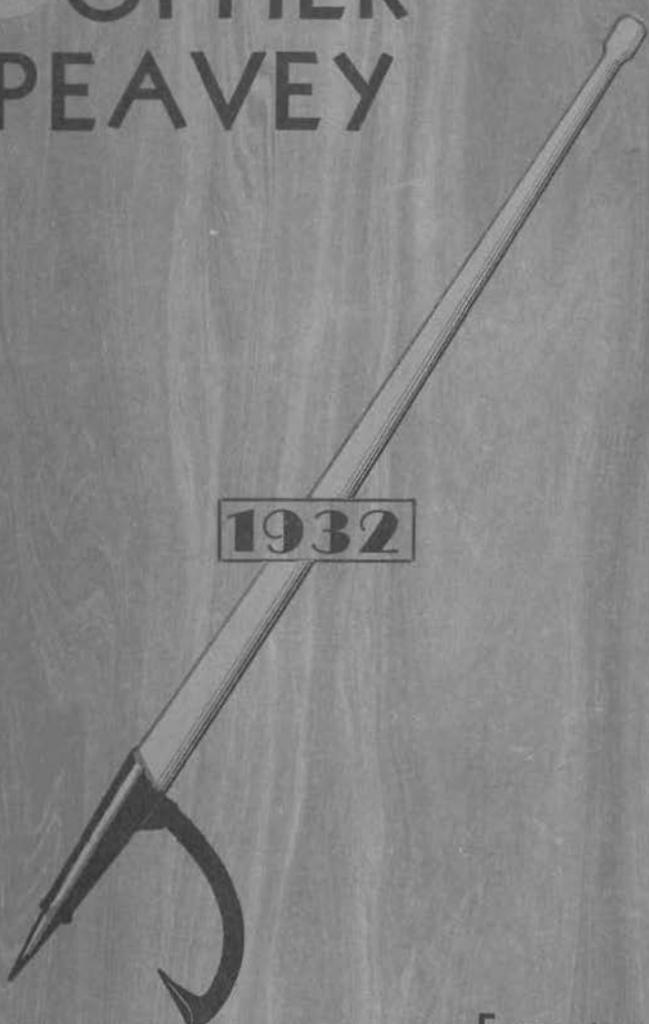


GOPHER PEAVEY



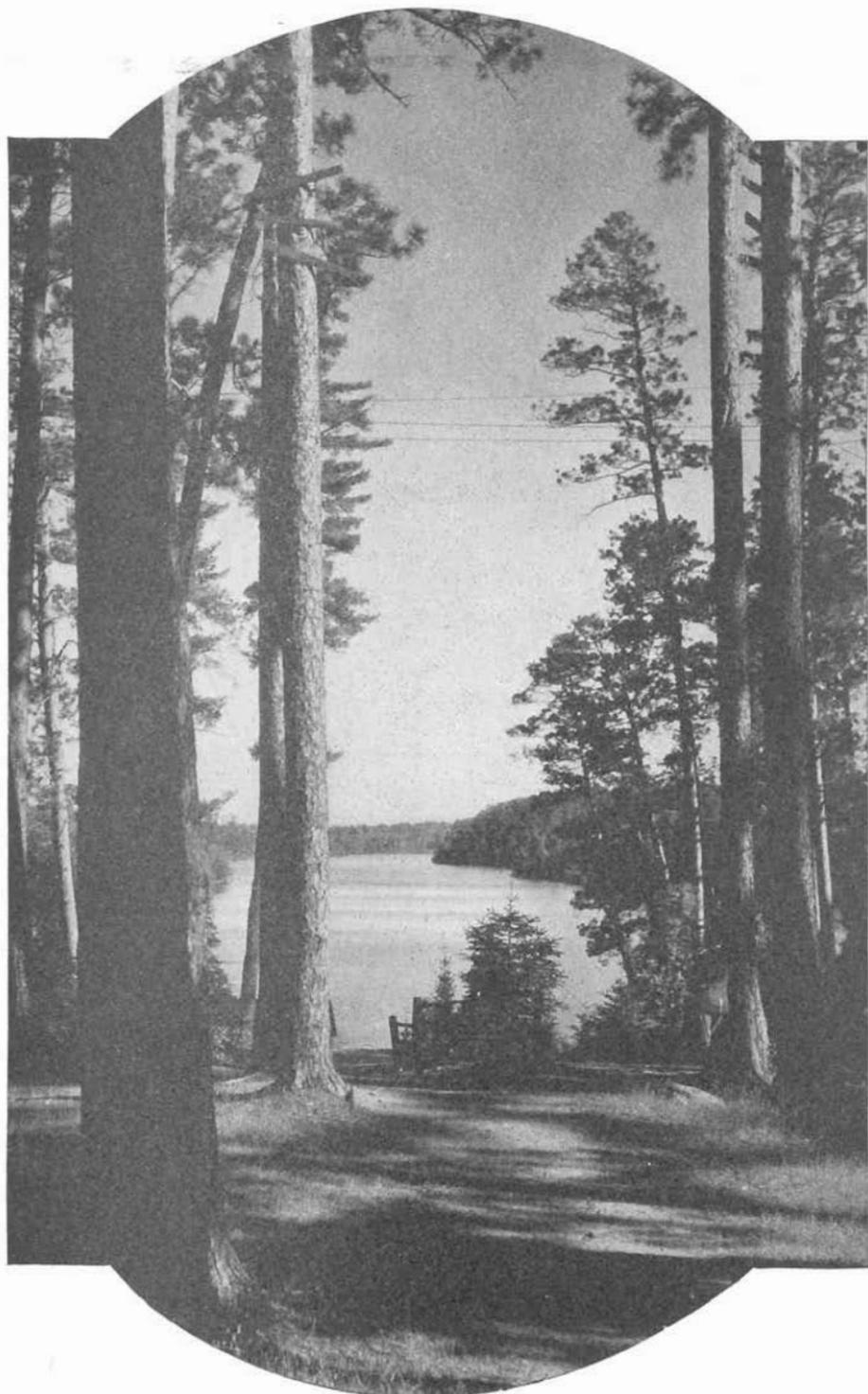
1932

Forestry Club
UNIVERSITY
OF
MINNESOTA

THE
1932
Gopher Peavey

THE ANNUAL
PUBLICATION OF THE
FORESTRY CLUB





"Itasca The Beautiful"



Dedication

It is always an added pleasure to be able to honor a member of one's own family. We have that satisfaction in selecting W. T. Cox, a graduate of this School who has already attained considerable fame and who will, we feel sure, raise the plane of conservation in this state to a new high level. To him we respectfully dedicate this book.

Foreword

On and up has been the well-directed course of our Forest School. From a mere idea in the late nineties, it has developed into one of the largest forest schools of today. From a lone forester, the graduating class has grown to its present size of thirty-eight. From a relatively simple, inflexible curriculum has developed one of multiple choice and flexibility. With the increase in enrollment and expansion in the curriculum has also come additions to the faculty. So far has the School progressed that it is now recognized as one of America's leading forest schools. We are justly proud of the progress made by this our School; and hope that "the past is but the beginning, and all that has been done is but the twilight of the dawn."

The Quality of our graduates is attested to by the fact that many of them are holding responsible positions in the lumber industry, in professional forestry, and in other lines of work. Not a few are outstanding in the profession and of national repute.

Success, coveted by the masses, attained by the few, is due in no small measure to an individual's self-willed driving force.

Minnesota Foresters Make Good.

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1932
Gopher Peavey Staff



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MINNESOTA DEPARTMENT OF CONSERVATION

By W. T. Cox

THE NEW department of Conservation is taking hold of a big job. It has been given charge of the timber resources in Minnesota, the mineral resources, the public waters and drainage problems, the lands and the wild life of the State.

Minnesota, as a state, has tremendous conservation problems. First of all, there is the matter of agreeing on the policies to be pursued. Then it is necessary to harmonize the efforts made and to be put forth by the different divisions dealing with conservation matters. The building up of an efficient personnel is of vital importance. It is necessary to undo the mistake of over-drainage. It was only after a realization came to us that our forests were all too rapidly disappearing, that our game was being wiped out, that our soils were washing from the farms and filling the rivers, that we awoke to the situation, at least in part. We should have been building up our water reserves instead of depleting them. We must protect our forests more fully and develop them. They can be made to produce many times their present yield, and their usefulness in other ways can be greatly enhanced.

The delinquent tax situation is resulting in the State's acquiring title to many hundreds of thousands of acres of lands. Most of this land is of the marginal or sub-marginal type so far as agriculture is concerned, and probably should never have passed into private ownership in the first place. It is now coming back to the state in many of the northern and north central counties, and there is going to be an opportunity to do what should have been done in the first place, segregate on the one hand, areas that are suitable and needed for state forests and game refuges, and, on the other, areas that should form compact agricultural settlements as soon as they are needed for such purposes.

For administrative purposes the department has been divided into four divisions, each with a director in charge. These work under the Conservation Commissioner. Problems of immense importance to the State of Minnesota confront each of these divisions, but I am going to confine my remarks just now to some phases of wild life conservation.

The situation with regard to our wild life has been, and is, still very disturbing. Many factors tend toward the decrease and even extermination of some of our game birds and mammals. On the other hand, we are finding out and appreciating more and more the ways and means for bettering wild life conditions. Minnesota at present is probably not more than 5% stocked with game, and 3% or 4% stocked with fur bearing animals it should have. Even its



fish life is far below what it should be. By conserving our water resources, by the establishment of an adequate system of refuges and other necessary protective measures; by stocking the depleted areas and providing favorable conditions for shelter and food; by conducting research to solve perplexing problems of our wild life resources, we are going to be able, I hope, to rebuild outdoor Minnesota so that it may measure up to what nature intended it should be, a state scarcely paralleled in beauty and balanced production.

The introduction some years ago of English, or Ringnecked pheasants has proved to be a wonderful success. These beautiful birds have increased rapidly and are now the most important of our upland game birds. They stand our winters well, are good rustlers for food and in turn provide excellent sport and a choice table delicacy. This year a ten day hunting season for ringnecks was authorized with a daily bag limit of three birds, one of which might be a hen. There seems to have been some misunderstanding about this hen feature. The taking of one female per day was thought to be a good provision since occasionally a hen is shot by mistake and this provision of the regulation makes it possible to bring in such birds legally. It is hoped, however, that sportsmen will continue as in former years to shoot only male birds which to any experienced hunter are readily recognized as soon as they break cover.

The Hungarian, or gray partridge, introduced into Minnesota quite recently, is another fine upland game bird. It is somewhat on the order of our quail, but larger. The Hungarian partridge is a prolific breeder, and where conditions are favorable it has increased in numbers remarkably. Many thousands of dollars were subscribed by the sportsmen of the state to introduce this splendid bird. The Hun, as this bird is commonly called, is of a grayish color which makes it a little difficult to distinguish against a back-ground of

dead grass and autumn foliage. It flies swiftly and when hunting is permitted it is going to test the hunter's marksmanship much more strongly than does the ringneck pheasant. The Hungarian partridge lies well to the dog and in this way may to some extent take the place of the prairie chicken, especially for hunters whose chief enjoyment in the field is to see their dogs work well on birds.

The quail is suited only to a part of Minnesota, principally in the southern and eastern portions of the State. Even there they do well only where they have suitable cover and where they are taken care of to some extent, during hard winters. Sleet storms are particularly deadly to quail, and it is advisable after such storms, and even after heavy snow storms, that groups of quail be hunted up and fed for a time. The sportsmen of southeastern Minnesota have expended thousands of dollars in purchasing quail from other states, to stock certain counties after particularly hard winters, and in organizing and conducting feeding campaigns.

Quail have an unfortunate habit of bunching up, thus making them more noticeable to their enemies. From studies made, it appears advisable that the big coveys or bunches be broken up and the birds scattered. The remaining birds then have a better chance to survive winter and the danger of inbreeding is avoided.

The prowling house-cat is probably their greatest enemy. Hawks and owls, gray foxes and weasels are also destructive to quail. A shortage of suitable cover, however, is probably the greatest drawback to this bird. The annual burning of brush and grass lands and the over-pasturage of brushy hillsides make conditions very difficult for the quail, since their nests are burned and the mother bird often destroyed by the fires, and even if they escape such fate they are left without protection from their enemies in the air and on the ground.

Farther north in the State, we have every reason to believe that the prairie chicken and the sharp-tailed grouse can be so managed through hunting regulations that they will increase rather than decline in numbers, and thus furnish good sport to the farmer's boy and the village sportsman in the northern half of Minnesota.

There are three good reasons why we must conserve our game birds, such as the pheasant, the Hungarian partridge, the quail, the prairie chicken, and the grouse. All of the people of Minnesota enjoy seeing these birds under natural conditions and we get a thrill as they rise from the grass or brush at our feet with an explosive sound and a musical whirr as they speed away. The outdoors would be much less attractive to us if we could not occasionally glimpse some wild game birds, even though we may not want to shoot them. The agriculturist has the strongest of reasons for wanting these birds on his lands. He and his boys are more than likely to be sportsmen themselves in a limited way as time permits, but more important still, the farmer needs such birds on his place to hold down the hoards of insects that otherwise would make serious havoc with his crops. Noticeable examples have occurred this year where the

pheasant and other game birds have rendered outstanding aid in checking damage by grasshoppers, cutworms, and other insect pests. Such work—perhaps less noticeable, we know is going on wherever these game birds exist in worth while numbers. It may easily be, as has been estimated, that the insect control maintained by pheasants on a farm may add an average of two dollars an acre in the value of the crops harvested.

The farm from which every little patch of brush has disappeared and on which the grass lands are burned annually, offers no inducement to either game birds or song birds. They have practically no place to nest, and should they succeed in bringing forth a nest of young, the little birds are without proper concealment during the growing period and are subject to attack by all kinds of enemies. Many of our insect eating birds nest on the ground or on bushes close to the ground. Trees do not meet their requirements. A wood lot heavily pastured and with no undergrowth is of little use as game cover or as a nesting place for insect eating birds. The land owner who leaves a few patches of brush in their natural condition and who refrains from burning all of his grass lands, thus leaving an opportunity for the ground nesting game birds to increase, and for the brush nesting song birds to survive, is not only helping himself, in my judgment, but is helping the whole community, and I hope that the forward looking farmers of the State will give serious consideration to this matter, for I think they will find, as I have, that the more we look into this matter the more important it appears. This saving of brush and grass lands is one of the really essential factors in conserving our wild life.

I am deeply concerned with the fate and the welfare of our wild life. The upland game birds and the insect-eating birds represent only one phase of the problem. Other phases concern the big game, the water fowl, the fur bearing animals, and the fish. There has been much unwise drainage and the subject of water conservation, of restoring our lakes, streams, and marshes, is intimately connected with the problem of conserving our forests and our wild life.

THE FORESTRY SITUATION IN GERMANY

By FRANK KAUFERT, '29

MY KNOWLEDGE of the forestry situation in Germany was obtained during a recent nine months visit to that country. I did not travel the five thousand miles, nor remain nine months for the express purpose of studying forestry. This perhaps saved me from returning with my note book bulging with facts concerning German silviculture and management, and enabled me to obtain a far better perspective of the economic conditions of the country and the general forestry situation as it is today.

During my stay in Germany, I met numerous men connected with the administration of the forests as well as those engaged in teaching at the various forestry schools throughout the country. From them I learned a good deal about the German Forests, but it is possible that the native sons of Bavaria, with whom I spent many an hour of hearty vituperation over filled glasses of Munchener Lowenbrau, or the theology students of Halle, with whom I occasionally tramped the hills, contributed more to my general knowledge of the forestry situation in Germany than did the foresters themselves.

The term "German Forests" as generally used is largely a misnomer, for strictly speaking, there are no "German Forests," just as there are no "German People". The forests like the people are either Prussian, Bavarian, Saxon, etc. And just as the thick-headed, stubborn, heel-clicking Prussian differs from the more adroit, agreeable Bavarian, so the forests of the several German provinces differ from each other. A discussion of these differences in the forests while interesting would involve considerable silviculture and forest management, knowledge which is beyond the scope of this paper to present and which is well summarized in a number of books by eminent American and German authors.

The forests of present day Germany differ little from those of pre-war days despite all the evil rumors of over-cutting, forest fires, and poor management, broadcast during and immediately after the world war. The war may have weakened the German race by removing two million of her young men, and it and its evil sister, the unjust Treaty of Versailles, may have stripped her forever of her much needed colonies and rich mines, but her forests remain almost intact. The German forester may lament the passing of the goose-stepping armies, cheap beer, buxom Frauleins, and the good old German "Gemutlichkeit," but he can still point to his forests as the finest man-made forests of the world.

The Prussian foresters have spent centuries in their efforts to cover the sandy waste lands of north Germany with high producing pine forests. And they have been successful in their labors, as a trip

from Berlin to Leipzig or any other city of northeast Germany will testify. To the south, the Bavarians have had even as hard a task in their efforts to cover the protruding rocks of the rugged Alps with forests of spruce and fir. They have not only been successful in covering the rocks, but have built upon them forests that compare well with any in the world.

Also, the technical men of Germany have not been idle. They have been working hand in hand with the dirt forester. They have supplied information galore concerning cutting systems, planting methods, methods of disease control and other information needed for the proper administration of their forests. Through their combined efforts they have succeeded within the last century and a half in covering fully one-third of the total land area of Germany with a green carpet of forests.

Today, however, they are no longer the controlling influence in guiding the destinies of the forests they struggled so hard to create. Today the German forests are as they have always been, but tomorrow they may have changed so that even the German forester will have difficulty in recognizing them.

It all began at Versailles. That is what the Germans have been saying since 1919 and what we are just beginning to realize. To them the Treaty of Versailles can justly be regarded as the root of all evil for it is forcing them into making sacrifices and changes that seem utterly impossible. But we are considering the forests of Germany. Very well, then, I shall show you how the forests of Germany are being directly affected by the terms of the treaty so ruthlessly forced upon these people.

Germany has always been more or less of an industrial nation, but in her effort to pay her reparations she has gone still further in this industrialization process, until she compares well with England. To obtain an excess of exports over imports has been her goal, and until the world-wide depression came along she was doing well. This was her only possible method of ever paying off the tremendous load of reparations placed upon her, for she is one of the world's poorest nations with regard to natural resources. To attain this goal of an excess of exports over imports, it has been necessary for her to begin with the cheapest raw materials possible, and it is a pretty well recognized fact that such raw materials can be raised far more cheaply upon the tremendous areas of rich land in Russia and America than upon the little patches of half-starved farm land of Germany, or any other central European nation. The result of this struggle to meet her reparation payments and devise means of meeting them in the future has been decidedly detrimental to German agriculture, always considered the soul of the German people.

