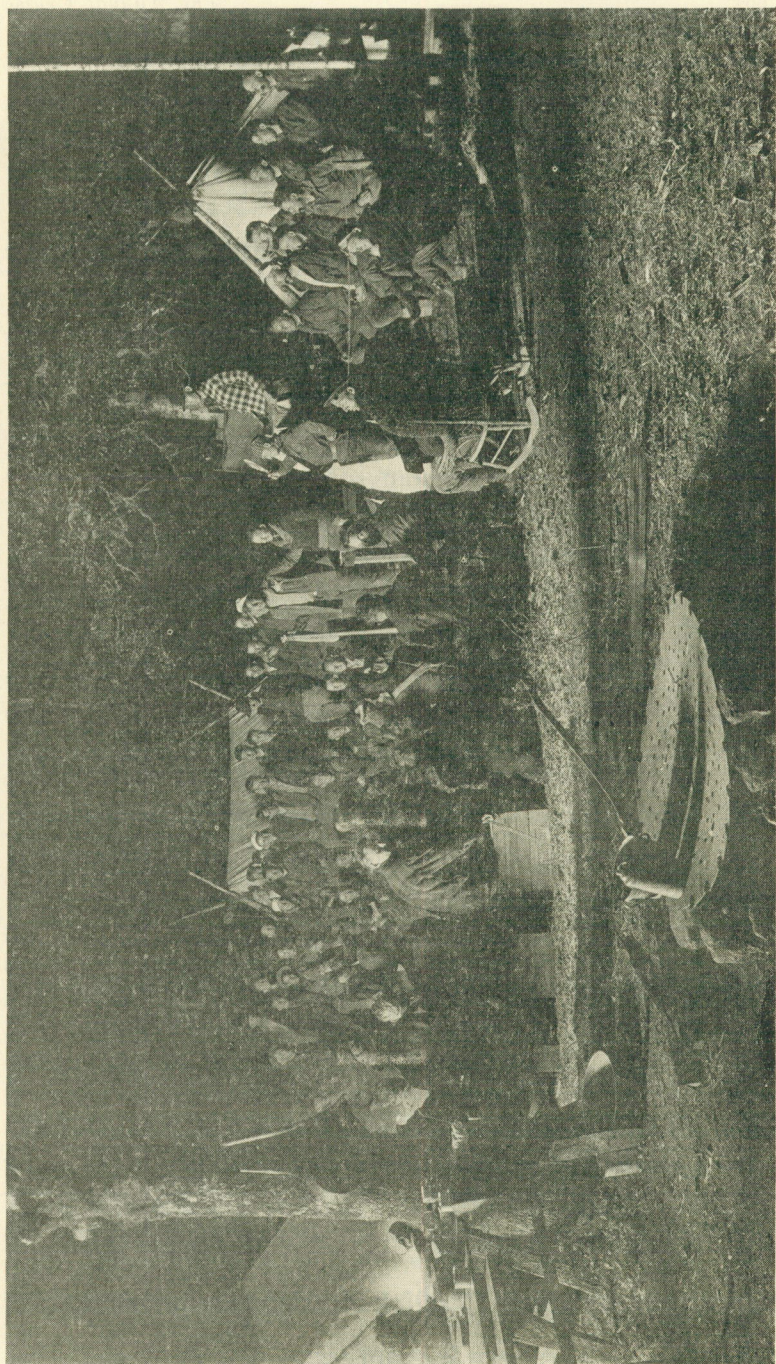
through four times. In the beginning of any cruise it is necessary to first run the base lines, but these had already been put in by Pat's loggers, so everyone was ready for the cruising proper in the morning. Secondary control lines were run in by Harry Nettleton's mapping crew, and these lines were the source of considerable razz later. Harry must have had Paul Bunyon for his compassman.

Four parties were formed with an upperclassman acting as captain in each crew. Seven men and the chief formed a party including a mapper, tallyman, head and rear chainmen, compassman, and two estimators. One mile was to be cruised each day, using the Abney hand level and trailer tape. On a commercial job two men make up the crew and cruise two miles a day, although they do not do such extensive and accurate map work. Our large crews and slow pace enabled everyone to become thoroughly familiar with the actual cruising work, allowing plenty of time in the afternoon to discuss the work and prepare for the evening's pow wow.

Let us follow through a day in camp to see how the life of the forester is spent. It begins at 4:30 o'clock like this:

"Roooooooooooooolllll Outtttttttt—Hi! You sleepers. Rise and shine. Hey you on the weather beam, hit the deck and swab 'er down."

After several minutes of belling and shouting, the Dean succeeds in getting everybody out. Soon a fire is crackling in front of each tent and a breakfast of bacon and eggs, hot cakes and coffee ready. The dishes are hardly washed before Harry starts yelling for crew captains "front and center" to get assignments for the day's work. When equipment has been issued and a sack filled with eats, the crew is ready to start up the hill to begin the day's work. It's peculiar that no matter where camp is located one must go up hill to start. The trail from camp to the "A" base line was nearly straight up and with a "belly" full of Sam Rotch's hot cakes this made some pull. The snoose chewers had to take the rear. Half the day's work was over in just getting to the top. The other half of the



work consists of merely the cut and dried matter of running the line.

Work progresses without a hitch until the tie in on line "C." That secondary was a jinx, and "kay-oed" altogether after the first day. Harry must be taken to task for such a job. The end of the day's work finds the crew a mile off the trail, but when headed for chow, one travels fast.

In the afternoon a line of tired, hungry buckeroos comes breezing into camp. Supper is immediately started and the day's events cussed and discussed. At night everyone gathers around the fire and listens to the musicians of the outfit tune up. Malhoutra, forester from India, gave an exhibition of Indian songs that would do credit to the Rahja himself, while Sam Rotchy and Hopping can yodle like the real thing.

One night Kelly McGuire got the queer idea into his head that he would catch fish in B. S. creek. The evening was spent without a nibble. Mac, being no amateur angler, immediately made the fact known that no fish were in the creek. The following evening Piper—with two 9 inch cut-throats in his blouse, caught that afternoon out on the line—went out to try his luck. Kelly bet him he wouldn't catch a thing, and his bet was promptly covered. While Piper did his "fishing" many side bets were made, for Kelly was firm in his belief that where he failed to land them, no one could. "Mac" entertained with stories of how he would spend the money he won, until Piper returned, all wet and tired from the strenuous fishing. When the two specimen were produced, Kelly's jaw dropped a foot and his eyes bulged out like saucers. Without a word he dug down in his jeans and shelled out five iron men. Kelly McGuire was a sadder, but wiser boy. "The right kind of bait will catch most any fish."

Thursday night was the big night with the holding of the court of Kangaroo, which meets annually to bring to task culprits of the camp. The motto of the court is "Every man is guilty no matter how innocent." Of course the Dean got jerked for the usual offenses and Harry was nicked for that Paul Bunyon control of his. Found terribly

guilty, they were required to participate in a paper chewing contest, using 30 feet of No. 00 non-skid. The Dean, being used to chewing the rag, had little trouble in masticating the cambric, and walked off with the honors.