What effect will this change from an agricultural to a purely industrial nation have upon the German forests? Anyone who realizes that 45 per cent of the German forests are still in private hands, and that 90 per cent of these are in the form of farm woodlots, less than

25 acres in size, can see how all important such a change is bound to be and how it will affect directly a good portion of the nations forests.

The sad fate which seems to be in store for Germany's privately owned forests seems to have been knocking at the door of the state owned forests for some time; and these state owned forests occupy another 35 per cent of the forested area of Germany upon which her foresters spent so much time. The purpose of the state forests has always been to furnishing high grade material for use in ship building, for railroad ties, poles, etc. Today, however, such material is being dumped upon the German markets by her eastern neighbors, Russia and Finland. These countries still have large tracts of unexploited virgin forests and can consequently deliver such high grade products in Germany at such low prices that the German state forests have for some time been practically valueless.

Germany might save her state forests by use of the protective tariff; but here again the spectre of the reparation payments lurks in the background and prohibits such action, for the cheapest raw materials obtainable are necessary if she is to fulfill the impossible task the rest of the world has imposed upon her.

We have rather successfully disposed of 80 per cent of the German forests, so our task is nearing completion. We have remaining only the city, town and communal forests, which make up a scant 20 per cent of the total; for them, however, there is a far more optimistic outlook.

These city, town and communal forests are striking features of German forestry. They play a large part in serving the needs of very many persons who would otherwise have difficulty in obtaining the supplies of wood that they absolutely require. It is a phase of German forestry which should be of genuine interest to Americans, for it holds lessons that could well be taken to heart by many communities in the United States.

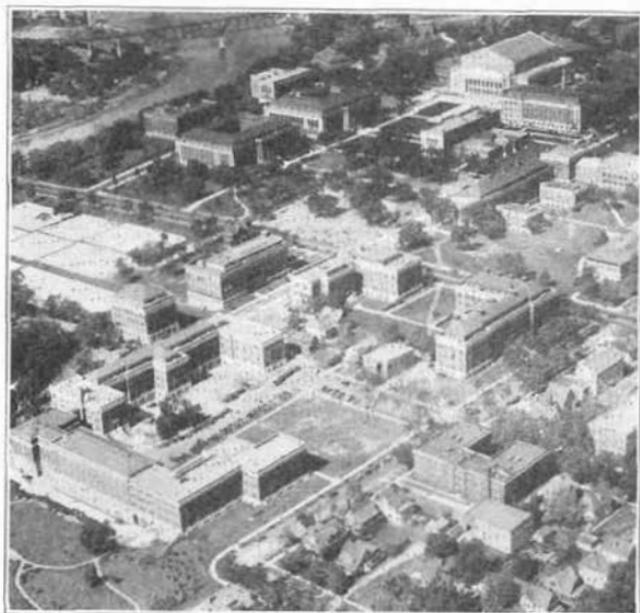
The history of the communal forests runs back to very early times. Some are the remnants of the land that in pre-feudal times was held for the common use of all the people of the tribe or community. Others have their origin in prescription rights that were secured by the people during the Middle Ages, under the feudal system. Those of more recent date, as many of the city forests, have been obtained through gift, purchase or as the result of land adjustment made at the conclusion of a war. But, however they came into existence, forests of this class are distinctly factors to be reckoned with in all parts of the federated German states.

There are examples of communal forests in Germany for which it is said the annual net proceeds are sufficient to pay a good share of the local public expense. The larger town and city forests of such cities as Halle and Heidelberg have been equally as successful. These city forests, besides supplying a large number of poor with fuel, supply work for a considerable number of persons during all seasons of the year.

I have written rather pessimistically about all save a very small portion of the German forests, but the conditions are such as to warrant extreme pessimism.

At the last meeting of the German Reichstag there appeared new hope for at least a temporary revival of agriculture and preservation of a large share of the German forests. This group of leaders has noticed the downward trend of agriculture and forestry and went on record as favoring protective tariffs and temporary subsidizing to prevent further change.

It appears inevitable to everyone, however, that such measures can do no more than effect a temporary improvement. A general change in the forestry situation in Germany and in the economic conditions of the entire world will come only when the crimes committed at Versailles are completely erased.



Birds Eye View of Minneapolis Campus.

DEVELOPMENTS IN THE GRADING OF SOFTWOOD LUMBER

By L. N. ERICKSEN, '21

LUMBER grading may be defined as the segregation of the products of the log into quality classes according to the particular uses for which the various products are intended.

When lumbering first began in this country conditions were quite different from those existing today. Then the lumber cut by a mill was consumed locally. Each mill made its grading rules to suit its needs, and it was a simple matter for the mill operator and the buyer to agree on the quality or grade involved. As the country developed and transportation facilities improved lumber began to be shipped longer distances and the products of a number of mills began to compete in the same markets. This necessitated the establishment of rules providing for uniformity of sizes and grading of lumber throughout the different regions so as to avoid confusion in the markets.

As the population grew and spread westward the demand for lumber increased, mills were opened up in the west and the development continued, until we reached present day conditions under which lumber from all parts of the country competes in the same consuming markets. Because of differences in building practices and customs in various parts of the country and in lumber manufacturing methods, due to differences in the characteristics and uses of the large number of commercial woods, a number of distinct sets of sizes and grading rules came into use. In some cases the same names were applied to lumber of different quality classes and as a result purchasers and users of lumber became confused and sometimes did not receive lumber of the size and quality expected because they and the lumber manufacturer did not have in mind the same set of grading rules.

That there was need for standardization of lumber grades and sizes was recognized years ago. The first concerted action was taken in 1919 when the first American Lumber Congress was held under the auspices of the National Lumber Manufacturers Association. The work has continued from that time on, but has proceeded more rapidly since 1922 when the first General Lumber Conference was held in Washington, D. C., under the auspices of the Division of Simplified Practice of the U. S. Department of Commerce. A coordinating body called the Central Committee on Lumber Standards and made up of representatives of lumber producing, distributing and consuming groups was organized; and since then has directed the work of lumber standardization. This work has advanced until the present time when we now have a set of standard basic grade provisions for softwoods termed the American Lumber Standards,

established by the Central Committee on Lumber Standards, adopted generally by the various branches of the lumber industry, and published and recommended by the Department of Commerce in Simplified Practice Rec. 16-29—"Lumber," Fourth Edition. The American Lumber Standards are intended for use as a guide by lumber manufacturers associations in preparing commercial grading rules.

They provide for standard sizes, grade names, minimum quality requirements for the various grades, standard nomenclature, and definitions of defects for the commercial softwoods. Except for slight variations due to inherent differences in the characteristics of the various woods, in methods under which they are manufactured, and in the uses to which they are put, the American Lumber Standards have been incorporated in the standard grading rules published by the softwood lumber manufacturing associations in all parts of the country. Since the American Standards are minimum provisions, associations may provide, and some have provided, for higher quality material than called for in the standards.

Prior to the establishment and adoption of the American Lumber Standards several different finished sizes were frequently manufactured from the same rough sizes and considered standard in the various producing and consuming regions. This naturally led to confusion, much of which has been removed since standard sizes have been established under the American Standards. The adoption of standard sizes throughout the country means that the engineer, architect, or lumber purchaser can get the same finished sizes in any of the commercial woods and that lumber coming from different mills or different parts of the country can be used interchangeably since these standard sizes are recognized in all the lumber producing regions.

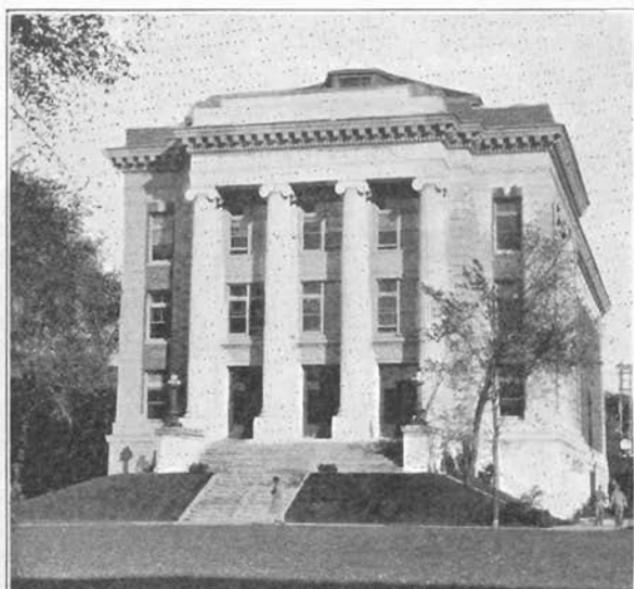
American Standard sizes have been established for the various items of Yard Lumber, Factory and Shop lumber, and Structural material. For such items as flooring, ceiling, drop siding, and partition, they include standard patterns so that worked or patterned manufacturers' associations are based on and conform to the American material coming from different mills is identical in profile.

The grading rules published by the various softwood lumber can Lumber Standards except for slight variations due to differences in manufacturing methods, in the characteristics of the different woods, and the uses to which they are put. Over 80 per cent of the softwood lumber produced in the country at the present time is manufactured in accordance with these standards.

It is impossible to estimate the value of this lumber standardization work. It makes possible more systematic and orderly marketing and buying of lumber, it has eliminated a great deal of confusion with respect to lumber grades and sizes. Through the many con-

ferences that have been attended by representatives of all branches of the industry, producers, distributors, and consumers, they have been brought closer together and have acquired a clearer understanding of each others problems.

This standardization work is not completed. Improvements are being sought for constantly and refinements are being made as rapidly as possible.



Administration Building

JUNIOR FORESTERS IN THE FIELD

DAN E. BULFER, '30

Targhee National Forest

I'M NOT going to horn in and tell you Professors how to educate a Junior Forester. You know how and do a good job of it. What I'm going to say is intended primarily for those undergraduates who are all enthused about protecting, conserving, and administering Uncle Sam's forests.

I'm assuming you all know the essential steps necessary to become one of us. However, if you are the least bit doubtful, just arrange a little conference with Mr. R. M. Brown and receive necessary information. If he tells you that your past due mensuration report is one of the essentials, believe him and get it in. You will probably cuss him a little, perhaps a lot, I did, but lend an open ear, get in your report, and a Junior Forester ye shall be.

You are now authorized to don the whipcords, Stetson, and riding boots. Yes, you get to wear a badge also. This stage of the game may be likened to the third day after you had that pet operation of yours. You are going to pass on or recover from your ills and become one of us.

That pretty blonde nurse will be replaced by several old rangers, that wise old physicians boots will be filled by an equally wise supervisor. Your temperature will be recorded by rangers, supervisors, regional foresters, permittees, and the general public at intermittent intervals throughout a number of years. The final curve of these records will be weighed, balanced, and read in somewhat the same manner as you employ in that famous course of Forest Mensuration. It's called Anna Morphosis or something like that; at any rate I've forgotten just what it really is.

Perhaps your first assignment will be timber sale administration. Here you will be given opportunity to employ a surprising amount of the silviculture, mensuration, and logging knowledge which you are now acquiring. Here you will shoulder the responsibility of marking timber, scaling logs and other forest products, and supervising the proper cutting, utilization, and removal of thousands of feet of timber. You also have to work and associate with men who never heard of anamorphic curves or the Swiss method of determining the allowable annual cut, etc. So leave your spats when you leave your Alma Mammy, and bring with you a well balanced personality, a general education, and an open mind. You might also find it advisable to be endowed with a constitution capable of enduring a little hard work, a stomach comparable to the water system of a camel, and either a capacity to appreciate a chew of snuff from the woods boss or a tactful method of refusing same. Here you will become familiar with timber sale administration from every angle.

You will run into strange and new things which you will be expected to absorb and apply. You will come to know the policies and methods of the Forest Service. You will realize the satisfaction of seeing actual forestry applied in the field.

Perhaps your next assignment will be that of Assistant Ranger on a grazing district. Here you will find an entirely new set of technical and administrative problems, and perhaps the most difficult of all. You will work and associate with an entirely different class of people. Naturally you must familiarize yourself with the stockman's terminology before you become one of them. You will have ample opportunity to demonstrate your wares as you gradually assimilate their views, characters, ideas, and their methods of livestock management. You must have a mind which is flexible and well rounded so as to be able to converse intelligently with experienced old livestock managers one day and the next be able to ride the range all day with one of our remaining frontier characters, the sheep herder. He will tell you wild tales of the sea, the gold rush in Alaska, early days on the range, of a great "bust" a year ago in the Kitterring Palace of Butte where such and such a guy became intoxicated and married that beautiful blonde that used to work there.

You must be able to ride, pack, and use the dutch oven with ability; otherwise you are looked upon with a cautious eye.

Now don't get the idea from this description that you need not know grazing from a technical point of view. You will be called upon to gather administrative research data on plant development, range composition, carrying capacity, and utilization. You will aid in carrying out range management plans and constantly be expected to find sound ways of improving them and formulating new ones. More difficult still you will be asked questions by the stockmen, which you are expected to answer. If you don't, your ability is again looked upon with doubt, and your usefulness becomes questionable.

Here, as in timber sales, you will find the ranger your friend, advisor, and teacher, one who is sympathetic with your position and point of view. You are looked upon as a man having something which he hasn't, and you will find him eager to listen to you. You will be well repaid by rich knowledge of long experience. If you are wise, you will listen well and profit by it.

These two activities are perhaps the two most important and will absorb the major portion of your time during this period of your career, but before your training is complete, you will have spent many long, hard hours on the fire line. Here your keen practical judgment, ingenuity, administrative ability, and physical condition will be taxed and tested by the most rigid and strenuous tests possible. Here again the ranger, backed by that rich store of experience gained by years of service will be your counsellor. Here is provided an outlet for your overflowing energy of youth and that primitive instinct of battle. After your job is done, you can proudly wipe the sweat from your brow, sit down and light a smoke, and heave a sigh of genuine satis-

faction, for there is real genuine satisfaction in fighting this deadly enemy of the forest and winning even though at a sacrifice of many hours of sleep and many long hard hours of honest-to-God work.

While engaged in one of the above activities, you will have occasions to conduct "Show Me" trips, deliver speeches, and contact the public in various ways. Sundays and holidays offer wonderful opportunities to do this. You'll be surprised to hear the complex and diversified nature of the questions you will be asked to answer. You will find this rather boring and difficult at times, but you must bear in mind that you are a public servant. However you will have your moments when beautiful dark-eyed brunettes and peroxide blondes cast their bewitching eyes upon you and tell you how gorgeous the mountains are, how wonderful it would be to be a ranger, how they would just simply adore it. Then as you get sort of flustered and try to say something, but can't, they will ask you to relate your most current hand to hand encounter with a mountain lion or bear. You will then feel like revolting from our present social standard governing such occasions and placing the print of your boot where it is apt to do the most good. However, you must politely inform the fair one that such wild creatures are our friends and are glad to have us roam the woods with them. Then that evening when it grows dark you stealthily steal about the camp ground and empty the accumulated garbage from the garbage barrels, wipe the fermented conglomeration from your hands, adjust your Stetson, and walk proudly down the timbered pathway.

I will merely mention a few more activities with which you will become familiar. You will handle large crews of men and supervise the control of epidemic outbreaks of forest insects, conduct timber, grazing and insect reconnaissances, construct and repair roads, trails, bridges, telephone lines, and various sorts of buildings. In this latter activity a thorough knowledge of Chick Sales' works, particularly "The Specialist," is imperative. Fish and game law enforcement and game management also have their place in this curriculum.

This field work will be replaced by short details to the Regional and Forest offices during the winter months. Here you will be given opportunity to exercise your technical knowledge on paper and become acquainted with office routine, administrative problems, and policies of the Forest Service.

It would be possible to go into considerable detail with each of these various problems; but you will of necessity have to take my word for it when I say that it is a really big job, one which offers a wide diversification of work, one which challenges you to put forth the very best that's in you.

PROGRESS IN FIRE CONTROL

CHAS. D. SIMPSON, '13

Coeur d'Alene National Forest

THE PROBLEM that is uppermost in the minds of practicing foresters in almost all regions of the Western United States is fire control. This is particularly true in the Inland Empire which includes Northern Idaho, Western Montana, and Eastern Washington, for here with pure coniferous stands, rather low altitudes with extremely dry summers and frequent low humidity periods the demon fire still challenges and demands the best that man can give. True, there are other important activities. Timber sales, land acquisition, to a lesser extent grazing, and more recently insect control, and now blister rust, must have their share of attention, not to mention road and trail construction and the upbuilding of protection improvements such as towers, lookout houses, and telephone lines. But fire rightly comes first. Fire control needs bring some of the other jobs into being and certain others are aggravated by a lack of control of fire. Still others would be of little or no permanent value if the fire control job was not mastered. And so, when the question of progress is raised, one engaged in National Forest administration immediately and persistently thinks of progress in fire control.

At first thought our progress seems painfully slow, but to get a true picture one must take into account more than the day to day changes. So I am taking you back to a summer twenty-one years ago when as a sophomore student I signed up as forest guard on the Superior National Forest. With Drakenburg as partner, we were assigned a territory on the North Kawishiwa River and started out canoe patrol. The Forest Service furnished us an excellent 16-foot, Old Town Canoe and two axes, one a 2½ pound double bit and the other a pole axe of lighter weight. The rest of the outfit we furnished ourselves and it was pretty meagre—partly because weight was an important factor and partly because of financial reasons. We did take pride in a 6 x 8 silk-o-lene tent and with plenty of boughs for the taking and a double blanket apiece we often disparaged the genuine Ostermoors. A reflector baker and two man nesting mess outfit comprised our kitchen. A couple of green birch chunks was our fire place and forked spring poles bore the coffee pail and stew kettle. For lunch we regularly brewed a pail of tea (in the coffee pot) munched some rye crisp and opened a can of beans or salmon. In thirty minutes we were again on the portage or working the paddles. For breakfast and supper we had somewhat more elaborate menus, even including some freshly taken lake trout. Yes we had a map—big enough for a table cloth—but with scarcely more data on its folded white surface. Most lakes or streams were unnamed and



many were not even shown. Pioneers had nothing on us, in fact the area had not been previously patrolled and our chief accomplishment was the locating of suitable portages from lake to lake or around rapids and marking them and opening them up. Instructions were simply to patrol our area and look out for fires. Training was nil. Fortunately 1911 was a favorable season and we never found any fires so the lack of training, specific instructions, and adequate equipment was not so serious a handicap. How about supervision and inspection? Well, we met the supervisor in his office and were with the ranger at his headquarters a couple of days, but out on our patrol we were always alone. Moose and bear were our only visitors.