One offense was very serious. A prominent member of the club deliberately and maliciously broke an old tradition—that of shaving while in camp. A speedy trial found “Phil” Begue guilty for the evidence was right on his face. To pay for this mucker’s trick “Phil” had to take a public bath in the frog pond. After the punishment was administered, “Phil” resolved never again to bring a razor to camp.

The time came to learn the reason for the Dean finickiness in tent arrangements. Blamed if the Dean didn’t bring the picture man to the hills to get a photo of his motley crew! Of course things had to be just so, and everyone donned their sweetest smile, and the affair was over.

During the last of the week, matters became uneasy. The grub was getting low. Saturday morning there was one line left to run, and seven crews to pick for this task. Yes, crew 1 drew the lemon, but a faster line than tally 1½ was never run, for the men were back in camp by 10 o’clock. Nothing remained but to watch the rest pack out. Four hours of waiting. Ah! the Dean had it—a whisker contest. Who was the man to win the fur-plated razor with the rubber blade? The grizzly gang was lined up and the judges passed by. Points were given for conspicuousness, length, thickness and uniqueness. The “dirty dozen” were first picked, and from them came the “filthy five.” From this last selection of grizzled manhood was chosen the “king hobo.” Old Gus won that title, hands down.

A cloud of dust formed on the horizon—two army trucks approached. The outfit was piled aboard, and the setting sun found the Beaver foresters back once more to the land of many people.

THE FOREST SCHOOL ARBORETUM

AN ARBORETUM for the School of Forestry—an outdoor laboratory in which experiments with various tree species and silvicultural practices could be conducted, and

a "botanical garden" of trees—has long been dreamed of and planned for by the faculty and students of the school. Definite action toward the realization of this dream is one of the most noteworthy of the achievements of this year.

Though it is recognized as a worthy project, college funds have never been available for such a purpose. Early this year a few of the old grads, headed by T. J. Starker and S. A. Wilson, instituted a campaign to raise money among the alumni and students of the school, with the aim of purchasing a tract of about 100 acres of land close to Corvallis suitable for such forest experimental purposes. A committee representing the alumni, the faculty, the Forest Club, and Xi Sigma Pi is conducting the drive.

But a small portion of the necessary funds has been raised, though several alumni and many students have pledged generously. The response among students has been especially gratifying, many who are barely able to finance their college education having pledged to the hurting point. It is regrettable, however, that many of the alumni who are best able to pay have not pledged a dollar, and without their support the project cannot be carried through as planned.

Those who cannot contribute financially, can still aid very materially by sending in seedlings and specimens, by giving constructive suggestions regarding the arboretum and our other work here, and by advertising and urging the support of the movement by lumbermen and others.

A lumberman who has made his little stake from the exploitation of the forest resources of the West could make no better contribution toward the perpetuation of his industry and the service of society than to give generously toward such forest experimental work.

It is true that but few owners are practicing forestry to any extent in the northwest today, but we need not argue here that the next few decades will see vast areas of our forest lands under intensive management. At that time the schools of forestry may well expect to be asked some very pointed questions regarding tree species and silvicultural treatment, just as the agricultural college today is expected to aid the farmer in the solution of many

of his problems. Our failure to answer would be interpreted as a failure to fully accomplish our purpose. That forest research is a proper function of a forestry school is evidenced by the fact that several eastern schools are maintaining experimental forests and have already contributed valuable facts and figures on forest growing.

The O. A. C. School of Forestry likewise should have—and will have—an arboretum, though it be no more than an acre. Its size and its corresponding usefulness depends upon the further support it receives from the friends of forestry.

ATHLETICS

THE annual football classic between the Fernhoppers and the Muckers proved once more the superiority of the men of the forest.

Early in the fall quarter the manager and coach, Ira Gnose, proclaimed loudly and lustily his desire that the boys get out on the gridiron and “show him their stuff.” The response was prompt and enthusiastic.

The reluctance shown by the Miners in their acceptance of the Foresters’ challenge was strategically overcome by the setting of a definite date for the annual conflict. The date set proved to be one especially adapted for the impending struggle. Bell field was wet and muddy that day, and the Muckers were in their element. Since all calked and hobnailed shoes were taboo, the Fernhoppers contented themselves with the inefficient footgear issued for the occasion by the physical education department.

The Muckers kicked off and the boys from the sticks commenced their walk down the field. In that first half Lady Luck proved the savior of the miners on more than one occasion. Once after an unusually rough scrimmage Bursell emerged from the tangle and shouted for snoose. “I’d a lot rather chew snoose than sawdust,” he said. Hyatt, calling signals, displayed an uncanny ability to pick out the weak spots in the Muckers’ line.

In the third quarter Benedict got away with a long pass from Hyatt that resulted in a touchdown for the Foresters, but Benny’s feet were too big and he was count-

ed out of bounds on the ten yard line. A little later Bursell recovered a fumble and ran between the Muckers' goal posts. Hyatt failed to kick, and the scoring for the game was over.

"Phil" Kreiger, playing quarter for the Miners, played a real game all of the time. If "Phil" could have been twins the Muckers would have had more of a chance.

Prof. Starker played a good game as head linesman. In exceptionally difficult plays he resorted to counting yardage by pacing. After dark "T. J." always oriented himself by backsighting on the grandstand flagpole.

Students Registered In The School of Forestry
The Second Term of The School
Year 1923-1924

SENIORS

General Forestry

Benedict, Warren V.,.....	Hoquiam, Wash.
Griffie, Willett E.,.....	Corvallis, Ore.
Kenyon, Edgar C.,.....	LaVerne, Cal.
Knauf, William J.,.....	Newport, Ore.
McDaniel, Vern E.,.....	Dayton, Ore.
Morgan, Gilbert D.,.....	Milwaukie, Ore.
Mowat, Edwin L.,.....	Ashland, Ore.
Reynolds, Lloyd J.,.....	Portland, Ore.
Rotschy, Samuel,.....	Vancouver, Wash.
Strong, Clarence C.,.....	Washougal, Wash.

Logging Engineering

Clark, William E.,.....	Portland, Ore.
Gilbert, Philip B.,.....	Long Beach, Cal.
Kerr, Claude,.....	Portland, Ore.
Melis, Percy E.,.....	Mist, Ore.
Peterson, Harold,.....	Portland, Ore.
Tousey, Reginald F.,.....	Portland, Ore.

JUNIORS

General Forestry

Craven, Milton M.,.....	Parkdale, Ore.
Dickerson, Donald H.,.....	Weiser, Idaho

Edmunds, Milton R.,	McMinnville, Ore.
Hopping, George R.,	Vernon, British Columbia
Jones, Sidney C.,	Chehalis, Wash.
McCoy, Harry,	Independence, Ore.
Malhotra, Des Raj,	India
Mielke, James L.,	Stayton, Ore.
Pfeiffer, Karl,	Port Townsend, Wash.
Robinson, Temple M.,	Corvallis, Ore.

Logging Engineering

Bacher, Fred A.,	Corvallis, Ore.
Bursell, Homer G.,	Dallas, Ore.
Gnose, Ira C.,	Anaconda, Mont.
Lagus, Lorenzo W.,	Astoria, Ore.
Murdock, Kenneth M.,	South Bend, Wash.
Olsen, Alvin C.,	Orencia, Ore.

Lumber Manufacture

Begue, Philip,	Tia Juana, Cal.
Morse, Clayton C.,	Portland, Ore.
Spaur, George,	Corvallis, Ore.

SOPHOMORES

Balderree, Grant R.,	Dallas, Ore.
Carter, Thomas L.,	Long Creek, Ore.
Case, Paul C.,	Pasadena, Cal.
Curran, Will E.,	Langer, Cal.
Furness, Milton J.,	Norman, Wash.
Gibson, Roy C.,	Portland, Ore.
Hann, Jay B.,	Orland, Cal.
Janowski, Albert,	Wauwatosa, Wis.
Keeney, Earl A.,	Monmouth, Ore.
Lawson, Harold K.,	Portland, Ore.
Maxwell, Antony E.,	Elgin, Ore.
Metzler, Glen A.,	Corvallis, Ore.
Parker, Alvin L.,	Vernonia, Ore.
Rosenkrans, Charles R.,	Portland, Ore.
Scharpf, Lawrence G.,	Portland, Ore.
Schroeder, Lorin C.,	Coquille, Ore.
Sexton, Virgil L.,	Roseburg, Ore.
Shaver, James D.,	Portland, Ore.
Smith, Chester A.,	Paisley, Ore.
Wenner, Adolph N.,	Newport, Ore.
Wolfe, Harry M.,	Brownsville, Ore.
Wilkinson, John C.,	Portland, Ore.
Zobel, Raymond L.,	Council Bluffs, Iowa

FRESHMEN

Angus, Chauncey B.,	Eugene, Ore.
Bagley, John H. Jr.,	Portland, Ore.

Busick, Robert A.,	Union, Ore.
Coucier, George,	Bakersfield, Cal.
Denn, Bernard L.,	Camas Valley, Ore.
Dixon, James V.,	Corvallis, Ore.
Dwyer, Anthony J.,	Portland, Ore.
Fehren, Richard B.,	Portland, Ore.
Fox, Charles W.,	Portland, Ore.
Gardner, Howard L.,	Altaville, Cal.
Halsey, William W.,	Springfield, Ore.
Heil, Wendell B.,	Santa Anna, Cal.
Heilborn, Edward A.,	San Diego, Cal.
Hornibrook, Ezra M.,	Thorp, Wash.
Horton, Lynn A.,	Hildebrand, Ore.
Joy, Edward L.,	Portland, Ore.
Lake, Everett W.,	Gresham, Ore.
Libby, Josiah A.,	Kelso, Wash.
Lund, Walter H.,	Warren, Ore.
Lyons, James A.,	Marshfield, Ore.
McKnight, Robert C.,	Dufur, Ore.
Miller, Douglas R.,	Halsey, Ore.
Paine, Philip L.,	Oregon City, Ore.
Pepoon, George W.,	Oregon City, Ore.
Peyton, Calvin P.,	Klamath Falls, Ore.
Philips, William S.,	Marshfield, Ore.
Rounsefell, Harry N.,	Corvallis, Ore.
Shreve, Herschel, H.,	Portland, Ore.
Small, R. Rowland,	Portland, Ore.
Smith, Curtis E.,	Richmand, Cal.
Stinger, Charles R.,	Portland, Ore.
Strong, Lester E.,	Washougal, Wash.
Sugnet, Fred,	Portland, Ore.
Van Den Bosch, Wentworth P.,	Falls City, Ore.
Woodin, Donald K.,	Grants Pass, Ore.

SPECIALS AND OPTIONALS

Baker, William J.,	Toledo, Ore.
Brown, Oscar D.,	Lebanon, Ore.
Craven, Alexander R.,	Corvallis, Ore.
Harmon, Warren R.,	Tracy, Min.
Hult, Melvin B.,	Colton, Ore.
Leadbetter, H. L. P.,	Portland, Ore.
Lewis, Trevor,	Corvallis, Ore.
McGuire, Kelly B.,	Corvallis, Ore.
Miller, Wallace L.,	Seattle, Wash.
Pieper, Paul Summer,	Milwaukie, Ore.
Smith, Bijah G.,	Corvallis, Ore.

The Song of the Forest Ranger

♦♦

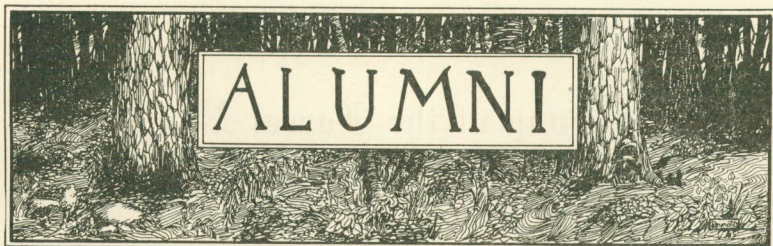
Oh, to feel the fresh breeze blowing
From ridges yet untrod!
Oh, to see the far peak growing
Whiter as it climbs to God!
Where the silver streamlet rushes
I would follow—follow on
Till I heard the happy thrushes
Piping lyrics to the dawn.

I would hear the wild rejoicing
Of the wind-blown cedar tree,
Hear the sturdy hemlock voicing
Ancient epics of the sea.
Forest isles would I be winding,
Out beyond the gates of Care;
And, in dim cathedrals, finding
Silence at the shrine of Prayer.

When the mystic night comes stealing
Through my vast, green room afar,
Never king had richer ceiling—
Bended bough and yellow star!
Ah, to list the sacred preaching
Of the forest's faithful fir,
With his strong arms upward reaching—
Mighty, trustful worshipper!

Come and learn the joy of living!
Come and you will understand
How the sun his gold is giving
With a great, impartial hand!
How the patient pine is climbing,
Year by year to gain the sky;
How the rill makes sweetness rhyming
Where the deepest shadows lie.

I am nearer the great Giver;
Where His handwork is crude;
Friend am I of peak and river,
Comrade of Old Solitude.
Not for me the city's riot!
Not for me the towers of Trade!
I would seek the house of Quiet,
That the Master Workman made!
—Herbert Bashford.



THE FIRST SPRING TRIP



Gill, Nillson, Barbur, Wilson, Starker, Pernot, Eberly

TO THE old timers, the above picture will recall many a good story and personal characteristic of the first foresters of O. A. C. to fare forth into the woods in the

spring. This particular time we journeyed to the camps of the Columbia Timber company above Goble, Oregon, where an outline was "followed" as we had no learned professors with us to guide and mark the way.