It is hoped that a student spending a season on the Coeur d'Alene or other National Forest at the present time leaves for school with more of a feeling that he has contributed to the cause of fire control and that the organization is reasonably capable of handling its fire job. All equipment is now furnished and it is standardized and its condition checked frequently. It includes lights for night travel, prepared emergency rations, a compact first aid packet, mess kit, combination tools providing for chopping, digging and shoveling, canteen or water sack, file or axestone, compass, map, notebook and pencil.

Each man goes through a three day group training camp. Here he has practice work in detecting small smokes and plating them on the map. Then there is a cross country trip to locate one of these smudges and practice in night travel and compass running. Finally a sizeable fire is controlled and put out and the good and poor practices discussed. A man from the city or from a prairie farm can't be made into an expert fireman in three days, but he does learn to see and find and smell smoke, and learn what to do about it.

Each man is provided with specific and complete written instructions to which he can refer with profit throughout the season. A few days are provided for each man to become familiar with his territory. Patrol has given way to lookout-fireman assignments and the territory handled by each man is very much reduced.

The ranger follows up with individual training at each man's point of duty, and visits each man about every three weeks thereafter to keep up interest and check up on action. In addition, continuous telephone communication is maintained. Prompt followup is provided when firemen go to fires and after every fire is left as out a return trip by someone is made.

Intensive studies are being carried on to locate unseen or blind areas and day and night watch is kept on lightning storms and the strikes are noted so that special attention may be given to areas where starts are most liable to occur.

Where greater speed can be made, or the saving in condition of the firemen justifies, a saddle horse is furnished. As our road construction progresses more men use motor transportation. Nine lookout or fireman stations on this Forest were reached by new roads during the past season. It gives a real feeling of satisfaction to be able to drive to these points where for years they have been reached mainly on foot with a back pack. These fire control roads or motor ways are built primarily to give quicker access with crews for secondary defense, but they incidentally greatly facilitate supplying the protection men and shifting them to danger points as conditions warrant it. The lookout firemen are much more valuable, as with a car they can cover larger areas, arrive more quickly and in better shape to combat the fire.

The building of these roads is a story in itself, but should be told briefly here. The clearing is done by upsetting the trees, roots and all and pulling them down hill off the roadway by cable and drum attached to a 75 h. p. tractor. A lighter tractor with bulldozer attachment plows out a tread for the big tractor and 12 foot grader which finishes the road. One such outfit and crew of 13 men last season built 19 miles of sidehill and ridge road through medium to heavy timber at a cost of \$803 per mile. Fifty-six miles in all were built on this Forest during the year.

No substitute has yet been found for the swamped out fire line and trench to mineral soil to stop the spread of fire. Even on steep, rough slopes, however, a single horse and two-way plow speeds up trench construction and on larger fires is rapidly replacing the mattock and grub hoe. A narrower trench is being built, but more attention is given to "mopping up" inside the line. No unburned strips must be left, the snags felled, and the fire killed as rapidly as possible. Some material must be burned out, but other stuff may be deeply buried. The aim is to as rapidly as possible reduce the danger of spotting, crowning out or creeping across the line. Water is used more and more, but its use is still limited. High speed pumps and small spray pumps are now in common use.

The use of airplanes has become common practice, but it, too, has its limitations. Last year saw its first real use here in transporting supplies and equipment to inland fields or to be dropped near fire camps. An experienced overhead man was moved between forests and between fires. Planes are also frequently used to comb areas crossed by bad electric storms when visibility is poor, and have been proven valuable to scout going fires although they can not substitute for ground foot work in seeking out detailed facts needed by the fire boss.

Speed, and more speed, is the keynote of present day firefighting. The aim is to control the fire before the next burning period. To do so, much night action is necessary. Pack stock is loaded in trucks and moved to the nearest road point. Fire tool units have been lightened. Last season an eight pound, kopak sleeping bag was substituted for the army blanket bed and with a pair of shoulder straps each firefighter can carry his bed and a working tool while the food supplies follow up with the mules. This saves long delays waiting for enough stock to move in a complete outfit.

More and more effort is being put into the prevention of man caused fires. Progress in this line is hard to measure but except for smokers' fires and incendiary fires the curve is downward. The placing of gate men, at main entrances to the forests, who issue entry permits, caution about use of fire, and urge cooperation is a recent development and a promising one. Visitors are required to carry fire tools in their cars.

A few fires still get away and develop into big ones when they are loose on one of those "bad days". It is realized that there is still room for much improvement, but yet, all in all, there is a wonderful advance in accomplishment over that of two decades ago.



A GLIMPSE AT LIBERIA

By ARTHUR F. VERRALL, '27

THE WEST coast of Africa, and especially Liberia, is sinister to the initiate. Inaccurate and exaggerated travel accounts and the stories told by the old timers on the trip down add to the misgivings—even whites from other tropical parts of the world enter with uneasiness. Every one goes thru this preliminary fear; some stay but a few weeks, others a year or more, but never return after once leaving, while some learn to like it and spend their lives there. Here are a few of the impressions of a forester who soon lost his fear, but never liked the tropical life of Liberia.

The long monotonous African coast-line, the first sight of beautiful Cape Mersurado and Monrovia, the transfer from steamer to surf boat, the rhythmic chants of the muscular black oarsmen, crossing the bar which always seems rough, the inevitable tropical downpour, passing Providence Island where the first American negroes settled, the Liberian navy of two antiquated gunboats, the small group of whites at the landing only too glad to welcome an addition to their number, the stench and babble of the native market on Water Street, the motley Liberian guard with its immaculately dressed officers, the preponderance of unfinished buildings, and a host of other things that first attract the attention of a visitor to Monrovia are too oft described to be more than mentioned here.

Even the casual observer is struck by the many changes of vegetational types along the government road from Monrovia to the rubber plantation. The open grove of stately oil palms, fifty to seventy-five feet high, open on one side to the sea and on the other gradually shading into the jungle—a beautiful sight indeed. The salt marshes with their mangroves marching forward on prop roots, the knarled, dwarfed trees scattered over the grasslands, and finally the jungle itself has a particular character and charm. It's the jungle that characterizes Liberia—not only does it cover most of the area, but also it is the chief enemy of plantations and agricultural enterprises. It forms a solid mass of vegetation—herbs, shrubs, and trees all tied together by innumerable lianas and covered with epiphytic orchids, mosses, etc.; almost impenetrable except with the aid of cutlasses, and ever encroaching on any artificial clearing. It's with the jungle that any agriculturist must fight.

The jungle is always new, everywhere different, and never loses its charm. Its darkness, stifling closeness, and denseness close around one and holds him prisoner. Every emergence into a clearing of village or rice field is accompanied with a sense of relief. The deathly struggle between jungle and white man is always apparent, yet the desire to return to its grasp, to cope with its adversities, and to try

to understand its secrets is never lost. The square mile of jungle near my cottage will always be in my memory. After innumerable visits, exploring its animal paths, its streams, and studying the plants that make up its tangle of vegetation, it still remained unknown to me, always foreign.

Although forests cover practically all the area of Liberia, forest products are almost entirely unexploited. Many tree species have fine wood for furniture and special uses as well as for general construction; but with the present condition of the world's lumber industry there is little need of logging such an inaccessible country as Liberia, except for local needs. The lumber needs of the natives and Liberians are satisfied by a few crude native logging operations. Single trees are selected, felled, and sawed by hand into lumber at the site of the tree. In clearing jungle for cultivation, little attempt is made to save anything, mere felling and burning is the usual practice. Considering that a native works a piece of land two or three years, there must be an enormous amount of wood going up in smoke. To a forester this seems unpardonable waste, but under present conditions what can be done but this?

Liberia is well supplied with animal life, although the difficulties of jungle hunting and the disagreeable relations with the government, keeps the big game hunters away. They much prefer the open grasslands of East Africa under British or other European rule. During the jungle trips I took, a wide variety of animals came to my notice, even though I was not particularly on the lookout for them. Elephants, hippopotami (both large and pigmy), bush cow, antelope, leopards, civits, wild cats, various species of monkeys, chimpanzees, alligators, geckoes, cameleons, and other lizard-like reptiles; snakes, from pythons and deadly cobras to small harmless ones, various birds, termites, driver ants, and innumerable insects, some very large, many quite beautiful, are some of the animals seen. All these are quite harmless unless provoked to attack, in fact I soon saw the uselessness of lugging a high-power rifle thru the jungle and felt perfectly safe with a .22 colt automatic or a good stick.

Finally the novelty of the tropics wore off and the oppression of the climate, its heat, dampness, closeness; the ever present feeling of unconquerable foreignness of the jungle; the lack of association with other people, the myriads of insects, and the constant attention to the small health necessities of tropical life gradually wear on the nerves. Sulking for days at a time with no cause, quarrelling over small differences of opinion on any subject, going almost insane at the constant beat of the native drums, beating the servant boys for small offences, anything is excusable in Liberia.

Really, though, tropical Africa isn't as bad as many writers would have us believe. True it's no paradise or vacation land; nor is it a "white man's grave". A kind of temporary insanity, a tendency to exaggerate and to imagine experiences until they seem real, has much to do with many African tales; and most travel books of West Coast Africa need to be taken with a grain of salt.

A TRIP TO THE ORIENT

By HAROLD NILSEN, '34

SAILING DAY—the last of the lumber was stowed in the holds, tarpaulins were stretched taut, and battening irons put in place. "Chips" drove in the wedges, and the manhole covers to the holds were dogged down securely. The longshoremen loaded the rest of the timbers evenly over the hatches, and the deckload was finished. The sailors brought chains, cable, and turnbuckles from the forepeak, and the deckload was lashed down. All but the crew were sent ashore, and the gangway hoisted aboard. A final throaty blast from the whistle, and the S. S. "Margaret Dollar" was ready to put to sea. The lines were let go—the ship backed slowly astern until clear of the dock. The telegraph clanged. The ship gained headway and with the wheel "hard starboard" swung to port. Again the engine room telegraph clanged—full ahead and "all clear." The course was set. We were off to Shanghai, 5,300 miles over the horizon with the Weyerhaeuser mills in Everett, Washington rapidly disappearing in the wake.

The remainder of the first day was spent in cradling and lashing the booms, stowing the gear, putting additional lashings on the deckload and rigging a lifeline around the deck. Everything must be shipshape before leaving the Sound and entering the open sea.

At sea, the work included the ordinary ships' routine of upkeep work, with weekly fire and boat drills. Enough thrills were interspersed to make it interesting. At times, heavy seas broke over the bow and roared madly over the deckload to smash against the midships house bulkhead, leaving broken timbers, loosened lashings, and utter confusion of the deck load. Then the sailors had to straighten out the deck load and lash it again while occasional seas were shipped to make the work hazardous. Then again at night, there were times when a landlubber wished he had both feet on solid ground—a howling gale blowing accompanied by driving rain, decks awash, and ice freezing. One must feel his way over the timbers to stand lookout up for'ard with the ship rolling and pitching heavily.

Some twenty days after leaving Everett, land was made on the Japanese coast off Inuboe light, and the next day while going thru the Idzu islands, majestic Mt. Fuji-Yama, Japan's far-famed volcano, was seen rearing its snow capped peak 12,000 feet above sea level. It was an impressive sight from the sea.

Leaving Japan, the Yellow Sea was entered. A sharp line of demarcation was plainly discernible between the blue and muggish water. Almost simultaneously it seemed, the first fine weather of the trip was encountered. The sea was as calm as the proverbial mill pond.

The pilot was picked up in the Yangtze Delta at night, and the

ship went to anchorage to await high tide for the sixty mile trip up the river to Shanghai. The following morning, the anchor was weighed, and the interesting trip up the Yangtze began. Hundreds of "Junks" with tattered and patched sails were on the river. On the bow of each, a pair of eyes looked ahead. The Chinese seamen says, "No have eyes, no can see."

The Wangpoo, a tributary of the Yangtze, was entered twelve miles below Shanghai. Here in the village of Woosung, with the fort plainly visible, hundreds of Chinese were hurrying along afoot with hands tucked in the sleeves of long coats, on bicycles and in rickshaws. Huts were visible on either bank. Soon the godowns of oil companies appeared with the familiar names of "Socony", "Shell" and others on the roofs.

Traffic became increasingly heavy. Large steamers were moored in the stream while others were leaving port. Lighters and sampans dotted the river. Close to the ship a funeral cortege passed with the large black coffin placed midships in the sampan, and mourners in white seated on either side.

Without warning the ship rounded a sharp bend in the river—The Garden Bend—and there stretching back from the famous Bund of the International Settlement, stood large buildings comparable to those in any western city.

Men of war from many nations were moored before the Bund, and the ensign was dipped in salute to each of them. Three miles up river the mooring was made in the stream—thirty days after departure from the States.

Almost immediately the discharge of cargo began. As soon as Quarantine and Customs had been dispensed with, coolies seemed to swarm over the ship to start unloading. Lighters were made fast on either side ready to receive the cargo.

The first night new methods of travel were indulged in—old in China but new to me. First there was the sampan trip ashore. A Chinese woman sculled it. The trip was made without event, and landing was made in the Chinese city. This night there were several of us, and we climbed in rickshaws and cruised about town through the French Concession into the International Settlement and thence to the Bund taking in points of interest enroute. Each time a rickshawman's services was dispensed with there came the argument over the fare—each coolie wanting much more than the regular price. The help of those dark, heavily bearded, and turbaned policemen of the Settlement, the Sikhs, was necessary in getting rid of several. The Sikh policemen wasted no time in dealing with the coolies.

The ride through the Chinese city with its poorly lighted and narrow thoroughfares gave one a decidedly scary feeling. Once was enough at night, and from then on when returning to the ship, a launch was engaged at the Custom's jetty.

The water people of Shanghai presented a sorry sight. Many are born, live and die on the river. They live on sampans with makeshift housing on them, deriving their existence from the river. It was a common sight to see a sampan coming down the river with the women sculling and the rest tending a dragnet. Each haul was carefully sorted over. A charcoal fire was used to cook the meager fare of rice and fish. The food was washed and cooked with the unspeakably dirty water of the river. Any piece of line or board thrown over the side was hurriedly retrieved.

During the eight days in Shanghai many trips ashore were made in the sampans. They were not without their thrills. Cutting across the bow of a large steamer bearing down on the sampan didn't seem to bother the boatmen, but to me it seemed inviting disaster. I had no desire to bathe in the dirty waters of the Whangpoo. Pidgin English and gestures were of no avail in trying to persuade the coolie to be careful.

One trip of interest in particular was up Nanking Road past the race course into Bubbling Well road to the Bubbling Well temple. In the road nearby the temple, was an effervescent well. Many things were seen with the use of "plenty cumshaw." A Chinaman loosened up immediately when he saw the prospects of "cumshaw."

The next port of call was Amoy, China. This was located in a picturesque, if not in an entirely safe harbor. The natives lived on one side, and the foreigners on the other side of the bay. Here the streets appeared to be paths between the buildings—narrow and torturous with hardly room for rickshaws to pass in places. There were no automobiles such as one saw in great abundance in Shanghai. Here every member of the ships crew was on duty in the holds while discharging flour in an attempt to keep the coolies honest. As soon as one's back was turned, several extra sacks of flour were thrown in the sling. More than the allotted 25 to a sling went out of the hold, at times resulting in a shortage when the checkers compared tallies.

From Amoy we went to Hong Kong, the flower city. Hong Kong has a large and beautiful harbor, and when one overlooks the city, the harbor, and Kowloon across the bay, from the summit of the mountain back of the city, a beautiful sight is seen with the numerous ships dotting the bay. The trip by cable car to the Governor's residence to obtain the sight was an interesting sidelight. Incidentally, the wine list of the Hong Kong hotel was also interesting.

Hong Kong has a semi-tropical climate and there the weather began to get very warm. From there to Manila, a trip of two and one-half days over a calm sea, sparkling under a brilliant sun, was the best sailing of the entire voyage. A nice case of sunburn was developed on the way.

Manila bay was entered by passing through a comparatively narrow channel guarded by the guns of Corregidor, a U. S. fort. Shortly, the naval station was passed, and many ships of the Asiatic fleet were

seen maneuvering. The pilot was taken aboard, and the ship went to anchorage inside the breakwater a short distance from the new pier. Inside the breakwater were many more ships of the Asiatic fleet. Here much of the remaining cargo was discharged and four thousand tons of unrefined sugar loaded for discharge in San Francisco.

Manila presents an interesting contrast between the new and the old. New Manila with its beautiful palm lined avenues and modern buildings surrounds the Walled City. The streets within the walls are narrow and of cobblestone. It was erected by the Spaniards in the 1500's.

An interesting day was spent in the Bureau of Forestry in Manila where the director, Mr. Fisher, was kind enough to have the system and departments explained by various departmental heads, all of whom were Filipinos. There I obtained a collection of the commercially important woods of the Philippines.

The annual carnival was in full swing and the exhibits of various industries were very informative. The festivities were very spirited, and several evenings were spent there. The Spanish dress of the older women was very quaint, with the mantilla and large comb in the hair.

For light divertisement, there was dancing at Santa Ana, advertised as the largest cabaret in the world with the finest dance music in the Orient.

One wanted to tarry longer in Manila, but ships have a habit of spending most of their time at sea rather than in port, and after five days we were again on our way—this time to Iloilo.

The weather became very warm, but not entirely uncomfortable. Sailing in the tropics, and especially at night, with the heavens covered with stars, and a moon creeping over low hills—tall trees silhouetted against the sky, and a placid sea—there is nothing like it. One didn't mind at all standing lookout watching the phosphorescent gleam of the water as the ship parted it.

In Iloilo the longshoremen were on a strike. They wanted a raise of fifty centavos a day from the wage of two pesos a day. After two days of enforced idleness, the "skipper" who had been giving vent to his wrath, weighed anchor and went on to Cebu where the Iloilo cargo was finally discharged. All we got in Iloilo was cholera anti-toxin, and a stowaway who became very downhearted when told that the ship was not going to San Francisco, just yet. The way he went at chipping rust on the forward deck showed his disappointment.