As in the present day the practical joker was in our midst and "Eb" Eberly and "Scondy" Nilsson arranged a limb so that with the proper pull on a cord it would slap the tent in the dark hours of the night and arouse "Hal" Barbur to action in his pajamas to repel the attacking lumber jacks. This training stood him in good stead as now he is repelling the enemies of the United States as a captain in the army. He was also the hero of the battle of Bunker hill where Gill and he battled instead of "following" the outline. At the mention of Gill we all recall his desire to sail the sea; to draw windjammers instead of listening to Peavy on how to plant the chaparral; and in botany he discovered many species which are all named "Gillifolia." (Sudworth has not recognized this as yet.)

"Jacques" Pernot was the scientist of the crowd and we all mourn Jack as he lost his life on the Ochocco National forest.

At night there were so many wierd noises that our portly banker friend "Weary" Wilson slept with his head covered up. This wild life cured "Weary" and the next year he was back at Ann Arbor studying law.

We were few in number, but we still maintain that the 1910 spring trip was a hard one to beat and think if we could all vote we would like another week together.

Alumni Directory

Alumni and ex-students addresses have been checked against all information of them that could be obtained. There are a number whose addresses we were unable to get and others whose addresses are old and unreliable. Any information of these men would be appreciated by the alumni editor. The names of all the graduates of the school of forestry have been included in this list.

1910

GILL, HAROLD D., B.S., F., J. K. Gill company, Portland, Oregon.

PERNOT, JACK F., B.S., F., deceased (1917).

STARKER, THURMAN J., B.S., F., professor of forestry, O. A. C., Corvallis, Oregon.

WILSON, SINCLAIR A., B.S., F., president, First National bank, Linton, Oregon.

1911

- BARBUR, HAROLD H., B.S., F., captain, regular army, 784 E. Franklin street, Portland, Oregon.
 EBERLY, HOWARD J., B.S., F., deputy state forester, Salem, Oregon.
 NILSON, ADOLF, B.S., F., U. S. Forest Service, Portland, Oregon.
 RAITHEL, WILLIAM FRITZ, B.S., F., 165 Coast Highway, Santa Barbara, California.
 TOTTEN, BENJAMIN J., B.S., F.

1913

- DUTTON, WALT L., B.S., F., grazing inspector, U. S. Forest Service, Baker, Oregon.
 TURLEY, HAROLD S., B.S., F., superintendent, Bradley Logging company, Cathlamet, Washington.
 CRONEMILLER, LYNN F., B.S., F., Eastern Oregon Lumber company, Enterprise, Oregon.
 EMERY, LEE EARL, B.S., F., 1323 Pleasant Avenue, Klamath Falls, Oregon.
 EVENDON, J. C., B.S., F., forest entomologist, in charge of U. S. Forest Insect Field station, Coeur d'Alene, Idaho.
 FREYDIG, PAUL E., B.S., F., engineer, Clark and Wilson Lumber company, Gobel, Oregon.
 HAYES, MARSHALL C., Jr., B.S., F., deceased (1918).
 MILLER, CARL N., B.S., F., bank cashier, Enterprise, Oregon.

1915

- ANDERSON, EDMUND G., B.S., L.E., killed (Nov. 1923).
 BATES, EDWARD G., B.S., F., owner and operator, Ocean Home farm, Gearhart, Oregon.
 BLACKDEN, RALPH S., B.S., F., teacher in manual training, Sacramento, California.
 CHAMBERLIN, WILLARD J., B.S., F., assistant professor of forest entomology, O. A. C., Corvallis, Oregon.
 CHAPLER, RAYMOND H., B.S., F., inspector, U. S. Forest Service, Portland, Oregon.
 CHASE, ERNEST, B.S., F., rural carrier, Corvallis, Oregon.
 CHRISMAN, ROBERT J., B.S., F., Vaughan Lumber company, Portland, Oregon.
 CULVER, BENJAMIN C., B.S., F., rehabilitation assistant, U. S. Veterans bureau, 1209 East Stark street, Portland, Oregon.
 DEUTSCH, HENRY C., B.S., F., National Park Service, Portland, Oregon.
 WENDOVER, ROYCE F., B.S., F., Phillipine Forest Service, Manilla, Phillipine Islands.

1916

- ANDERSON, ALBERT, ex-'16, Marine Products company, Warrenton, Oregon.
 ARCHIBALD, HAROLD G., B.S., L.E., captain, regular army, professor of military science and tactics, University of Kansas, Lawrence, Kansas.
 BRETT, SERENO E., B.S., F., captain, regular army, 16th tank battalion, Camp Meade, Maryland.
 HOLMES, FREDERICK A., B.S., L.E., 527 West 46th street, Los Angeles, California.
 HULT, GUSTAF W., B.S., F., timber examiner and appraiser, Central Pacific Railway company, San Francisco, California.
 LOOF, HANS W., B.S., F., salesman, Standard Oil company, Grants Pass, Oregon.
 SCHUBERT, BEN W., B.S., F., Baker, Oregon.
 SPAULDING, CLIFFORD, ex-'16, superintendent, Spaulding Lumber company, Newberg, Oregon.
 WILSON, DAVID M., B.S., F., Commercial Transfer company, Portland, Oregon.

1917

- ALLEN, M. H., ex-'17, owner, Allen's Wood and Coal yard, Corvallis, Oregon.
 BLACKDEN, EARL B., B.S., F., killed in action, France.
 BUDELIER, CLARENCE J., B.S., L.E., engineer, Coast Range Lumber company, Mabel, Oregon.
 CRAWFORD, AMES A., B.S., L.E.
 CRONEMILLER, FRED P., B.S., F., grazing examiner, U. S. Forest Service, Willows, California.
 FERTIG, CHARLES A., B.S., L.E., Interstate Chemical company, Kansas City, Missouri.
 HARTLEY, EDWIN A., ex-'17, department of forest entomology, College of Forestry, Syracuse university, Syracuse, New York.

JACOB, CARL C., B.S., L.E., logging engineer, Inman-Poulsen Lumber company, Vernonia, Oregon.
 JONASSEN, OLAF R., B.S., L.E.
 LUNDEEN, ARTHUR R., B.S., F., assistant manager logging department, Inman-Poulsen Lumber company, Mount Solo, Washington.
 McCOLLUM, JOHN E., B.S., F., 36 John street, St. Calinas, California.
 O'NEIL, WILLIAM J., B.S., L.E., timber contractor, 314 East Second street, Duluth, Minnesota.
 PATTON, HARRY C., B.S., L.E., logging engineer, Hammond Lumber company, Mill City, Oregon.
 PAULSEN, EDWARD M., B.S., L.E. logging operator, Lakeside, Oregon.
 SPAULDING, DON, ex-'17, captain, regular army, Camp Meade, Maryland.
 STEPHENS, JAMES T., B.S., L.E.
 TILLEY, WALKER B., ex-'17, Arcata, California.
 TUTTLE, LEROY J., ex-'17, Box 15, Natches, Washington.
 WAKEMAN, WILLIAM J., B.S., L.E., Trenholm, Oregon.
 WOODS, LEROY, B.S., L.E., second lieutenant, field artillery, Fort Sill, Oklahoma.
 WRIGHT, MARK F., B.S., F.
 YATES, LLOYD D., B.S., F., 5412 Garrison avenue, Baltimore, Maryland.