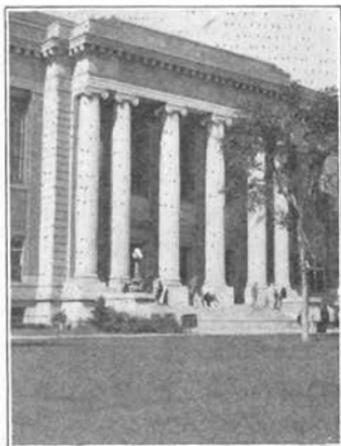
In Cebu, the remainder of the cargo from the States was discharged, and the loading of copra began. The one Sunday in port was spent in visiting the interior by bus—with a visit into the bamboo homes of the natives, cocoanut plantations, a mineral water swimming pool and other sights. The final event of the day was a ringside seat at a cock fight where, when the fight got going good, the spectators would jabber more excitedly and spit betel nut juice a little more often.

It was in Cebu that the first Christian mass in the Orient was celebrated in 1521 by Magellan's party. A cross was erected at this time, and part of it is now embedded in a large cross standing in a shrine in the Plaza Rizol. In the shrine, candles are burned continually. It was on the Island of Maktan across from Cebu that Magellan was killed while aiding the cause of a local chief. A large monument in his memory now stands on the site of the battle.

During the long stay in Cebu, the heat made it necessary to quench the thirst with cool San Miguel beer at the "Shamrock Bar" on the water front.

Completing the loading of copra in Cebu, the ship started for the States via Legaspi and Tabaco. The trip to the States was uneventful with the exception of several days when heavy seas swept clear over the boat deck damaging two of the life boats.

The cargo of copra and sugar was discharged in San Pedro and San Francisco. From there to Aberdeen, Washington, the ship went without cargo. In Aberdeen and British Columbia ports, lumber was loaded for the Orient. On April 17, 1931, four months after the start of the voyage, I paid off in Seattle, Washington, thoroughly satisfied that the time was well spent.



Entrance to The Main Library

PLAY-O-FINE CRINK-O-NOPE

By HARRY A. PETERSON, '29

PROGRESS is often associated with history, not always nor necessarily, yet at times the two are almost synonymous.

It was away back in 1748 that George Washington, erstwhile father of our country, fearful for the welfare and unity of the people of the land, wrote to Henry Lee concerning settlers who were then first venturing westward over the eastern mountains. "Open all the communication which nature has afforded between the Atlantic states and the western territory and encourage the use of them to the utmost . . . The ties of consanguinity, weakening every day, will soon be no bond at all and we shall be no more to the inhabitants of that country a few years hence than the British and the Spaniards are today."

Jumping to the present we find Washington's desire fulfilled. We do have communication facilities, far greater than he dreamed of, for in 1932, 32,800,000 telephones are in daily use linking six continents. Today any one of us is able to pick up a telephone and within a short space of time, talk to almost anyone we choose, to the Pope in the Vatican, to a friend on a ship at sea, to our business partner on a speeding express crossing the Canadian wilds, or to one's sweetheart on an air transport flying over New Mexico. That's progress of the first water and real history is being made through it, great history!

The Bell System, responsible for these conveniences, along with hundreds of others, with its personnel numbering some 350,000 people, its plant investment running to \$4,200,000,000 and having some 78,000,000 miles of copper wire strung about this country of ours, still impresses me, after three years time, with the realization of what a very small sprout, even as sprouts go, I, as an individual, am. That too, you will note is something after the manner of progress, if you get what I mean.

Now that the spell has been broken and the theme spoiled, we'll get down to the business of me and my shadow, otherwise job, but for this year just a shadow. What does a Forester do in a business so fundamentally electrical engineering, you ask. Is he a throw off, a sport in the breed such as an automobile salesman or a trumpeter in a jazz band would be? Well, perhaps. I'll leave it to you. Anyway, after joining up, I found I had a lot of things to learn, one of the first being to speak the language. You cannot get along with folks, I find, unless you can talk in their terms and telephony as an institution has an impressive dictionary all its own. Then I learned that it is O. K. for a white man to ride the cushions instead of the rods. A little later I learned that there are thousands of

people in this old world whose chief bent in life is to be disagreeable. This group I find is quite indispensable though, for by its blood and thunder complaints jobs are created for some of the rest of us and one has only to learn to work with and not on them as he'd often like to do to enjoy a fair amount of success. My first job was, plainly, to survey the tree situation as it affects the thousands of miles of wire and cables strung throughout that part of the country north of the Mason Dixon line and west of Pennsylvania, and to devise a means for improving it in an economical and altogether equitable manner. In other words "Satisfy the public." That turned out to be quite an assignment.

You men of the tall timber perhaps place little value on shade, ornamental, or woodlot trees. I'm convinced, however, that should you talk to a few hundred irate property owners whose trees have been wrongly treated (always wrongly) by the world's richest corporation, you would suffer a change of heart and come to appreciate that some peculiar forms of growth are being called trees these days, and that to each is attached an almost fabulous value. Bear in mind that this business has been going on since 1876 and that complaintants values have since become traditional. I think you would become determined, on certain especially dark and gloomy days, to see to it personally that each so called tree was treated in such a manner that you might have the satisfaction of saying to yourself, "There now, you such and such; find something to complain about on that job if you can."

You would, in the course of making small talk with these same property owners, learn that walnut trees draw lightning, and that you should plant one near the house for your own protection; that Locust beans make sow pigs have bigger litters; and that cottonwoods in creek bottoms promulgate love affairs. You would learn that if you touch a tree with an edged tool on the 22nd of February, the 14th of March, or the 9th of July, it will certainly die. Should you have a desire to kill hazel brush you would find the way to do it is to cut it before daylight on the 16th day after a full moon, having first soaked your hands in milk. You would most certainly be informed that if you drive a copper spike into the heart of a tree it will be poisoned and will promptly cease its struggle towards the sun. You would learn to know people personally who have followed these maxims and numerous others for years with unflinching success, and thereafter you would be able to justify all things, even witches and a Hex on the house.

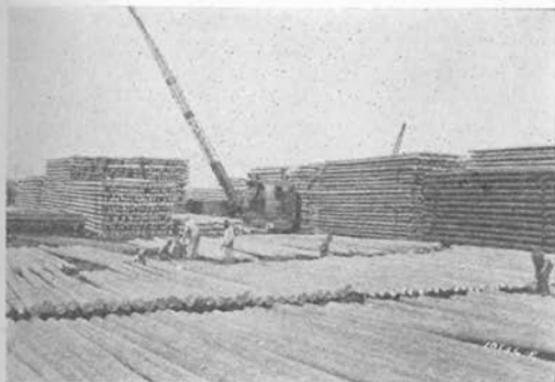
I have learned that Van Alsten has peers when it comes to a flannel-mouth vocabulary (with due reverence for "Vans" ability). I know that all the guns in this world are not in the hands of the Capone mob or on the hips of cow-punchers or the wild men of Montana, Saskatchewan, Alaska, or other nether parts of hinterland. I have seen specimens elsewhere at sufficiently close range for practical identification and have, thereafter, at times, left the particular locality with considerable speed.

Sometime in the course of acquainting myself with the above facts, all of which I now know thoroughly, some work was done; a book has been written, a course of training in the care of trees has been drawn up and made effective, and I became, what I had hopes of never being, an instructor. Oddly enough, I liked it. That is past all comprehension of progress, you will agree. Yet some has been made, I think, progress I mean. The Long Lines Department of the American Telephone and Telegraph Company has become tree conscious. We know how a tree grows, how it acts and reacts, what is good for it, and what is harmful to it. We have been dispensing our knowledge, of this subject, gratis to the public for the past two years, but strangely, we find John Public remarkably hard to sell even at that price. Dead and dangerous trees have been catalogued for removal or strengthening. Valuable trees are being transplanted, and new ones replace some of those necessarily removed. Right-of-way through timbered stretches is being cut under improved methods. Slash disposal and other fire prevention measures have been taught and enacted in connection with this work. Brush must be kept at a minimum in the cleared areas and experiments are now in progress to determine the most efficient and economical means of doing this.

Outside of the jobs attached to the above, a Forester with the Telephone Company plays the role of a Line Inspector. Do you know, by the way, that the Bell System used 600,000 poles and 1,800,000 crossarms last year, mostly in replacement work? I was going to tell you I had put them up but I guess that's a bit thick. In addition your Forester passes for an electrolysis engineer, inductive coordination, open wire and cable maintenance authority, with special emphasis on the authority, a designer of tools and motor equipment at odd times, or he just works on anything no one else wants to do. As Amos would say, "Ain't that sumpin'?"

Living in the city is not so good from my standpoint, but trips afield are great and perhaps we'll so progress, in the near future, in this business of bringing the world to our fingertips, as to bring about a decentralization of business such that we can live almost where we choose. It hardly expresses my feelings to say that I'm mighty proud of the company I work for and its accomplishments. Think for a minute what a change the developments of the Telephone industry have effected in our daily lives. Think of the predicament you you might have been in, and for that matter might still be in, but for the ever present telephone. When you think of that, think of all that lies behind your telephone and you've thought of "Play-O-Fine Crink-O-Nope." That's the equivalent of perfectly good English scrambled up in the manner used in trans-oceanic telephony, to obviate the possibility of eavesdroppers listening in on private conversation, when unscrambled, reads "The Telephone Company," of which I am one-three hundred and fifty thousandth part.

POTENTIALITIES OF WOOD PRESERVATION

J. D. BURNES, 17, *Creosoting Engineer**A modern pole yard.*

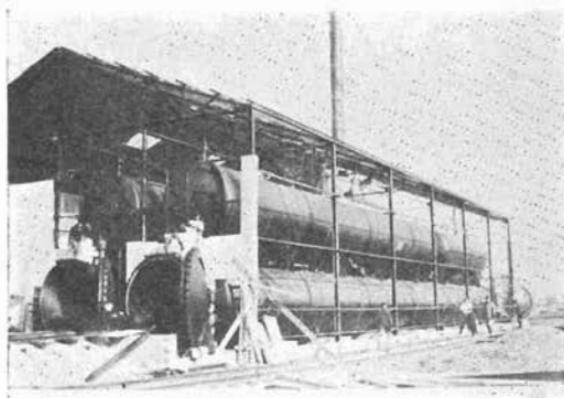
ANYONE who has been intimately connected with the Wood Preservation Industry, and who is familiar with the decided changes which have occurred in that industry during the last quarter century cannot but wonder what changes the next twenty-five years will bring in our ideas of preserving wood, and what progress will be

made in the industry. In this paper the writer will attempt to crystallize these questions into ideas which indicate some of the problems that may influence the industry during the next few years.

In the last twenty-five years the preservation of wood has been confined mainly to its protection against decay and destruction by insects. It seems inevitable that future demands must broaden the field of usefulness for a treatment which will offer more protection. On the surface it would seem entirely feasible to treat lumber with the idea of making it fireproof. The advantages arising from such material would be numerous with the result that the use of wood products as structural material would be stimulated. Wood shingles are often given as the cause of roof fires, and houses having wood shingle roofs take higher insurance rates. A fire-proofed wood shingle which could be marketed economically would have several advantages over the non-fire-proofed shingle.

During building construction, disastrous fires sometimes occur in the scaffolding, thus causing serious loss. Ordinances in some cities require that fire-proofed wood be used for scaffolding. It would seem inevitable that an economical fire-proofed wood could be readily marketed for wood construction projects, thus rendering a real service to the community by reducing the fire hazard. The fire-proofing of wall boards and other similar material also offers opportunities for plants equipped to give such treatment.

The problem of processing wood to prevent the changing of its dimensions is also one that the treating plant will do well to take up for study and experiment. There is scarcely a single use of wood that is not hampered to some extent by the volume change in the material and the checking of the wood which results therefrom.



Modern pressure retorts.

Certain types of wood used for floors, which require a waxed surface, could be treated with the wax previous to installation, and thus do away with the continuous waxing which material of this kind requires.

Treatments of a commercial nature which would render woods proof against corrosive materials, such as strong acids and alkalis, would be of great value in those industries where it is necessary to handle these strong chemicals.

Treatment which would harden wood and make it more resistant to mechanical wear would render a more efficient service wherever wood is used for floors and decking purposes. It is not beyond the realm of possibility to imagine that wood so treated might find a use in the construction of noiseless gears, the demand for which is growing in many lines of industry.

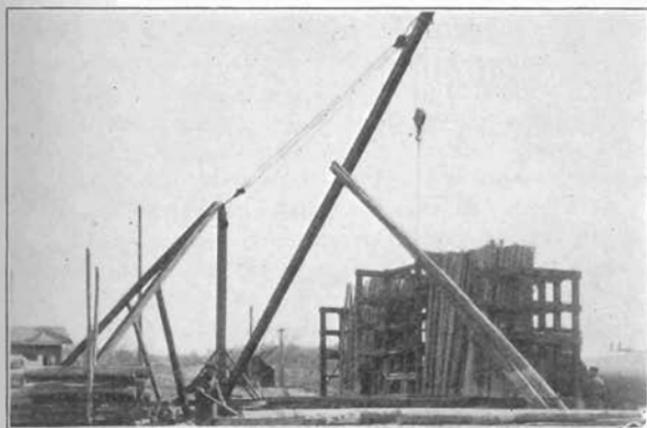
Treatments which would make wood water-proof would increase its effectiveness when used in contact with moisture by adding to it stiffness, strength and buoyancy. Water-proofed wood will also give more efficient service under all conditions where condensation of moisture has to be considered.

It seems quite possible that a treatment which would protect wood against rodents could be used economically in farm buildings, grain bins and elevators.

The foregoing uses of treated materials are a few which would extend the field of chemical protection beyond those of fungus and insect destruction, the commonly accepted use of present treatments.

Another problem which will confront the Wood Preserving Industry in the future is essentially one of education and marketing. It is one of bridging the gap between the treating companies and the large number of potential users, each of whom require small amounts of treated material.

At present most of the preserved material is disposed of to relatively few consumers, who do not usually purchase smaller quantities than carload lots. There is no satisfactory way in which the farmer or home builder can, through the lumber yard, purchase treated lumber.



Modern open tank treatment.

turing plant are as great in proportion as they are in the public utility, highway and railroad construction field.

The process of evolving a given treatment for a given length of service is an extremely complicated one which involves many factors, such as effect of climate on preservative dissipation, and on fungus growth, amount of rainfall, type of structure, etc.

A thorough study of the living habits of fungi in the presence of toxic materials and their reaction to various amounts of preservative is also necessary before intelligent answers can be given to the demand for a treatment sufficient to last a specified time under given service conditions.

The problem of finding cleaner, cheaper and more efficient preservatives must also be studied in order to meet the more exacting requirements of the future users of treated wood.

In stating these problems it has been my intention to emphasize the services which treated products might render to potential consumers rather than the problems of plant management and operation. At the present time some of these problems may appear to be impossible of solution, and work on them may seem like a waste of good time and money, yet it should be borne in mind that much of our efficiency and progress in industry today is founded on the impossibilities of yesterday.

It might be said that lack of demand for treated material on the part of this type of user is probably responsible for the presence of this gap, but the fact remains that the economies resulting from the use of treated lumber about the home, farm and small manufact-

THE DEVELOPMENT OF THE DUKE FOREST

By HUGO J. PAWEK, '30

THE NEED of a demonstration forest in the Piedmont region has long been felt. At Duke University, Durham, North Carolina, such a unit is now in the process of development. At some time in the near future, a graduate school of forestry will be established in the University. The work to date has been centered around the development of approximately five thousand acres of land as a demonstration and research area and for the purpose of organizing a forest laboratory for prospective students.

Late in 1930, Dr. C. F. Korstian, Senior Silviculturist at the Appalachian Forest Experiment Station, accepted the position of Director of the Duke Forest. In January, 1931, Mr. William Maughan (Minn. '25) was selected from the staff of the Yale School of Forestry as Assistant Director. Shortly after, with the aid of two field assistants, Mr. Maughan began an intensive survey of the resources of the Forest in order that a basis for future work might be established.

The survey consisted of running strips through the area at intervals of three hundred feet so that type boundaries might be established. Age, growth, and density of each stand was determined and approximately 11% of all trees over 1.6 inches in diameter at breast height were tallied. Total and merchantable heights were taken arbitrarily from the tree nearest the end of every two hundred

Because of numerous and often prolonged interruptions due to the press of other important work, this task was not completed until last fall. Compilation of the data began soon after. The method employed, being somewhat detailed, has consumed considerable time to date and is not yet complete for the whole Forest.

In working up the data standard procedure for intensive surveys was employed. That is, stand tables were made for each stand and then stock tables based upon volume tables for species from this or similar regions. Stock tables have been made for three units of volume, namely, cubic foot, board foot, and cord. Following the completion of the stock tables, the areas of individual stands were determined by planimeter, and stand volumes were computed. The final steps included summarizing volumes by all three units for stands of similar composition and age, for stands of the same composition, and for species. A system of compartments is planned whereby the major divisions may be divided into smaller and more workable units. In this event, totals by the above mentioned classifications may be computed by grouping the stock tables for the stands within each compartment.

The Duke Forest is located regionally on the lower limits of the Piedmont Plateau and contains many variations in timber types and

in composition of individual stands. The forest types may be divided into two quite distinct groups, namely, uplands and bottomlands. In the bottoms along streams and branches two forest types occur. The first, and perhaps most important, is the yellow poplar (*Liriodendron tulipifera*), red gum (*Liquidambar styraciflua*) type. In this type there are many variations in composition due presumably to conditions which might have favored one or a group of species at the time of establishment. Associated species are willow oak (*Quercus phellos*), sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), American elm (*Ulmus americana*), winged elm (*Ulmus alata*), white ash (*Fraxinus americana*), with an occasional white oak (*Quercus alba*), and scattered pines. Often the type may contain sufficient yellow poplar to be classed as a pure stand of even age, but as a rule a large variety of species of uneven age occur.

The sycamore-river birch type, although not as common as the yellow poplar-red gum type is often found along the larger streams. Here it occurs as a fringe at the immediate banks of the stream with the yellow poplar-red gum type occupying the remaining bottom. Associated species are similar to those in the yellow poplar-red gum type.

The uplands may be divided into two quite dissimilar groups. The first of these has been cultivated at one time or another and is stocked with pine. Loblolly pine (*Pinus taeda*) and shortleaf pine (*Pinus echinata*), either in pure stands or in mixtures, are found in practically all cases. These stands are seldom found fully stocked and as a rule are even aged unless heavy selective cuttings for fuel or tobacco wood have been made. Red gum, eastern red cedar (*Juniperus virginiana*), red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), dogwood (*Cornus florida*), and occasional oaks and hickories occur in varying proportions and densities as an understory in these stands.

The second of the upland groups occurs on lands which, because of poor soil or relative difficulty in clearing them, have never been used for agricultural purposes. Rocky ridges and steep hillsides and sometimes even the more fertile lands have never been cleared for the growing of farm crops. This group may be classed under three more specific heads: first, shortleaf pine-oak; second loblolly pine-oak; and third pure hardwoods. Due to recent changes suggested by a committee of the Society of American Foresters, type nomenclature has been simplified. As generic names are not to be used alone, a binomial classification results. At first there was some doubt as to whether the types existing in the Duke Forest would fit into such a scheme of classification. However, it has been found that the types existing here are only distinct local variations of the more general types outlined for the region as a whole and therefore the Society's type classification will be adhered to.

In the pine-hardwood and pure hardwood stands the species most commonly found are the pines, hickories, oaks, yellow poplar,

eastern red cedar, red gum, red maple, persimmon (*Diospyros virginiana*), white ash, dogwood, sourwood (*Oxydendrum arboreum*), black walnut (*Juglans nigra*), and others.

In the proper management of a forest area which is as varying in nature as the one at hand, many problems arise which require immediate attention. When the land comprising the Duke Forest was acquired a part of it was in the form of farm land. Much of this farm land is still being cultivated for the production of tobacco, cotton, and corn. Some open land exists which is not producing either timber or farm crops. Old fields which have recently been abandoned require planting because many of them are so large that natural seeding cannot be expected. A planting program extending over a period of six or eight years has been outlined and it is planned that at the end of this period all open lands will have been stocked. In January and February, 1931 a considerable area was planted. These early plantations were set out primarily for experimental purposes and a number of species foreign to this region were used. This year, however, only native species were planted.

Due to the relatively low cost of planting, the advisability of waiting for natural re-seeding of open areas is questionable. The greater percentage of the stock has been set out as 1-0 stock. An unlimited supply of labor is available at twenty cents an hour. With exceptionally low costs for labor and stock it is possible to plant for less than \$5.00 per acre.

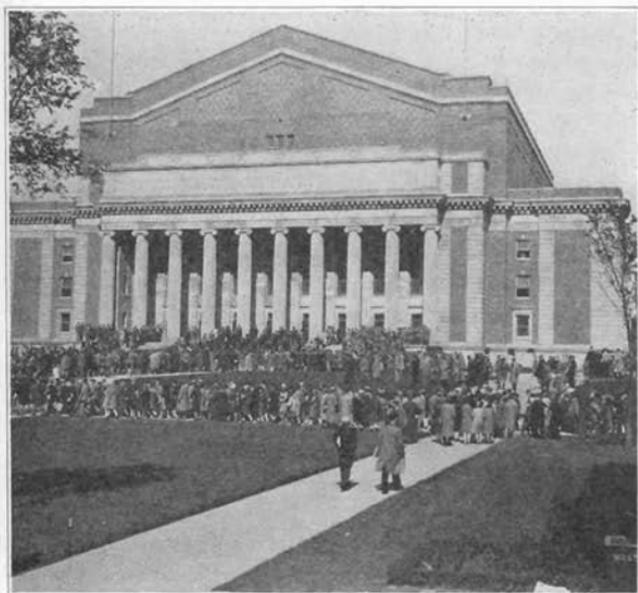
There are two seasons during the year in which the fire problem must be given primary attention. There is a period of high fire hazard in the early spring before the new leaves develop and another in the fall after they have fallen. Open fields, which are usually covered with broom sedge, are the most dangerous fire hazards. A unique condition exists on one division of the Duke Forest in that it consists of separated units, each being irregular in shape due to the difficulty in acquiring land in square blocks and to the prevailing system of land subdivision. As a result there are numerous adjoining holdings owned or tenanted by people, who, as a rule, give little attention to fire prevention and suppression. On the other hand, due to an extensive system of roads, all parts of the Forest are easily accessible by automobile. Although the state and county are co-operating to a satisfactory degree at present, it has been found desirable by the Duke Forest staff to develop a supplementary organization within the Department.

Pathological and entomological problems have been given relatively little attention to date. However, because of the damage caused by bark beetles in the summer, when attracted by freshly cut pine, all pine cuttings in the Duke Forest have been confined to the winter months. Perhaps the most common rot of pine heartwood is *Trametes pini* causing red heart in over-mature stands. In the hardwood stands, the oaks are also subject to heart and sap rots. In marking wood to be used for curing tobacco and for fuel, infected

trees are removed first with the idea of leaving the sound and more valuable timber until a time when economic conditions warrant cutting them.

Some attention has been given to the control of erosion in the Forest. Although there is little of it at present, some areas have started to erode due either to the removal of top soil or to washes started in old fields. Only one area has been treated for control thus far. Here the top soil had been removed for road construction and later the area was planted with loblolly pine and black locust (*Robinia pseudoacacia*). Severe sheet erosion had started followed by the formation of pronounced gullies. Slash from cleanings on the area was broken up finely and tightly packed into check dams built across the gullies. The brush was weighted down by rocks or soil. Brush cut into small pieces was scattered over the upper reaches of the area and side-hill ditches or dykes were constructed to carry off the water less rapidly.

In the near future numerous sample plots are to be established and initial steps have already been taken to organize various projects in research. A study is being conducted at present to determine the correlation, if any, between soil acidity and forest cover. Also some time has been devoted by the Director and the writer to a study of the physico-chemical properties of leaf sap to determine their relation to drought and cold resistance in certain native tree species.



Students entering Northrup Memorial Auditorium for Convocation Assembly.

A LITTLE FIRE PHILOSOPHY FROM "THE GREAT DANÉ"

By G. K. FENGER, '23

Huron National Forest

THE PLAN to make this issue of the Gopher Peavey one of progress is a mighty fine idea. I am sure it will be accepted with enthusiasm by the student body and not least by us old grads. But your request for a contribution is a large order, and I am confident that the student-faculty committee who made the suggestions should be charged with gross neglect of duty, court martialed, and shot at sunrise for suggesting a contribution from myself.

Progress—can we say we are making progress? First thought usually results in a pat on the back, but after due reflection, progress becomes a rather elusive accomplishment. However, from the time of the birth of forestry in our country to the present date, the span of time reveals many an improvement, and how many more are not in process of development today. Progress means growth; growth means progress; and man's efforts well directed or otherwise are always upward and onwards toward perfection or a still greater ideal. (Some ambition! Ed.)

Let's take fire detection for instance. It was not many years ago when the ranger on a great many districts climbed up a tree to look for smokes or a rickety wooden tower that promised a wooden overcoat every time the wind blew. It is a long step from those facilities to the modern steel tower, which within a great many years, no doubt, will be provided with an elevator operated from a button switch.

In these days of depression, finance is indeed an all important subject in every forester's work plan, and not least is the question of how to finance the personnel necessary to provide detection on the fire towers and also a small skeleton unit as ground firemen, throughout a fire season which normally runs for seven months, with funds sufficient to pay these men from four to five months. Were it not for cooperation from the weatherman, every one of us would be wearing a long face at meal time, and that always calls for unfavorable comment from the feminine side of the household. Normally, however, there are periods of shorter or longer length throughout a fire season that require no detection or suppression organization. Advantage must be taken of these periods to appear successfully on the right side of the ledger at the close of the financial year.

The determination of the relative fire hazard, not alone in the morning, but also what it will be between noon and four o'clock, usually the most dangerous part of the day, is simple enough. But to forecast it at a time when you are ready to send your men out to

work, is much more difficult. Some work in this field has been done, and will continue to be done on this forest this next year.

Drawing from the experiences gained, we have found it desirable to take relative humidity readings at every hour during the day. Plating these and drawing our curves, we secure an accurate record of the atmospheric tendencies. If you associate therewith the precipitation and the wind velocity, the basis for forecasting is still better.

Based on the best available data obtainable, hazard has been classified in accordance with relative humidity as follows:

Extreme	-	50 or under
High	- -	50 to 60
Moderate	-	60 to 70
Low	- - -	70 or over

Considering the records obtained between April 1 and October 21 last year, the analysis shows fifty-one days with a relative humidity below 60 at 8 a. m. We had 101 days when the reading at the same time registered between 60 and 70. The two o'clock readings, however, told us that we had 132 days with 60 or less, and 161 days with relative humidity between 60 and 70.

Of the total number of fires on one district, 39% started when the relative humidity at 8 o'clock was below 60, 33% with the relative humidity between 60 and 70, and 28% with the relative humidity above 70. From this it will be seen that too much dependence cannot be placed on the 8 o'clock reading.

With respect to the acreage burned, the average per fire starting when the humidity was below 60 at 8 a. m. was 40 acres; whereas the average of those starting with the humidity between 60 and 70 was only 11 acres. Only one acre per fire was burned over when the humidity was above 70.

And all of this falls back upon our old friend, the sling psychrometer. That it forms a valuable addition to equipment for fire control is assured, and I am sure that after another season's experience we will have secured more reliable data on the behavior of weather in relation to fire hazard and fires.

TECHNICAL CONTROL IN THE PAPER MILL

By DONALD PRICE, '33

UNTIL twenty years ago practical experience was the only requirement in the manufacture of newsprint paper. The industry was founded on a producer's market. Today, the industry is based on a consumer's market, and in order to meet competition the manufacturer must meet these demands. This changed market has made it necessary for the producer to search for new methods to attract customers; and to keep their good faith he must have a uniform product. The uniformity necessary can be gained only by rigid control. Every year some new methods for paper mill control are added to the literature by technically trained men.

The space at our disposal is too limited to adequately mention all the methods which are used in the up-to-date paper mill in order that a uniform product may be obtained. The moisture content of newsprint is of prime importance to the publisher and manufacturer, and will be discussed first. The manufacturer wishes to sell as much water in his paper as possible without marring the appearance of the paper. Standard newsprint should contain eight per cent moisture; and if it is less than this, the paper is too dry to handle with the speed required and steam is being used up in drying that could be used elsewhere in the mill. Moisture tests are usually run every two or three hours to check up on the backtender who regulates the drying of the paper. Samples are taken from the sheet and dried oven dry and the moisture content computed. A variance of one per cent in the moisture content will make a perceptible difference in the finish; and if this variance is on the wet side, will accentuate all the dirt present and will make the sheet second grade.

Moisture tests are also made on the wet end of the machine at the various presses to see whether each press is doing its assigned amount of water removal, and that the drying rolls do not have to work at high back pressures to dry the newsprint. The paper is delivered from the presses to the dryers at thirty-two per cent dry weight of pulp. This percentage has been found to be the optimum, as greater dryness would be obtained only by crushing the formation of the paper mat and thus destroying its strength. The moisture samples are taken at various distances from the edge of the sheet so that a true cross section of moisture content in the sheet is evident.

The weight of the paper is controlled the most accurately of any control measure; but this is performed by the paper machine crew, and is fairly well taken care of with an ordinary paper scale and tearing board. Ordinarily no other supervision is made.

Paper strength has always been recorded as the amount of pressure per square inch that is required to break the web. This is

done with a Mullen Strength Tester. Newsprint paper to be used on present day printing presses requires an average test of ten pounds per square inch for a single thickness of newsprint. Recent developments have shown that there are more accurate criteria of paper strength than the Mullen Tester; such as the shearing tester, the folding machine, and the tensile strength tester, but as yet, very few publishers specifically require these tests.

Newsprint, contrary to the opinion of the layman, has a distinct color and this color must be the same at all times. A standard color was formerly obtained by matching samples, but is now done by the use of a colorimeter. The finish is controlled by reflectometers and opacimeters. A smooth finish must be such that the ink will be absorbed sufficiently to leave a clear impression, but will not blot or smear.

In hourly tests on modern paper machines for over a period of a year the author found that the thickness of the paper seldom varied by more than fifteen ten-thousandths of an inch from the yearly average. Variations as soon as detected were reported and paper machines were immediately adjusted to bring the thickness back to the standard. The average thickness of four sheets of standard newsprint is .0135 inch. Government standards have recently lowered this to .0125 inch.

One of the minor duties often attached to the paper testing laboratories is that of inspection of the shipping rolls to prevent unsatisfactory rolls from being shipped.

Sulphite Control At the Mill

In the manufacture of newsprint often times the sulphite pulp necessary is shipped or pumped from some other source, and very little control work is done on it. Where sulphite is shipped into the mill, the baled pulp is tested for moisture content by a standard procedure adopted by all mills. Disputes arising from different determinations of moisture content are settled by commercial chemists. The unbleached sulphite used in newsprint is periodically tested for alpha cellulose, fiber length, color, and cleanliness. In testing for cleanliness test sheets are made and all shives or foreign particles are counted. Each mill sets up a standard for the allowable number of shives. One mill has set the count at 13,000 per ton of pulp. This was only a reference standard and varied with the grade of sulphite used.

The chemical pulp is hydrated in beaters which have their density controlled both by sampling and electrical devices regulating flow. Density remains constant at five per cent solid weight. Freeness tests are run every thirty minutes to prevent the character of the beaten pulp from changing without notice. The hydrogen ion concentration is controlled by colorimetric determinations with an indicator against a standard solution. Variations in Ph are kept at a minimum so that the best use can be made of the alum and rosin size added to the

beaters without their addition being injurious to the pulp or containers. The freeness of the sulphite fibers is controlled by Jordaning with a stone plug. The Jordan operation being regulated to obtain different lengths of fibers and varying degrees of hydration.

The Groundwood Pulp

The wood used in the making of mechanical pulp is controlled from the time it enters the mill until it is pumped to the paper machines. The amount of soaking that gives the best results for barking is studied. This is of especial importance as the bolts must remain firm without shiving at the ends. It has been found that spruce (*Picea rubra*) and balsam (*Abies balsamea*) give better fibre quality if barked bolts are allowed to stand in heated pools until ground. The temperature of the water is kept at about 60 degrees Fahrenheit.

In the grinders the pulp is kept at 60 degrees centigrade by the manipulation of showers which cool the pulp stones. This temperature must be kept fairly constant to control fiber quality, and to prevent the stone from wearing out as it will do in a short time if the temperature is allowed to fluctuate over a large range.

The pulp from each grinder is tested for freeness hourly so that the makeup of the pulp in the stock ditches can be kept constant. To control the fiber quality, each grinder is kept at a specific freeness by burring the stone. On some of the artificial stones the freeness tests run as high as 126 and as low as 40; each stone supplying a certain type of fiber to the mixture. Freeness has been defined as the amount of water that will flow through a certain amount of stock in a specified time. The larger the amount of water that flows through the stock the freer the stock is; and, if very little water flows through the stock during this time interval, the stock is said to be slow. The density of the stock ditches is tested every two hours, and the consistency is kept between one and two per cent fiber content.

A part of the groundwood mill routine control work is also testing the efficiency of the deckers, save-alls, and thickeners, all of which must be cleaned if they do not deliver stock of a uniformly high consistency of around four and one-half per cent of dry pulp.

All of the above mentioned control measures are going on constantly in the mill, and must be performed all the time to keep the product up to standard.

At various times during the year special surveys are made. One is to find out the amount of the white water being wasted and if this can be efficiently recovered to prevent an excess loss of stock. White water is the water that has been filtered through screens after being used in the paper making process. It contains the fibers that are too fine to be held in the paper mat. Special weirs are constructed at the sewage outlets, and the average flow is calculated. The author ran such a survey for a period of two weeks. Hourly samples were made at all weirs; and these samples were then composited, in which the amount of fiber in the water being determined. The average

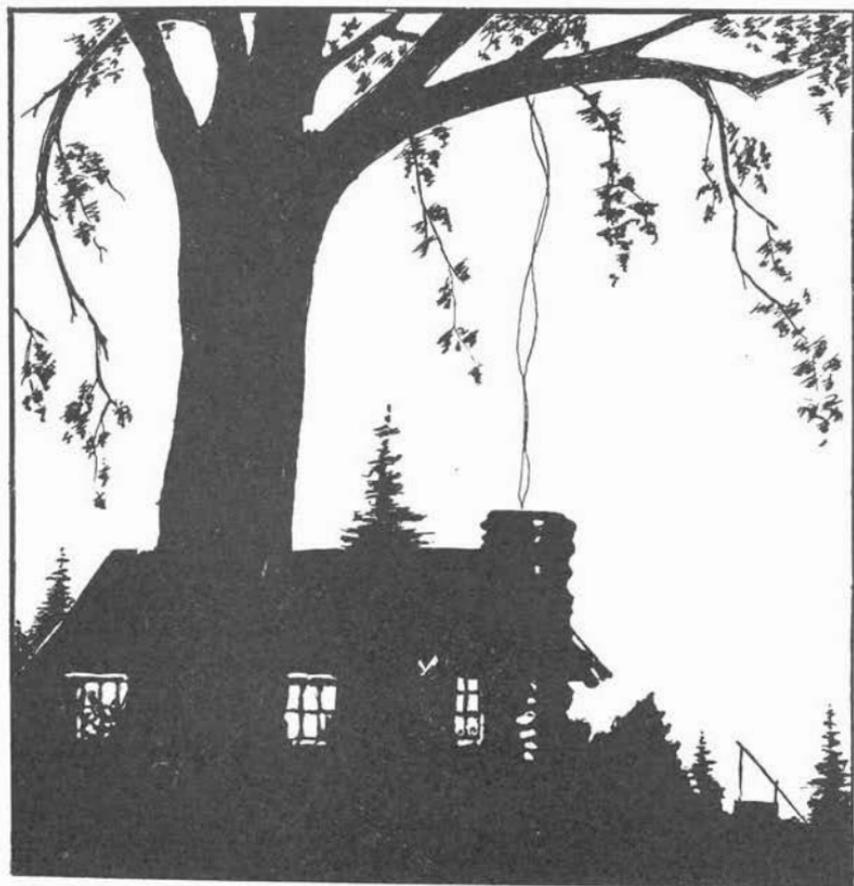
loss of water during the period of the test was two hundred and twenty gallons per minute throughout the twenty-four hours. Of this amount .028 per cent by weight was solid material which might have been reclaimed. This solid content entailed a loss of fourteen dollars and nineteen cents a day when figured on the basis of twenty-six dollars per ton of groundwood. Practically all of the fiber loss was in ground wood as the longer fibered sulphite was screened and reused. This survey did not account for all the shrinkage of wood fiber as evidenced by the tonnage shipped, but time was not available to make an exhaustive survey of all the sources of shrinkage. During the survey a complete map of the stock piping system was laid out and studied, to discover whether it would be possible to lower the solid content of the effluent by rerouting it through the save-all system. It was found that some stock could be regained by reusing the white water from the paper machines which had a solid content of .083 per cent, and allowing more of the white water from the deckers to be wasted as this only had .022 per cent of solid content.