1918

BOONE, W. W., ex-'18, captain, 14th infantry, Fort Davis, Canal Zone.
 BYERS, OSCAR L., B.S., F., teacher, Echo, Oregon.
 CAMPBELL, TOM P., ex-'18, McMinnville, Oregon.
 CLANCY, JAMES P., ex-'18.
 ELOFSON, H. W., B.S., F., grazing examiner, U. S. Forest Service, Missoula, Montana.
 HAZELTINE, CARL R., B.S., L.E., first lieutenant, Vancouver barracks, Vancouver, Washington.
 HOWE, GEORGE B., ex-'18, with Buehner Lumber company, Allegheny, Oregon.
 JOHNSON, OWEN, ex-'18, died in war service, France, (1918).
 JOHNSON, WILLARD, B.S., L.E., electrician, Mountain States Power company, Albany, Oregon.
 LANKENAU, WALTER, ex-'18, 301 East 162nd street, New York City, New York.
 McCAFFREY, LAWRENCE M., B.S., L.E., chief engineer, Flora Logging company, Carlton, Oregon.
 McCOLLUM, CHARLES A., B.S., L.E., district field engineer, National Supply company, 610 Lake Street, Shreveport, Louisiana.
 NEALE, ERIC W., ex-'18, killed in action.
 OLIVER, BURT L., ex-'18, Diamond, Oregon.
 RICHEY, LESTER C., ex-'18.
 WILMOT, RICHARD K., B.S., L.E., died in war service (July, 1918).
 WOODBURN, HOWARD R., ex-'18, with Willamette Iron and Steel company, Portland, Oregon.

1919

CASEY, JOHN M., ex-'19, with Casey Lumber company, Metcham, Oregon.
 FRALEY, LAWRENCE K., ex-'19, 393 Fourteenth street, Portland, Oregon.
 FUGH, PAUL C., ex-'19, student at Cornell university, 301 Dryden road, Ithaca, New York.
 HARBERER, ERWIN S., ex-'19, 315 Praire avenue, Pork Ridge, Illinois.
 TAYLOR, HERBERT H., ex-'19.
 THOMAS, HERBERT F., B.S., L.E., with Cobbs and Mitchel Lumber company, Valsetz, Oregon.

1920

ALSTADT, GEORGE J., B.S., L.E., salesman, logging equipment, 324 Nineteenth street, Portland, Oregon.
 BOEHMER, KARL C., ex-'20, 505 Market street, Portland, Oregon.
 BRENNAN, A. F., B.S., F., Priest River Experiment station, Priest River, Idaho.
 DANIELS, CLARENCE M., ex-'20, farmer, near Corvallis, Oregon.
 ECKLES, JACK, ex-'20, 2580 Jefferson avenue, Ogden, Utah.
 HOLMES, J. F., B.S., L.E., engineer, Holmes-Eureka Lumber company, 947 Monadnock building, San Francisco, California.
 HUTCHINSON, FRANK C., ex-'20.
 MASON, EARL G., B.S., F., instructor, school of forestry, O. A. C., Corvallis, Oregon.
 MATTHEWS, DONALD N., B.S., F., science teacher, Newberg high school, Newberg, Oregon.

REGNELL, LLOYD C., B.S., L.E., engineer, Long Bell Lumber company, Long-view, Washington.
 SHEFFIELD, FRANK B., ex-'20, Newport, Oregon.
 SHEN, PENG FEI, B.S., F., professor, Forest and Agricultural Experiment station, Canton Agricultural college, Canton, China.
 SMILLIE, ROBERT S., B.S., L.E., salesman, Lidgerwood Manufacturing company, 85 Second street, San Francisco, California.
 SNELL, CORALIE A., ex-special, Astoria, Oregon.
 STORM, EARL V., B.S., F., grazing inspector, Leeds, Utah.
 WILLIAMS, JAMES W., ex-'20, 242 East Forty-fourth street, Portland, Oregon.

1921

BODINE, RODGER C., ex-'21, 725 East Walnut street, Pasadena, California.
 BRACHER, KARL, ex-special, manager retail lumber yard, Sheridan Lumber company, Sheridan, Oregon.
 CAMPBELL, JOHN L., ex-special, Lebanon, Oregon.
 COMAN, ELLIS S., B.S., F., Corina, California.
 EILERTSON, JOHN, ex-'21, county road master, St. Helens, Oregon.
 FERGUSON, VANCE T., ex-'21, Alameda Drive, Portland, Oregon.
 HAYSLIP, EARL E., B.S., L.E., salesman, Standard Oil company, St. Helens, Oregon.
 HEALY, ROGER D., B.S., F., assistant engineer, Green Mountain Logging company, Kerry, Oregon.
 JOHNSON, CHARLES M., ex-'21, Yankton, Oregon.
 JOHNSTON, CLARENCE, ex-'21, Yankton, Oregon.
 KOLLER, FRANK O., B.S., F., 429 Twenty-ninth street, Astoria, Oregon.
 LUEBKE, GEORGE, B.S., L.E., Toutle, Washington.
 MEDLEY, JAMES W., B.S., F., Forest Products laboratory, Madison, Wisconsin.
 NETTLETON, HARRY I., B.S., F., instructor of forestry, University of Idaho, Moscow, Idaho.
 RICKSON, CARL A., B.S., F., with Wisconsin Logging and Timber company, Stella, Washington.
 YOUNG, ELLSWORTH S., B.S., L.E., logging engineer, Green Mountain Timber company, Kerry, Oregon.