A grinder investigation was also undertaken to determine the efficiency of the grinders. Freeness tests were run to show the relative slowness of the different samples of stock. Test sheets were then made in duplicate. One of the test sheets was tested for strength and the other was filed for future comparison. Very little difference in strength was noted. The average strength as reported in per cent of the Mullen Strength Test to basis weight was 24.1 per cent with a spread of five per cent in the individual grinder averages. As the equipment was not available no tests were run as to tensile strength.

To check up on the efficiency of the beaters, beater surveys are advisable. The author was fortunate enough to have charge of one of these surveys. The assignment was to determine if the maximum strength was being obtained in the beaters, to find out the average beating time, and to investigate the relative efficiencies of the various beaters. As the tests were run over a series of days, several different cooks of sulphite were tested, and thus, during the progress of the survey the relative strength of the different cooks was obtained. The loadings and dumpings of all the beaters were recorded. Two tests a day were run on each beater; samples being taken from the beaters at fifteen minute intervals and test sheets made. The density and freeness were also determined. The density was found to remain constant throughout the survey within one per cent to five per cent consistency. The per cent of Mullen strength to basis weight values were plotted with beating time as the independent variable, and curves balanced among the points. Smooth parabolic curves were obtained which did not taper off during the effective beater time. About twenty minutes of the total beater time (one hundred thirty-six minutes) was devoted to filling and dumping. The pulp had not attained its maximum strength during the effective beating time, but had gone beyond the point where it increased rapidly. Strength was

found to be impaired if the beating time ran over one hundred and sixty minutes.

In this article it has been the intention of the writer to point out only a few of the points in the process of manufacturing newsprint where control work is necessary, and where it increases the general efficiency of the mill to a much greater extent than was thought possible twenty years ago. Only the newsprint process was dealt with as that is the only paper making process with which the writer was intimately connected. All figures quoted in this article are actual results obtained under mill conditions, and although they are not ideal, they give a general understanding of the various steps in the paper making process. Control work is being recognized more and more in the paper industry as the profit margin decreases, and mills realize the need for scientific methods to lessen their mill loss.



"My Cabin Humble"

THE NIGHT AND THE NEW TOMORROW

*I'm sitting by my cabin humble,
Snuggly built from wall to wall,
Listening to the steady rumble
Of a mountain waterfall.*

*Long 'ere since, the day has faded
And anon, the moon doth rise,
Lighting all, save places shaded,
By its soft glow from the skies.*

*High above the mountain fastness
Rides the moon upon a sea,
Mighty in its flawless vastness
Of stars that sparkle endlessly.*

*A soft breeze wafts from up the canyon,
Smoothly plays upon my face,
Wanders on in sheer abandon
Here and there and into space.*

*Voices of the night are speaking—
Night birds, wood folk, Nature's all
I hear the lofty snags a' creaking—
Hear the splashing waterfall.*

*With such a night and such a setting,
Lives there one so deep in sorrow—
Who'd deem it hard, the past forgetting
And think naught of the new tomorrow?*

FRANK H. ANDERSON, '31

OUR BLOOMIN' BLOODY CAT

*Two Englishmen from o'er the sea
Sat on a forest log.
A greener pair there ne'er will be
To tread our native sod.
They called one Bloomin' Willie and the other
Bloody Matt;
But they'll ne'er forget the day they met
Our bloody bloomin' cat.*

*Now Willie was a man of note
To hear him blow and spout.
He'd been in lands so far remote—
All beasts he knew about;
But ne'er will he forget the day when
On a log he sat
And made his first acquaintance with
Our bloody bloomin' cat.*

*"What ho!" quoth Bloomin' Willie,
"W'at the bloomin, 'ell is that?"
His pal said, "Don't be silly,
'Tis but a bloody cat."
Now Matt and Willie gazed upon a
Thing they'd never seen
As they saw our stripped pussy strolling
Through the forest green.*

*This bloody bloomin' kitty
Headed straightway toward the pair.
A sight she was, so pretty
And so cute and debonair
That Matt did think it nice to hear the
Bloody pussy purr,
So he gently stroked his hand across
Her bloody, bloomin' fur.*

*Resentment filled our bloomin' cat
At such uncalled distraction.
She wheeled about in nothing flat
And cleared the deck for action.
Her tail went up and a putrid oil,
Or so the story goes,
Had caught our Bloomin' Willie
Beneath his bloomin' nose.*

*The pair then soon did fast disperse,
 From that foulish atmosphere.
 That bloomin' cat they sure did curse,
 In accents loud and clear.
 Now one was Bloomin' Willie and the other
 Bloody Matt,
 But they'll ne'er forget the day they met
 Our bloomin, bloody cat.*

Frank "Porky" Anderson, '31

PITY THE ANT

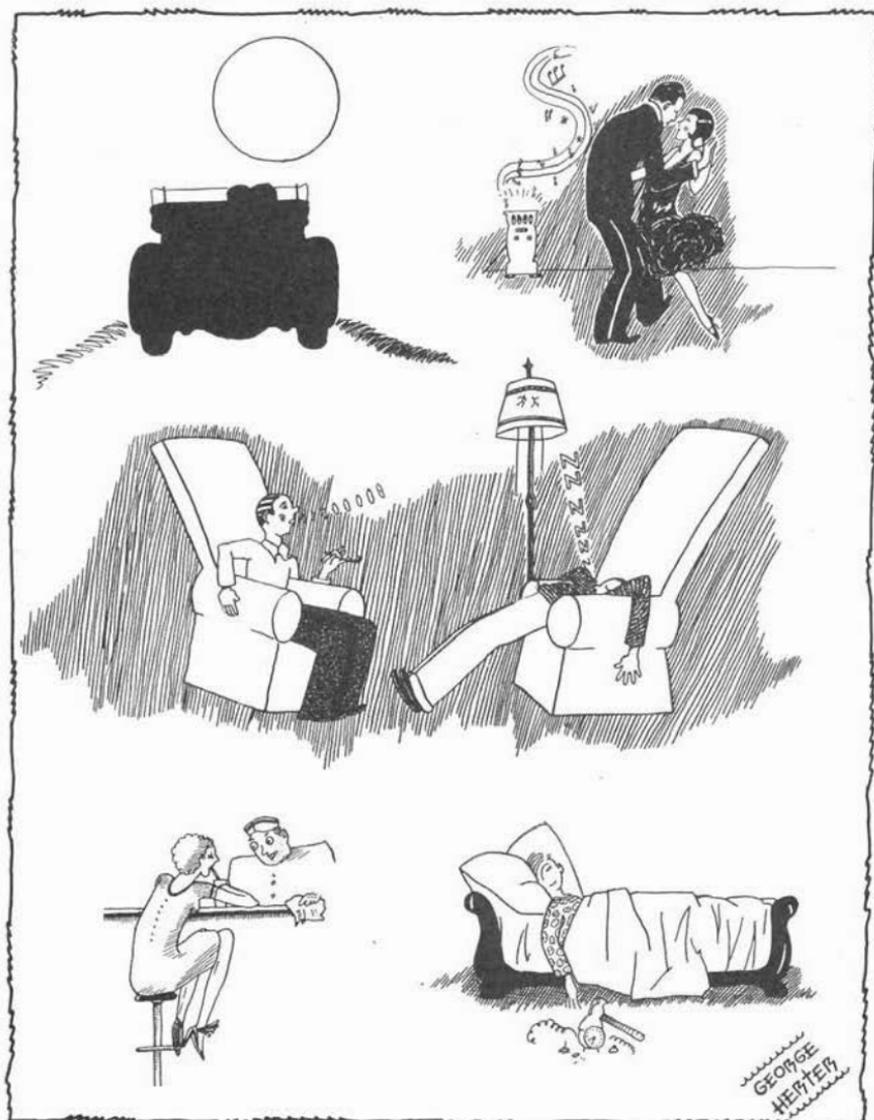
*Pity the Ant who toils all day,
 Giving no time to carefree play:
 Driving, striving, ambitious, vain—
 His spirit dulled by lust for gain.
 Hurry, scurry, grasp and borrow—
 Forget Life—live for tomorrow!*

*Ah, halt your labors if you will
 And let us seek life's greater thrill.
 Lie on the hilltop, 'next the sky,
 And let the lazy days drift by.
 And watch the chipmunks at their play—
 With not a thought of fleeting day.*

*Peek into such mysteries deep
 As cozy nests, where wee-things cheep.
 Gossamer air-things drifting by—
 Wobbly bluebirds learning to fly.
 Smell the fragrant new-blown rose—
 Could any ant make one of those?*

*Take your Progress and Ambition—
 This life needs no false ignition.
 For all the wealth of worldly strife
 I would not trade this simple life:
 No, not one day, or hour, in June,
 When all of nature is in tune!*

—IRWIN PUPHAL, '30



COURTESY OF SKI-U-MAH

"HOW DO WE STUDY!"

*When you're necking 'neath the silvery moon,
 Or dancing on the floor,
 Or dreaming evenings in your room
 To the roommate's lusty snore,
 When eyeing up some dizzy blonde
 In the campus soda shop,
 Or floating in the limpid pond
 Where Morpheus sets the clock,
 One wonders what an education's for.*

—FRANK H. ANDERSON



L. E. PETERSON, '31

ITASCA THE BEAUTIFUL

LYALL E. PETERSON, '31

(1931 Pack Prize Essay Winner)

*'And when the fury of the fiend was spent
Burned out the fullness of its torrid wrath,
It left behind a devastated path—
To human carelessness—a monument.'*

—DOUGLAS MALLOCK

ACHEERY sun gazes fearlessly down at the busy staccato of a racing city. Pedestrians dodging and cursing, brakes squealing and slipping, horns honking and braying, street cars rattling and clanging—all humanity in a race—for what?

Two pale gentlemen, slightly grey and shop-worn, weave their way down the sidewalk to a luxurious sedan, and sigh simultaneously as they settle themselves in its rich upholstery. A soft purr, a released clutch, and the car shoots out thru a tiny aperture between two surging hordes of pedestrians.

The skilfully driven sedan idles thru a suburb and out onto the endless, smooth highway. A slight pressure on the accelerator and the cars purrs contentedly as it zooms past the inevitable sign boards, the green fields, the gorgeous oil stations, and the scrubby patches of oak.

The day grows older and the sun hotter—a heat which serves well to accentuate the distasteful odors coming from Cloquet's paper mill. Stench or no stench, man's hunger must be appeased, and noon finds the two office-worn gentlemen chatting amiably in a Cloquet lunch room.

"Well, well! So this is Cloquet, the renowned lumber town. Believe me, John, they sure must use plenty of wood here—especially cordwood. From all appearances around this country, I can't imagine where they would ever get any timber. Say, wasn't there a fire here in 1918?"

John: "What? A fire! Emphatically yes! The Cloquet and Moose lake fire, which burned over 200,000 acres and took something over 400 lives. Surely you remember that, George? And then there was the great Hinckley fire of 1894, which took in about 350,000 acres, and also cost over 400 lives, not to mention millions of dollars.

"You go over to the Forest Service office in St. Paul sometime, George, and they'll give you plenty of information about fires. Indeed! Minnesota has received more than her quota. Do you know

that in the past decade, this state has averaged nearly 1,000 forest fires a year at a total annual cost of \$3,500,000. True enough, most of these fires may be small, but they cost money—millions—and to think that most of them are caused by man. Railroaders, loggers, smokers, campers, and many others. Believe me, George, it's an interesting problem.

"Man makes the fires, and man must stop them. With a proper attitude on the part of the public, and with a more adequate and efficient fire control organization, this loss could be reduced to a minimum. Strange but true! The answer seems simple, but in reality it is more than complex. Perhaps you are wondering why a few individuals are desirous of perpetuating the forests, instead of merely stripping them and leaving them to protect themselves against man? I won't tell you why; I'll show you why. This afternoon we can take a detour to a certain spot which I think is the best possible argument for conservation. Would you mind?"

"No, I should say not, John. Your amazing little speech has made me rather humble and inquisitive. This "certain spot" should be interesting. Lead on!"

The afternoon wanes, as the powerful sedan speeds, over hill and dale, across the state—passing beautiful lakes, which seem more than beautiful when contrasted to the drab landscape of dusty roads, sickly fields, and scraggly woodlots. The two wan gentlemen begin to weary of their oppressive surroundings, but the fading sun beckons, and the car speeds on.

One final cloud of dust as the powerful sedan swerves into a cool side road. John smiles indulgently at his companion, as he sighs, admiring the murmuring pines, and inhaling the invigorating breezes of Itasca Park.

Words are futile. George realizes that this is the "spot" but words can never do justice to his feeling of relief and contentment. The car halts in front of a fine rustic lodge, as the men step out onto God's green earth, and gaze down at Lake Itasca. Lake Itasca at sunset. A savory dinner, a satisfying cigar, and they are soon deep in the arms of Morpheus, sleeping as they had never slept before.

Morning! The vireo's song and the sun's smile awakens them—refreshed and eager for life. Not too hastily they dress themselves in wood's attire, consume a hearty breakfast, and stroll down an old trail.

George breaks the silence: "Well, so this is the spot you told me about?"

John: "Yes, isn't it heaven, tho? There are any number of these beautiful trails, springs, and picturesque patches; but that isn't all. There seems to be an indefinable peace which hovers over this source of the "Father of Waters". Everything here is so primeval, and in such striking contrast to the weary wail of humdrum humanity. Who wouldn't feel romantic on a morning like this?"



Nicollet Cabin, Itasca State Park.

"But you haven't seen anything yet, George. This park covers nearly fifty square miles, and is chucked full of interest. Lake Itasca, the source of the Mississippi; Indian mounds; beaver dams; the Nursery; the Forest School camp; the Elk; lookout towers; lodges and the finest camping facilities in the state; extensive tracts of stately pines; numerous wild animals and birds. I tell you, George, it's immense: this panorama of Nature at Her best, combined with all the conveniences of home.

"Take the wild life. Listen to those birds. Warblers, vireos and jays; not to speak of the "crazy" loons. Also, the many wild animals; or should I say tame animals? The beaver, and how he can dive! Big Bill, the Elk. You can't miss him! Johnny, the friendly little chipmunk. And all the rest, on down to the lowly squeaking mouse, who also plays an important role in this vast and thriving community—that community known as Nature. It is conservation exemplified.

"Do you know that this park contains over 125,000,000 board feet of pine, besides large amounts of balsam, birch, aspen, Jack Pine, and many other species? Well over a million dollars worth of timber, but what is a million dollars compared to the esthetic value which this Park has to thousands of people, like you and me? Look across the lake, at those majestic Norway pines in Preacher's Grove. They stand a noble monument; practically the last vestige of the murmuring pines.

"I can easily see that you want to ask me how these conditions can be applied thruout the state. The answer to that is difficult. However, by using Itasca park as the ideal of conservation, people might adopt those future policies which would bring them towards this ideal. At any rate, with forest lands in their present deplorable state, almost any measure can be considered.

"Conservation in Minnesota, today, is largely a question of fire control, and with a continued increase in efficiency along this line, the state can expect future forests which will more than supply her huge demands. With proper forest management the state would save a \$12,000,000 freight bill every year. Most of the cut-over lands will restock themselves, so that little planting is necessary.

"So you see, George, the situation is far from hopeless. The State is making notable progress and I have no doubt that we will once more have an adequate supply of timber. Over half of Minnesota, some 38 odd million acres, is natural forest area. Nature's forests crying out for an opportunity to exist and produce; to protect and beautify. Besides producing timber, these forests protect the watershed, the lakes, the game, and the fish. What do 10,000 lakes mean, without forests to make them real? Think of our immense tourist trade. In the past, people have abused forests, instead of considering them as a crop, similar to any farm crop, only grown on a longer rotation.

"The task with which the state is faced is by no means a small one. Aside from the necessary fire protection, there are literally dozens of important measures, which have been recommended from time to time, and which are essential to the future success of conservation.

"For one thing, a State Nursery is quite necessary, in order to promote artificial reforestation throughout the state. Such a Nursery will provide millions of seedlings for use by the Public, and would have the best possible influence towards interesting the Public in reforestation.

"Another thing, and one of the biggest problems, is that of taxation on cutover lands. These lands are mostly unproductive wastelands, a detriment to the county as well as the state, and are in most urgent need of management, since they are primarily forest lands. Tax laws have been revised in a futile attempt to induce private enterprise, but as yet they remain an enigma.

"Conservation may also be aided by encouraging the management of farm woodlots and the creation of municipal forests. It is quite surprising to realize how many of such small tracts will total up to a vast acreage.

"The Minnesota Land Economic Survey is one more step towards success. They began work only last summer, which, when completed, will provide reports on the land and timber which should be of essential value to the forest managers.

"It is indeed regrettable, George old chap, that the majority of tax payers are so hazy about forestry. Why! It is surprising to learn that some men still think that timber is inexhaustible. Others argue, that in this modern age—steel, concrete, and other things—are replacing wood. No need for argument there. I grant them their concession, and ask them to observe the quantities of wood being

used for pulp, furniture, lumber, boxes and crates, balsam wool, and what not else?

"All of which, my friend, brings me the permanent need of this conservation movement; namely, that of creating Public sentiment. The public must be made "forest-minded". They must be led to believe that forests belong to them, and they belong to forests.—an even trade. It has been truthfully said, that ninety per cent of forestry is education.

"So you see, George, this extemporaneous tirade of mine has been an attempt to 'sell you' on the idea of forest conservation. Therein lies the key to success. When the public, at large, has been sold on the idea, we will have achieved our goal.