1922

BAILEY, LAWRENCE D., ex-'22, 3911 East Forty-second street, Portland, Oregon.
 BAKER, A. R., ex-'22, with Hammond Lumber company, Kerry, Oregon.
 BALDEREE, ELMER W., ex-'22, engineer, Stout Lumber company, Marshfield, Oregon.
 CHAPMAN, EARL H., B.S., F., Passon's boulevard, Riveria, California.
 CHOOVERT, E. C., ex-'22, 2913 Fifty-fourth street, South-East, Portland, Oregon.
 FUGH, PAUL CHEN, B.S., F.
 GOULD, CURTIS E., B.S., F., teacher of mathematics, high school, Hood River, Oregon.
 HERRON, PAUL A., ex-special, timber department, Crown Willamette Paper company, Portland, Oregon.
 HOLMES, LEE S., B.S., L.E.
 JONES, NOAH., ex-'22, farmer, near Corvallis, Oregon.
 LARKIN, HAROLD G., ex-'22, Nalpee, Washington.
 OSBORNE, GIFFORD L., B.S., L.E., county engineer, Wahkiakum county, Cathlamet, Washington.
 OWENS, THOMAS S., B.S., L.E., engineer, Siler Mill company, Raymond, Washington.
 OWENS, WILLIAM O., B.S., L.E., chief engineer, Case Shingle and Lumber company, South Bend, Washington.
 PEAVY, BRADLEY, B.S., L.E., engineer, San Pedro Harbor improvement, 672 West Twenty-first street, San Pedro, California.
 PFEIFER, A. Payne, ex-'22, with Western Lumber company, Westfir, Oregon.
 PRYSE, E. MORGAN, ex-'22, forest examiner, U. S. Indian Service, Department of Forestry, Warm Springs.
 SMITH, BENJAMIN F., ex-'22, Tygh Valley, Oregon.
 SMITH, LAWRENCE H., B.S., F., South Bend, Washington.
 STEEL, JOSEPH I., B.S., F., with Moore Dry Kiln company, 118 Douglas Avenue, Burlingame, California.
 TRACY, J.E., ex-'22, with Sugar Pine Lumber company, Fresno, California.
 WILLIAMS, SUMNER W., B.S., F., salesman, Loggers and Construction Machinery company, Portland, Oregon.

1923

- ALLEN, JOHN W., ex-'23, Bureau of fisheries, Oakridge, Oregon.
 ALLEN, SAMUEL, ex-'23, Standard Oil company, Portland, Oregon.
 BREMNER, ALEX, ex-'23, 595 Eleventh street, Astoria, Oregon.
 CANNAVINA, ANTHONY, B.S., F., 122 South Craig avenue, Pasadena, California.
 CONKLIN, ROBERT, B.S., L.E., assistant engineer, Big Creek Logging company, Knappa, Oregon.
 DAY, DELBERT S., B.S., L.E., 1222 Princeton avenue, Portland, Oregon.
 DUNHAM, MARK W., B.S., F., traffic manager, Niedermeyer-Martin Lumber company, Spaulding building, Portland, Oregon.
 DUNCAN, GORDAN A., B.S., F., with Moore Dry Kiln company, North Portland, Oregon.
 EDGERTON, HARRY L., ex-'23, Grants Pass, Oregon.
 FAHNSTOCK, E. G., ex-'23, 346 Roberts street, St. Paul, Minnesota.
 FENSTREMACHER, HARRY, B.S., L.E., with Sugar Pine Lumber company, Fresno, California.
 FISCHER, ERNEST E., ex-'23, with Stout Lumber company, Clear Lake camp, Lakeside, Oregon.
 GERVAIS, LOUIS, ex-'23, with Modoc Lumber company, Aspgrove, Oregon.
 HALLOCK, F. H. W., ex-'23, 232 East Seventy-fourth street, North, Portland, Oregon.
 HEATH, JAMES, ex-'23, dry kiln operator, Pacific Spruce corporation, Toledo, Oregon.
 HEWITT, THOMAS, ex-'23, 829 Greenwood avenue, Portland, Oregon.
 JONES, D. C., B.S., L.E.
 KELLY, WILBUR C., B.S., F., transportation foreman, Western Lumber company, Westfir, Oregon.
 LA PETRA, VINCENT H., ex-'23, Glendora, California.
 LOVEGREEN, W. D., B.S., L.E., chief construction engineer, Bridal Veil Timber company, Bridal Veil, Oregon.
 MEIER, ARNOLD H., ex-'23, 1301 A street, Grants Pass, Oregon.
 MENDENHALL, F. B., ex-'23, U. S. Indian Forest Service, Madras, Oregon.
 MULKEY, LIVAN, B.S., L.E., Mehama, Oregon.
 NUTTING, BERNARD L., B.S., L.E., with O. and C. Lumber company, Brookings, Oregon.
 SANDWICK, ARNOLD, ex-'23, McMinnville, Oregon.
 STEVENSON, HERBERT W., ex-'23, 2145 Hassalo street, Portland, Oregon.
 SWEENEY, E. J. B.S., L.E., with Beaver Creek Logging company, Vernonia, Oregon.
 TEETERS, JOHN M., ex-'23, Dornea, Oregon.
 WARREN, GEORGE E., ex-'23, Fredemma apartments, 145 West Fifteenth street, Los Angeles, California.
 WILLERT, FLOYD B., B.S., L.E., contractor, Porter-Carsons company, Estacada, Oregon.
 WOOD, HERMAN D., ex-'23, with California-Oregon Power company, Klamath Falls, Oregon.
 WRIGHT, ERNEST B.S., F., with Stout Lumber company, North Bend, Oregon.
 ZOLLMAN, B. W., ex-'23, general forest work, Klamath Forest Protective association, Klamath Falls, Oregon.

Ex-1924

- BARNUM, M. M., forest assistant, U. S. Forest Service, Nevada City, California.
 BENTZEN, H. W., with Shope Brick company, Portland, Oregon.
 BOYLE, WAYNE J., Canyonville, Oregon.
 DEMELLO, SEZEFREDO S., Escola Enenharia, Port Alegre, Brazil.
 DENNY, MERRIL, lumber grader, Red River Lumber company, Westwood, California.
 DURBIN, MARTIN H., ranger, U. S. Forest Service, Bates, Oregon.
 HALE, M. P., with Beaver Laundry company, Corvallis, Oregon.
 JANKOWSKY, G. H., 861 Mallory avenue, Portland, Oregon.
 MOORE, E. H., Tiller, Oregon.
 SAMON, JUDELL M., Etna Mills, California.
 SLIFFE, ARTHUR L., compassman, U. S. Indian Forest Service, Warm Springs Indian reservation, Madras, Oregon.
 WAKLER, GEORGE, with Standard Oil company, Portland, Oregon.

Ex-1925

- BAISLEY, WILLIAM D., San Jacinto, California.
 ADAMS, HERBERT E., Carlotta, California.
 BUTLER, RANDON R., U. S. Forest Service, Richmond, Oregon.
 MANNING, R. T., Box 38, Roy, Washington.
 REYNOLDS, C. E. 160 West A street, Colton, California.
 THRILL, ALBERT, 489 East Eighteenth street, Portland, Oregon.
 WINTERS, LYLE, with Standard Oil company, Gresham, Oregon.



JOKES



PROSPECTIN'

Up the mountain and through the burn
 We climbed. An' 'mongst the brush an' fern,
 An ole man drove his maddock home,
 An' slapped a tree in the gapin' loam.
 "Mornin', Father. What's the game?"
 "Plantin' trees," the answer came.
 "You don't 'spect to live to see
 The standin' timber, do ye, say?"
 He looked reflectin', down the hill:
 "Wal, no. But, thunder, some 'un will."

—J. R. Simmons.

Conjugation of the latin word "slippo"
 Slippo, Slyppare, Falle, Bumpus.