"And that's that! Enough of this tirade. You want to enjoy this park, don't you, George?"

"Yes, John, I do want to see more of the Park. See it with new eyes. Believe me, you've surely made me feel my small part in this conservation game, and you can bank on me to be a good salesman, from now on. Really though, John, you don't sell conservation, you give it away!

"Well, lead on, to Itasca the Beautiful!"



"Itasca The Beautiful"

FRESHMAN CORPORATION

By GEO. HERION, '34

*"Come and get it"*

ON BEHALF of the Freshman Corporation of 1931, I want to thank and express the deep regard that the "gang" feels for the Big Four: Professors Cheyney, Brown, Rosendahl and Dawson. These four men are so interwoven with any legend concerning Itasca Park, that it would be impossible to mention the Park without saying something of them. To these four leaders of student life, this legend is dedicated.

And then Paul Bunyan sez to me, sez he, "Tell me all about it."
"I rather not," sez I, "for there ain't much to tell."

Paul scowled and cussed. "By the great horned owl, if you don't spill it, I'll wring your bloody neck," sez he.

Sitting myself on his shoulder, a shoulder as wide as the Ozark Plateau, I began my story, stopping every now and then to catch my breath because Paul's breathing made it necessary for me to shout at the top of my lungs in order to carry across what I said. Man, how that giant could breathe, a combination of a steam whistle, a volcano and a rip saw. And now for the story that I told Paul. This is it. So help me Belezeebub!

The Hungry Five were the first to desecrate the beauties of Itasca Park. Bill Emerson, Prexy, (tho you would never know it) Ed Bernston, his name is sufficient, Ed Panek, Goliath, doleful Don Burcalow and yours truly were the first to arrive. Due to the rigorous but just action of the Bull of the Woods, (Doc Schmitz) the bunkhouse wasn't open and the Hungry Five slept out of doors in blankets that were mildly saturated with rain. Cold beans and crackers gave the Hungry Five all the energy they needed. Boy, what a nite. In the morning they all lied like Ananias when they said, "Boy this is the only life! Isn't it great!"

Bernston caught a fish (it weighs about fifty pounds by this time) Sunday morning, and that's the way we observed the Sabbath—by fishing.

Sunday afternoon and Monday, the gang began to drift in and of all the squirrely outfits, that crew was the nuttiest. Randy Strate, just about the best man in these parts, must have thought he was going to the military ball. His outfit included shoe polish, silk shirts and undies, and polkadot ties. Youngren (Screwy), bounced in looking like a blushing bride. Screwy never did get civilized. He



And he did it up "Brown"

wore golf shoes and white sport shirts during his whole term. Wyatt, Wheeler and Wentling blew in with all the fury of a storm. We heard Wheeler coming all the way from Cass Lake. Well, they came from all over, all of them more or less nertz but some screwier than the rest.

Classes started on Tuesday. Brown's sections caught Hell the first day and it lasted for the full six weeks. Old Bill Cheyney took us out La Salle Trail and told us about the woods, then the following six weeks we tried to tell him. Dawson drove us bugs. Can you picture about sixty sophisticated collegians chasing bugs? Well, that's what the gang did and when we weren't chasing bugs we were cuckoo, cuckooing after all the birds in the park. Rosendahl, better known as Rosy, was throwing old Linneaus for a loss. That gent Rosy can spout more scientific names than Gray can give definitions for.

Good old Paul, the old Maestro, the gentleman logger and the Bull of the Woods, glared at me and growled, "what else?"

"Give me a chew," sez I, and the old champion chewer tosses out a plug of J. T. 12" x 12" x 2" (this is not an advertisement) and I takes a nibble and with this stimulant I rambles on.

Don Burcalow was the fist one purged to sin. He was tossed into the cleansing waters of Lake Itasca, just on general principles, Sheldon Ziegler, the good old steward, and Creamy Bill, the Prexy, after a six hour visit to Douglas Lodge, were also dropped into the brink.

Wheeler and Josephson were the lads who took the most baths. Just about five times did the healing, purifying waters of the lake close over them. Did they need it? Just ask Josephson.

Carl (Snipe) Kobes would still be holding the sack waiting for the snipe to drop in, if a certain individual hadn't got chicken hearted.

Emerson, Wheeler, Strate, Sandberg, Lindquist and Josephson were our social delegates. They divided up the public relationship jobs quite evenly.



Traditional "Quiz" Parade

Wheeler and Josephson (the C. C. Club) took care of the fair damsels from Headwaters and the tourist camp. The other Jellies took care of the skirts at Douglas Lodge. Emerson darn near became a permanent resident of the Lodge.

"O' course Paul," sez I, "the boys weren't always a hitting the books and studying. They also had their recreations. That baseball team kept the Jack Pine Savages amused. They trimmed everything but the Indians and Shevlin. Shevlin (no connection with Shevlin Hall) had a Roman Holiday at our expense. The Indians took our scalps and boy! were they ever bloody. But the biggest game was played between two teams from camp. The House of David took the fair haired, rosy cheeked glabrous boys down to the tune of 10 to 7.



The "Dear" Slayers

The good old trophy hangs in the bunk house, a fair attest of the game.

So the good old camp life went on. Sid Rommel, Jack Preston, Jake Jacobsen, Pete (Maxinoff) Super and Ralph Nelson were always taking week-end canoe trips. Link Mueller was the champion horse shoe pitcher in camp. He even gave the local boys a good battle. Yea! What a Man! John (Gladys) Dobie, was forever taking pictures. He was the most official picture taker this gang has ever seen. Pete Nelson and Don Wyatt kept us supplied with fish. They can tell you some fish stories. And they are all true. Just ask "Ripley's Believe It or Not."

July 19th, the Day of Daze, the Burial of the Quiz. And were we ever prepared for it! We had a parade led by Jack Wentling tooting that trombone, and Oscar Stabo burping on that cornet. Those boys sure got the death march down cold. Dewey Hahn made Robin Hood look like a pauper. When the "Strangler" blossomed out in a gunny sack, the fairer sex went wild. Ladies, please behave! Deacon Clark read the sermon and the quiz was lowered to a permanent resting place. Then being a sinful pack, we had a baptismal party in the good old lake. Everyone went in Ha-Chat-Cha.

True Confessions! I must admit we were a bit socially inclined, too. By Jove! We had a bully time at our dance. The bunk house was decorated with spruce, balsam, cedar, basswood and sphagnum moss until it was transformed into a veritable paradise. Certainly was pretty and the orchestra from Bemidji furnished the music, and

women!—gentlemen, hush! We had so many women that they were cutting each others throats for the privilege of dancing with those cute, cunning, big he-mans of foresters. Oh, its a tough life dodging these women. A midnite lunch was served at the cook shack. How thrilling to eat with those rough and tough foresters. Dear me!

Lake parties, fishing, swimming, horse-shoes, dancing and canoeing. Boy, that was the life. And sitting in front of the old fire place with the gang when harmony and stories went hand in hand. Those days! Boy for the good old days. Gone, but never to be forgotten. The happiest six weeks any of that bunch ever had, or ever will have, I bet. If we could all go back for one more day. Just to hear those wolves howl, "Lake Party! Lake Party"! Can't yuh hear them? I can.

I stopped and looked at Paul. His eyes were dim and misty. So were mine. I was thinking of the Park and Paul was thinking of his camps. Good fellows, good times, gone to be forgotten? I hope not. What do you say gang?



"Into The Lake"



"Winchell"

1931 Junior Corporation

*"Oh Lord, make all my
enemies very ridiculous".*

—VOLTAIRE

PERHAPS you have heard of the California Gold Rush back in 1849, or the mad dash to the Klondike, or of the summer and winter crusades to various vacation centers. These are mere trifles compared to the annual mad dash to Cloquet. But let's not avoid the point. After all it is nothing more than a change and for no other reason, perhaps, than that the administration advises a rest cure, in fact insists on it. Do not be misled by the above statement, for it is not our intention to depreciate the value of the course work. It is merely to put those after us at ease. You can readily understand the value of the institution of such a field study in forestry to give the novice forester a chance to be in direct contact with woods conditions. There is much to be gained by being in the field under the guiding hand of experienced men.

Going thru the list of members of the 1931 Junior Corporation we have picked out certain individuals with singular experiences which should bid fair to bring out our point.

For instance, Joe "Cleveland" Grigg was constantly in the field but never has been known to be on both feet more than five minutes at a time. Still, even Joe worked long enough to climb the tallest



Standing—Schantz, Isacson, Laidlaw, Zilgitt, Ferguson, Larson, Parker, Folsom, Engermeir, Engstrom, Moore, Tofte, Grigg, Olson, Roe.
Kneeling—Evenson, Duval, Jackson, Krefting, C. Jackson, Stuart, Cahill, Anderson Horn, Cann, Wagner.
Sitting—McKenna, Cline, Cheyney, Sanders, Sword, Stritman, Lazzaro, Callinan, I. Moore.

tree on his ten-acre forest to type map it. You have heard of aerial mapping of course. Very valuable experience.

The other members did not confine themselves to any field but wandered far from the beaten trail seeking further valuable and hair-raising experiences heretofore unknown to civilized man. But! with the valiant Captain Harry Stritman leading the charge why shouldn't they have had many a harrowing experience not to be spoken of. Off duty Harry was "Sitting Bull, keeper of the Vatican." He also won laurels as the best darn "chiseler" in camp. These gifted men with more than their share of personal magnetism, grabbing off the fairest of the "Cloquettes" for themselves are a pain. Why can't we all be handsome and have that certain way about us to attract the fairer?

Only second to Captain Harry came good old "Bosco," better known to the folks in Chokio as Leonard. "Bosco" kept up the holiday spirit, which will remain a tradition. Needless to say, as one of the inspiring leaders, Bosco had the best following in camp. Along with "Ike" Issacson, chief gobbler, and "Charlie" Lazzaro, mechanic, to complete the roster of that famous and memorial triumverate which made thrilling history on its various and sundry escapades.

By the seven stars of Allah, who could this be parading down the street with a sparkling, almost dazzling new hat? Can it be Roy Wagner? Yes, the hat is following a "Goose" so it's none other. Take a good look. "Wag" acquired this technique up Cloquet way. It seems that somebody stole his girl and—well—ever since, he has been that way. Like dropping a child on its head.



A Field Trip Party.

In a class with "Wag" we find another famous cohort in "Art" Roe. Besides his scholastic achievements he is without doubt the best "Bunyan Tennis" player ever. Every now and then "Art" came home with his rubbers full of mud and threatened to throw the wife and "kids" out in the street. Where he acquired that attitude is hard to venture a guess.

"Believe it or not folks I'm Mahatma Gandi." But us folks won't be fooled this time "Walt," for we knew you were Paul White-man all the time. "But Liza, wheah 'dja all git dat big black beard." Besides being the finest gent that ever came out of Kentucky, "Walt" Parker was the wit and support of the main bunk house. He did like his sleep—but "nite time is your time "Valter."

"Wheeling in tonight boy, old boy, old fella?" And we have in the crystal the one and only "Wheelers" Club. The members never did make it a point to wear their teeth on a chain and drink needlebeer, but it was only because they didn't have the chains or the needlebeer. They were too busy commuting between Cloquet and Duluth to let trifling matters interrupt their play. One of the neophytes, to be scientifically accurate, the "Right Rear Wheel," in the form of "Trapper Pelican" Folsom, can tell you the exact number of telephone poles between Duluth and Cloquet. It appears that he and the "Right Front Wheel," "Art" Horn, missed the "Steering" and "Left Rear Wheelers" and were left to do their commuting afoot. If this damn crystal is right, the "Trapper" made it in ten flat. All indications prove that "Art" Horn never did get back to finish the quarter.

No account of the 1931 Junior Corporation would be complete without the roster of the "Wheelers Club." Hence, lead on:—

- "Steering Wheel"—"Knickerbocker" Krefting.
 "Right Front Wheel"—"Two Harbor" Horn.
 "Left Front Wheel"—"Roan" Anderson, "The Minnesota Forester."
 "Left Rear Wheel"—"Ab" Tofte.
 "Right Rear Wheel"—"Trapper Pelican" Folsom.
 "Spare Wheel"—"Prof." Jackson.

"Stub Personality" Jackson established a few records which will, no doubt, hold for years. He spent the rest of the time getting his partner, "Rip" Callinan, to work and keeping him there. "Stub" explains that somebody had to do the work. There was some talk about the campus to the effect that "Rip" had to be put to bed each night, and, of course, Mother Jackson saw to it that he was duly taken care of. Callinan has a graceful little aesthetic interpretation in his repertoire which he calls "The Wilting Flower," and you oughta see "Rip" wilt. Lands, he just crumples right up and isn't fussy where he does the crumpling either.

"Jawhn Grouser" Cann, unlike Captain Harry, spent most of his time flushing grouse. When there were no birds to flush, "Jawhn," being a persistent young man, sat down and waited for them to come around or something. Have you heard Cann tell of that never-to-be-forgotten eve of the first corporation dance, when he attempted to duplicate George Washington's little act of crossing the Delaware. Although Cann had no Delaware and had to use a road bed instead, he found it difficult to cross. Thrice, yes, four times, did our "Jawhn" start for the other side of the road only to end up on the same side in a tired and weakened condition. What luck! What hardships!

And then came the tempest bringing with it "Woodchuck Lightning" Duval. Hell, if he had not been blown in by the tempest he would never have arrived in time for the spring quarter. There are people who are lazy and then those who are lazy. Duval is a combination of the two. He managed to work with some expression of vigor three times a day: breakfast, dinner and supper.

Even S'perior held no terrors for "Patty" Cline. The Stetson hat, or was it his socks which kept "Patty" out of mischief more than once. Of course, even Stetson hats and socks are not barriers all the time.

The Corporation was represented by one good Scout. Our disgusted, or should we say distinguished guest, "Dale-kin" Sanders. Dale has the only successful way with women. Hide or run. The only member of the weaker sex he harbored no aversion for was "Ducky" Stuart, for whom Dale went out of his way to admire vociferously. "Ducky" did well as statistician for her crew, but as an axman or head chairman—well, like any onion crop—was a failure. "Biscuits" Engstrom, the other half of the crew, didn't mind, however, for he was used to hardships and Dorothea. Consequently he journeyed often to Nopeming where he was known as a renowned "Biscuiteer."

"Prexy" Ferguson had so many things wrong about him (ulcers, bad eyes, red hair, etc.) that an account would take up an entire volume. Hence, we eliminate him with a passing remark about a certain "red head" who soaked her socks in "Don's" coffee during our stay at Cloquet. His efforts were not confined to "Linneaus," however, for he found time to have confidential chats with "Schantz," take out Stillwell's hired girl and push Ford cars around.

"Len" Moore had an affinity for nocturnal walks, which he demonstrated at frequent intervals. Yes, too frequent. It was nothing to see "Lenert" mushing down the road with Dorothea at his side as late as 9:30 p. m. Your privilege "Len," but most of us prefer a car.

Ah! the beaming countenance of Walter "Zilch" Zilgitt. "Zilch" smoked a corn cob pipe, stayed at home and didn't like music after 1:30 a. m. You should laugh Neil McKenna, even smoking a corn cob pipe isn't so base as impersonating Santa Claus. Nor is it nearly so pitiful to witness, as a boy sitting with his head between his legs, and a soft boiled, mellow look in his eyes, waiting for fan-mail. Why don't you marry the girl and come back to school?

And then our favorite, Wayne "Nigger" Sword. the boy who found romance in the backwoods, or the Scanlon affair. It always made us happy to see the way "Nigger's" face lit up when he could drive Captain Harry to town. My, how proud he was of our captain. How proud he was of "Luella." How proud he was of anything.

And so, gentlemen, we come to the conclusion of our memorial to the 1931 Junior Corporation. May you all taste the joys of success in your future enterprises and never forget that you were foresters once.

—Winchell.



A View of One of the Bunk Houses at Cloquet

THE FORESTRY CLUB



GOPHER PEAVEY BOARD

BROWN	WANGAARD	LORENZ
HERION	HOLT	SANDERS

FORESTRY CLUB OFFICERS

FRED WANGAARD	-	-	-	-	<i>President</i>
HAROLD ENGSTROM	-	-	-	-	<i>Vice-President</i>
ST. ELMO NAUMAN	-	-	-	-	<i>Secretary</i>
ART HORN	-	-	-	-	<i>Treasurer</i>

GOPHER PEAVEY BOARD

R. M BROWN	-	-	<i>Faculty Representative</i>
RALPH LORENZ	-	-	<i>Alumni Representative</i>
DALE SANDERS	-	-	<i>Senior Representative</i>
TEDDY HOLT	-	-	<i>Junior Representative</i>
GEORGE HERION	-	-	<i>Sophomore Representative</i>
FRED WANGAARD	-	-	<i>Forestry Club Representative</i>

FORESTRY CLUB NOTES

THE ANNUAL bonfire of the Forestry Club provided the first opportunity of the year for a get-together of faculty and students. A secluded corner of the University golf course was the scene of the event. About one hundred and fifty foresters gathered about the blaze to listen to a few words of greeting and reminiscence by faculty members and students. The musical entertainment provided by Gorman and his accordian and the Itasca Quartette warmed up the crowd, and soon all had joined in the singing. After beer and pretzels had disappeared the crowd broke up into smaller groups—the new men becoming acquainted, and old friends exchanging tales of the summer's experiences. As the fire died down to a glowing mass of embers, slowly, as groups of men departed, the gang around the fire dwindled—and the Bonfire of 1931 became but a memory.

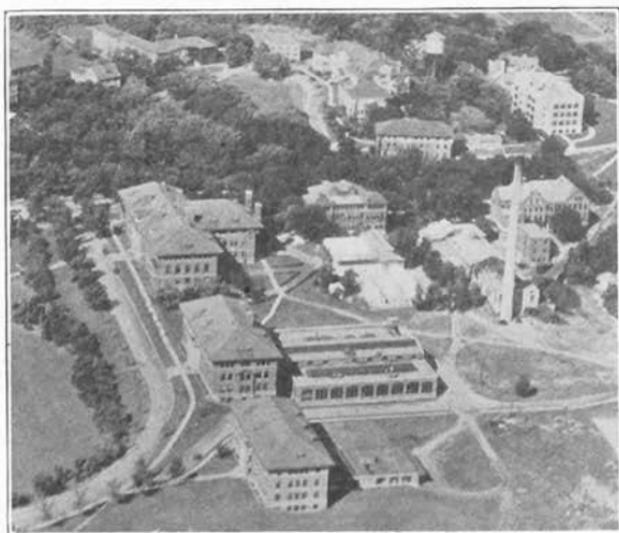
Two meetings of the Club were held during the fall quarter. The second meeting was featured by an illustrated talk by Prof. C. O. Rosendahl, of the botany department, who gave a description of the forests of Vancouver Island, and told of his experiences there.