I paid fifteen cents for the last cigar I bought.
 Well what of it?
 A good judge of smokes would have to pay fifteen
 dollars at that rate.

The Finger Prints on His Collar

True love is like a negative.
 How?
 It has to be developed in a dark room.

Then Why Leave Her Husband?

She—"I hear Marg. married her former husband's
 brother."

Ditto—"Yes, one mother-in-law in a life time was
 enough for her."

Adxertisers' Index

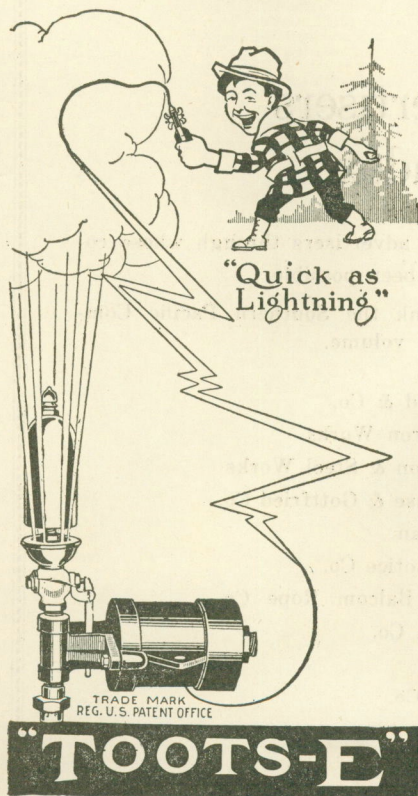
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The Son-of-a-Gun

English—"Your son just shot at me."

Irish—"Did he hit you?"

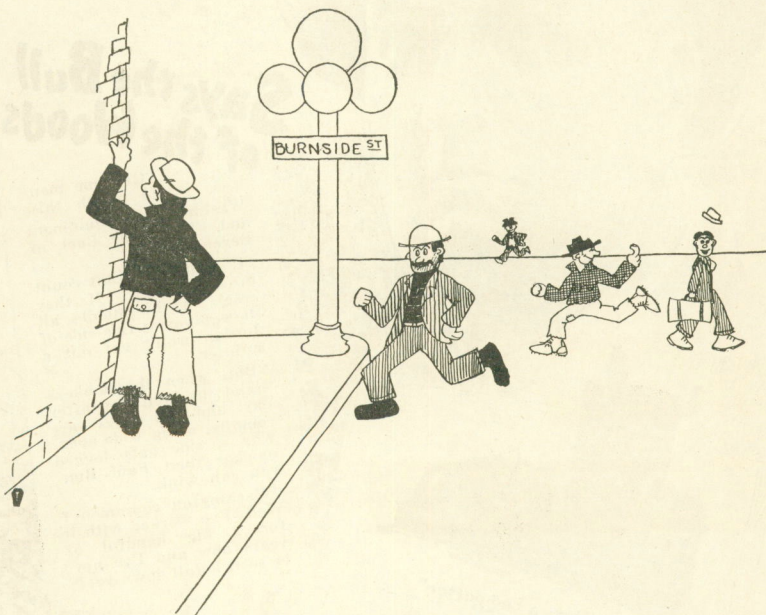
English—"No."

Irish—"Then he wasn't my son."

Then He Warmed Up

He—"Are you cold?"

She—"Yes ,but wait until we get out of town."



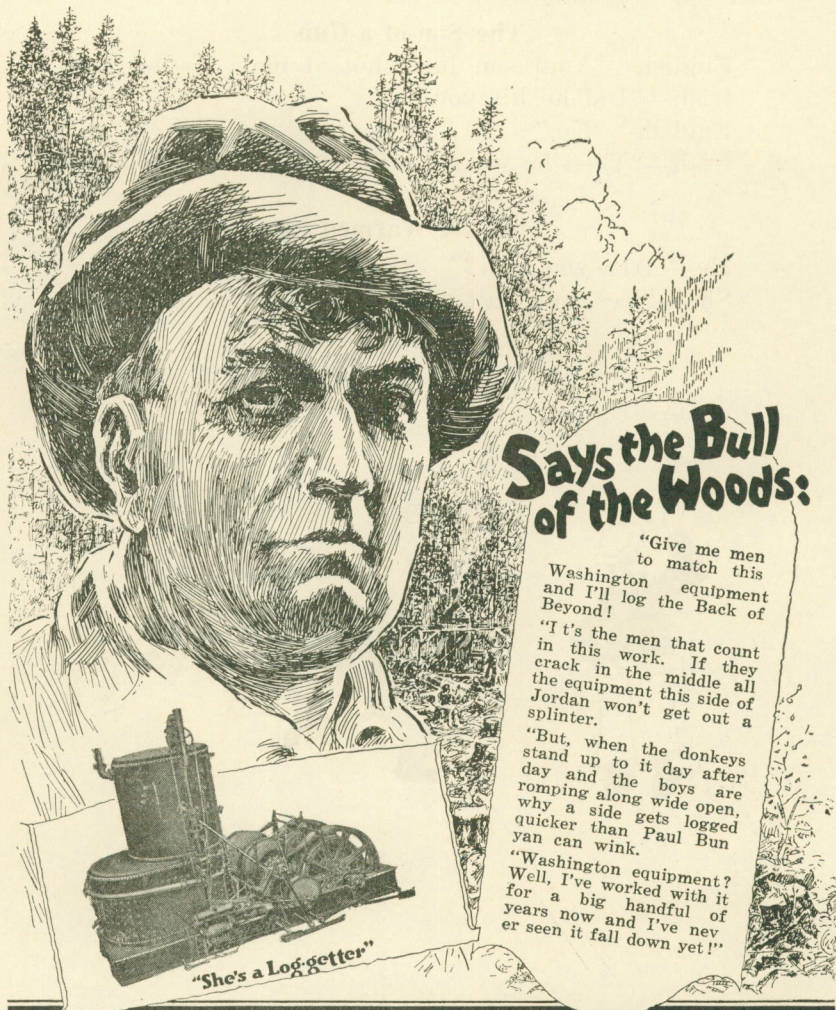
When a man reaches for his hip:—
In the olden days the crowd scattered,
Now the crowd gathers.

Good From Now On

Your child is badly spoiled.

Aw, go away.

Well, if you don't believe me, come see what the truck
did to it.



**Says the Bull
of the Woods:**

"Give me men
to match this
Washington equipment
and I'll log the Back of
Beyond!

"It's the men that count
in this work. If they
crack in the middle all
the equipment this side of
Jordan won't get out a
splinter.

"But, when the donkeys
stand up to it day after
day and the boys are
romping along wide open,
why a side gets logged
quicker than Paul Bun
yan can wink.

"Washington equipment?
Well, I've worked with it
for a big handful of
years now and I've nev-
er seen it fall down yet!"

"She's a Log-getter"

WASHINGTON ENGINES

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Vancouver, B. C.

Not When She Was a Baby Grand

Father—"Did that man kiss you last night?"

Daughter—"Did you think he came thirty miles just to hear me play the piano?"

So Long

1 Drunk—"Da ya know Si Long?"

2 Ditto—"Wat's his name?"

1 Ditto—"Who?"

No Laughs to His Credit

Why didn't you laugh at the prof's joke this morning.

Why should I? It had no point.

I know but it is a five credit course.

THE CO-OP

The Store of the Student

The Co-op is a book and supply store maintained and operated by the students who are members of the association.

The association carries all books and supplies necessary for the students in their college work.

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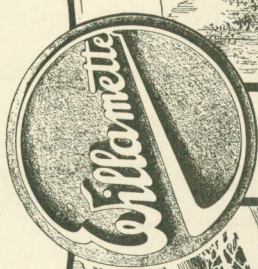
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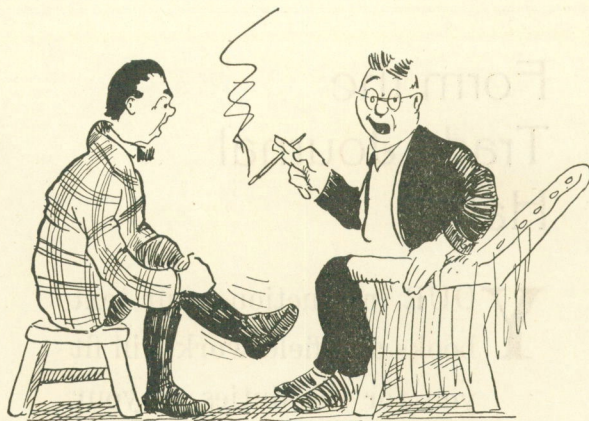
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WILLAMETTE
LOGGING ENGINES

WILLAMETTE
GEARED LOCOMOTIVES



Grain Alcohol

Wheat has taken another drop.

Of what?

How 'ja answer the question about the requirements of egg crate lumber?

I said that the lumber should be strong, tough, cheap, and should contain no knot holes large enough for the eggs to fall through.

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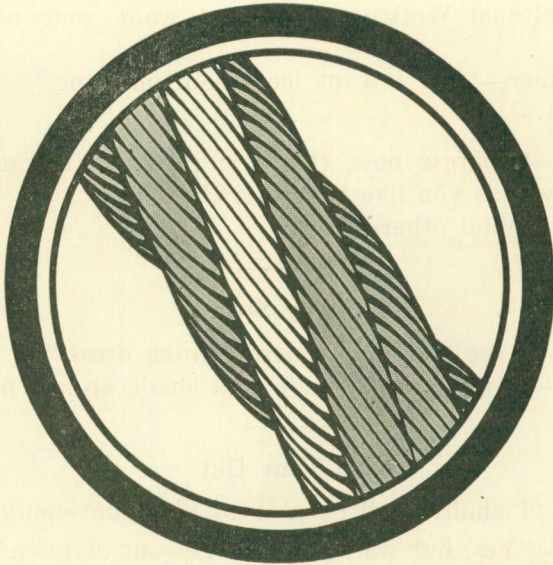
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YELLOW STRAND WIRE ROPE

Fight, Freight, Flight

Hey, what are you running for?

To stop a fight.

Whose fighting?

Me and another guy.

Give Him the Horselaugh

What is a bridal party?

A class in bridoling horses.

An Original One

Her originality showed through her costume.

Or Both

Hazelwood Waitress—"Do you want your pie a la mode?"

Wenner—"No. I want ice cream on mine."

She—"Confess now, that you men like talkative women as well as you like the others."

He—"What others?"

Shady Stuff

He—"I see you have a new evening dress."

She—"Migosh, did I leave that shade up last night?"

No Time Out

He—"I shall never be able to kiss you enough."

She—"Yes, but wait until we get out of town."

Climax Locomotives

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The Flavor Lasts

Son, have you been smoking?

No.

But your breath smells of tobacco.

Mother just kissed me good-by.

But your mother doesn't smoke.

I know, but the butler does.

A Caty-Corner

Jim was almost killed last night.

How?

He turned the corner.

Yes, yes, go on.

Well, there wasn't any corner.

An Old One

Her—"How old are you?"

Him—"Just old enough to answer foolish questions."

Dumb—"I always wondered where all the Smithes came from until I visited the city."

Dumber—"Then what happened?"

Dumb—"I saw a sign which read, 'Smith's Manufacturing Company'."

Also To Get Skinned

An easy way to get fat; Go to the nearest meat market.

No Grind

I'm learning to play the organ.

Hard?

Naw, Pipe.

A Weak Old Orange

Do, I look like I feel?

I don't know; how do you mean?

Like a week old orange.

How come?

Rotten.

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"Filson Clothes for the Man Who Knows."

Oh! Horsecollar

Roses are red

Violets are blue

Horses neck

And—well, girls do to.

I killed a chicken the other day.

Did you get the coop?

Time!

What time is it?

Two o'clock.

But I have quarter of eight.

Well isn't that two?

Prof. Starker (after dry lecture)—"Has anybody any questions?"

Leadbetter—"Yes, how soon will the whistle blow?"

Pretty Slick

Phil B.—“How was that girl you took out last night, pretty smooth?”

James M.—“Yes, she turned out to be an oil can.”

Dean—“I’m through telling you to stop talking in class.”

Geo.—“Good, now I can talk in peace.”

The Wrong Way

Cop—“Only one way traffic on that street.”

Auto Driver—“Yes sir, I’m only going one way.”

Then They Broke the Record

Let’s play “kissing” on the victrola.

No, let’s try the davenport, the victrola might break.

All Greek to Him

C. E. Prof. (to a forester)—“You foresters are a great bunch, can’t even give the correct names of the trees on the campus.

Forester—“The trouble is, they give the correct names but you don’t recognize them.”

Mark-ing Time

German marks have taken another drop.

How far this time?

I don’t know.

Well what of it?

Nothing.

What did you say it for then?

What?



SIMONDS

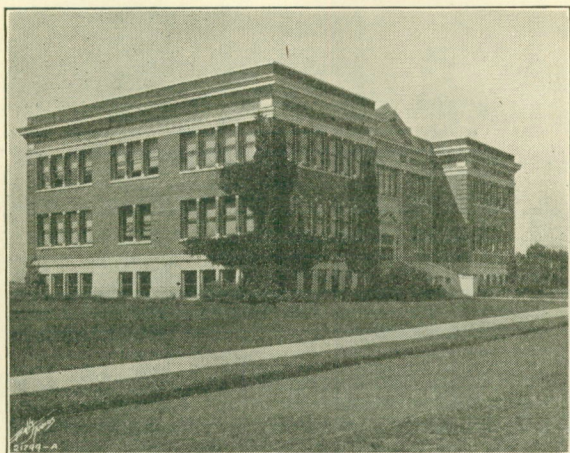
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