The Forestry Club Dance was held December 4th in the Ag. gymnasium. The place was beautifully decorated with spruce and cedar boughs. An unusual Paul Bunyan exhibit lent the appropriate "atmosphere" to the occasion and aroused a good deal of interest from the dancers. The thorough and efficient manner in which the committees in charge handled their duties was responsible for a successful affair from both a social and a financial viewpoint.

After considerable agitation by R. M. Brown for a winter outing, we were fortunate enough to enjoy a real snowfall and a toboggan party was hurriedly arranged. About twenty couples including a fine faculty representation turned out at Columbia Park to enjoy the sport. The night was perfect—a sparkling, crystal January night—the moon was full—the slide was slick . . . good ol' girls . . . good old tobogganing.

At one of the regular meetings Prof. Stakman addressed the Club and gave his impression of Liberia.

The Forestry Club Banquet, which each year marks the peak of club activity, was held at the Leamington, Wednesday, March 2. Principal speakers were W. T. Cox, state conservation commissioner, W. H. Emmons, head of the geology department, Wm. E. McEwen, chairman of the conservation commission whose members were honor guests, and St. Elmo Nauman, student. Entertainment was furnished by Clyde Gorman and a fencing bout by Henry Stoehr and William R. Pearce, '12 acted as toastmaster.



Birds Eye View of the St. Paul Campus.

1932
GRADUATING CLASS



ROAN ANDERSON
Monticello
General Forestry
Forestry Club
Varsity Rifle Team '30
Summer Work
Minnesota Forest Service '31



DOROTHEA CAHILL
St. Paul
General Forestry
Zeta Tau Alpha
Forestry Club
Secretary Freshman Corporation
Secretary Junior Corporation
Summer Work
Itaska Park assisting Prof. Cheyney
Lake States For. Exp. Station



HARRY CALLINAN "*Rip*"
St. Paul
General Forestry
Forestry Club



JOHN CANN "*Weasel*"
Faribault
General Forestry
Forestry Club
Summer Work
Duluth "Y" Camp
Lolo National Forest

HAROLD E. ENGSTROM "*Biscuits*"
 Detroit Lakes
General Forestry
 Alpha Gamma Rho
 Xi Sigma Pi
 Alpha Zeta
 Gamma Sigma Delta
 Forestry Club
 Vice-President 4.
 Gopher Countryman Staff 3.
 Summer Work
 Columbia National Forest '28 and '29
 Logging Camps, Washington '29 and '31



CLARENCE M. EVENSON "*Charley*"
 Wausau, Wisconsin
General Forestry
 Tau Phi Delta
 Xi Sigma Pi
 Alpha Zeta
 Gobblers
 Student Council 1 and 2
 Y. M. C. A. Cabinet 1, 2 and 3
 Ag. Union Board of Gov. 4.
 Forestry Club
 Secretary 3.
 Gopher Peavey Staff—Cir. Manager 3.
 Associate Editor 4.



DONALD H. FERGUSON "*Don*"
 Detroit Lakes
General Forestry
 Track—Cross Country
 Pres. Y. M. C. A. Cabinet 3.
 Student Council 2.
 Summer Work
 Blister Rust Control, Idaho



ARTHUR G. HORN "*Doc*"
 Minneapolis
General Forestry
 Tau Phi Delta
 Gobblers
 Forestry Club
 Treasurer 4.
 Varsity Rifle Team '30
 Summer Work
 Minn. For. Service '30





EDWARD S. IVERSON "Skipper"

Waseca
General Forestry
 Tau Phi Delta
 Gobblers
 Summer Work
 Angeles National Forest
 Cleveland National Forest
 San Bernardino National Forest
 Chippewa National Forest
 Huron National Forest



CLAYTON R. JACKSON "Prof"

Grand Marais
General Forestry
 Forestry Club
 Summer Work
 Minnesota Forest Service



J. ALLAN JACKSON "Stub"

Phillips, Wisconsin
General Forestry
 Forestry Club
 Summer Work
 Missoula National Forest
 Oneida Purchase Unit, Wisconsin



JOHN C. KOPITKE "Jack"

Minneapolis
Wood Technology
 Tau Phi Delta
 Grey Friars
 Xi Sigma Pi
 Alpha Zeta
 Forestry Club
 Pi Phi Chi
 Inter-Professional Ball 4
 Student Council 3 and 4
 Gopher Peavey Staff
 Cir. Manager 3.
 Editor 4.
 Senior President 4.
 Senior Commission, Treasurer 4.
 Summer Work
 MacGillis & Gibbs Co., '29
 University of Michigan '30
 Cornell Wood Products Co. '31

LAURITS W. KREFTING "*Dean*"

Minneapolis
General Forestry
 Forestry Club
 Summer Work
 Blister Rust Control, Idaho

ALAN F. LAIDLAW, "*Al*"

Mishawaka, Ind.
General Forestry
 Xi Sigma Pi
 Forestry Club
 Summer Work
 Guiding in Minnesota

IRVING H. MOORE "*Woolsey*"

Minneapolis
General Forestry
 Forestry Club
 Varsity Wrestling 4.
 Summer Work
 U. S. F. S. White Mountain National Forest
 New Hampshire
 Blister Rust Control, Idaho

STANLEY B. OLSON "*Stan*"

Minneapolis
General Forestry
 Alpha Gamma Rho
 Forestry Club





ARTHUR ROE "Art"
 Minneapolis
Forest Entomology
 Xi Sigma Pi
 Summer Work
 Angeles National Forest '30
 Bugs - Itasca Park '31



DALE SANDERS
 Detroit Lakes, Minn.
General Forestry
 Xi Sigma Pi
 Alpha Zeta
 Forestry Club
 Summer Work
 Minnesota State Forest Service
 Boy Scout Camp



HARRY R. STRITMAN
General Forestry
 Forestry Club
 Officers Club
 Gopher Country Staff '26 and '27



ALBERT L. TOFTE "Ab"
General Forestry
 Xi Sigma Pi
 Forestry Club
 Summer Work
 Superior National Forest



HAROLD TYSK

"Alledeles"

St. Paul
General Forestry
Forestry Club
Summer Work
Tongs National Forestry '30'



ROY WAGNER

Minneapolis

General Forestry
Xi Sigma Pi
Summer Work
Angeles Nat. Forest '30
Region 5 Timber Survey



RONALD J. WOOLERY

"Ron"

St. Paul
General Forestry
Tau Phi Delta
Xi Sigma Pi
Summer Work
Minn. Forest Service '28
Angeles Nat. Forest '29
Huron National Forest '30
Forest Survey, Wisconsin '31

HARRY E. ADAMS

Minneapolis

Forest Biology
Associate Editor Peavey 3.
Track '31
Summer Work
Blister Rust Control, Idaho

LEONARD H. MOORE "Len"

St. Paul, Minn.

General Forestry
Punchinello 1, 2, 3.
Class President 4
Forestry Club
Cloquet Corporation, Treasurer

DAVID R. GIBNEY "Dave"

St. Paul

General Forestry
Forestry Club
Summer Work
Cabinet National Forest

HERMAN F. OLSON "Ole"

Game Management

Superior State Teachers College '28
Forestry Club
Xi Sigma Pi
Y. M. C. A. Vice-Pres. 4.
Summer Work
Blister Rust Control, Idaho
Counselor, Des Moines Y. M. C. A.
Camp '31.

FACULTY

DR. HENRY SCHMITZ, *Head of Department*

E. G. CHEYNEY

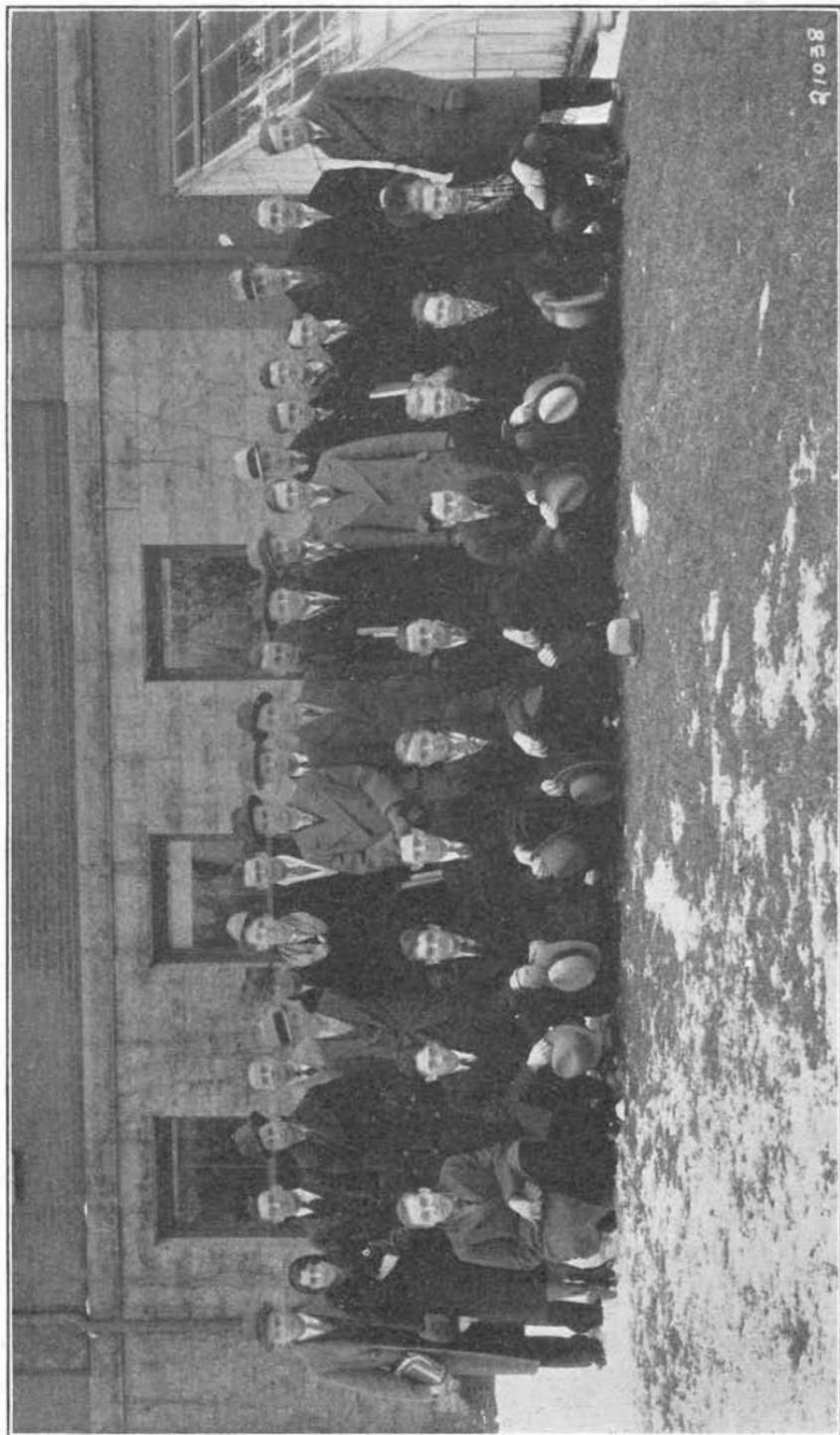
J. H. ALLISON

R. M. BROWN

DR. L. W. REES

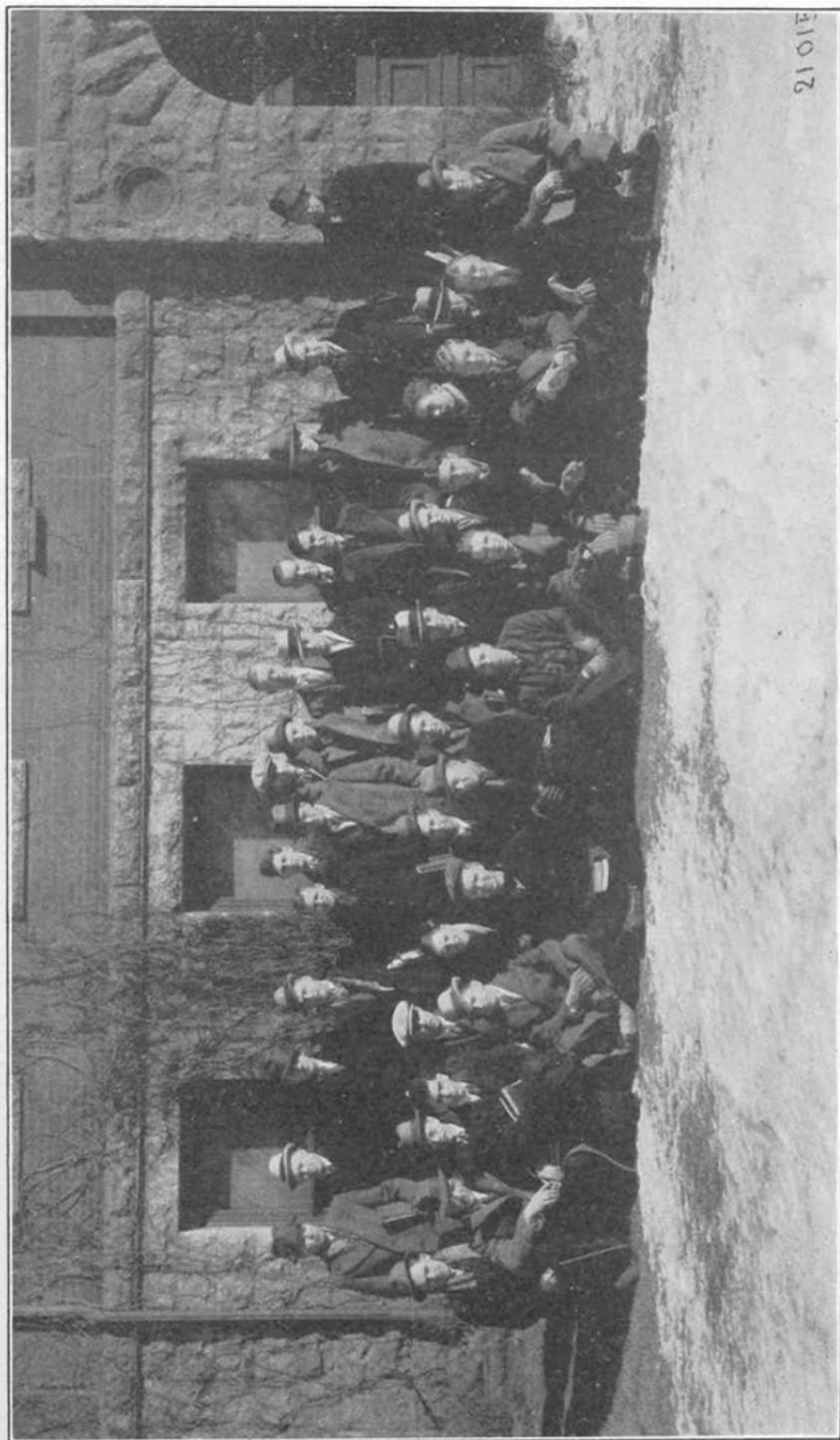
WARREN M. CHASE

MERRILL DETERS



21018

CLASS OF 1933



2101E

CLASS OF 1934



CLASS OF 1935

XI SIGMA PI

Honorary Forestry Fraternity

Founded at
University of Washington
1908

Local Chapter
DELTA
1920

FACULTY MEMBERS

J. H. ALLISON	M. DETERS
R. M. BROWN	T. S. HANSEN
W. W. CHASE	L. W. ORR
E. G. CHEYNEY	L. W. REES
C. CHRISTIANSON	H. SCHMITZ

ASSOCIATE MEMBERS

G. GEVORIKANTZ	R. ZON
----------------	--------

GRADUATE STUDENTS

S. BUCKMAN	R. W. LORENZ
D. GRAY	A. VERRAL
R. HUNT	J. STOUT

ACTIVE MEMBERS

WILLIAM ACKERKNETCH	STANLEY OLSON
HAROLD ENGSTROM	ARTHUR ROE
CLARENCE EVENSON	DALE SANDERS
JOHN FRY	ORLO SOLAND
TED HOLT	ALBERT TOFTE
JOHN C. KOPITKE	ROY WAGNER
ALAN LAIDLAW	FRED WANGAARD
JOSEPH LOZINSKI	RONALD WOOLERY
JOHN McMILLAN	WALTER ZILLGITT
HERMAN OLSON	



TAU PHI DELTA

Professional Forestry Fraternity

Founded at
University of Washington
1924

Local Chapter
BETA
1926

FACULTY MEMBERS

J. H. ALLISON
R. M. BROWN
C. CHRISTIANSON

M. DETERS
H. SCHMITZ

GRADUATE STUDENTS

R. ANDERSON
CHARLES BEARDSLEY
S. J. BUCKMAN
ERNEST DAHL

S. FRISBY
R. W. LORENZ
M. RIGG
D. M. STEWART

ACTIVE MEMBERS

EDWIN BENDER
WILHELM BECKERT
JOHN CLARK
CLARENCE EVENSON
JACK DINSMORE
JACK FRY
GEORGE HERION
TEDDY HOLT
AATOS HUHTALA
EDWARD IVERSON
JACK KOPITKE

HARRY MILEY
RALPH NELSON
HAROLD NILSEN
WALTER RIDDLINGTON
JOHN RISS
PAUL SEASTROM
PETER SUPER
FRED WANGAARD
RUSSELL WHEELER
SHELDON ZEIGLER

PLEDGES

FRANK ALEXANDER
DANIEL BLISS

JACK COLLARD
RAYMOND NEASE



Back Row—Iverson, Beckert, Seastrom, Herion, Ridlington, Nelson.
Middle Row—Huhtala, Densmore, Wheeler, Nilsen, Riss, Clark, Super.
Front Row—Wangaard, Fry, Kopitke, Evenson, Zeigler, Holt.

ALPHA ZETA

Honorary Agricultural Fraternity

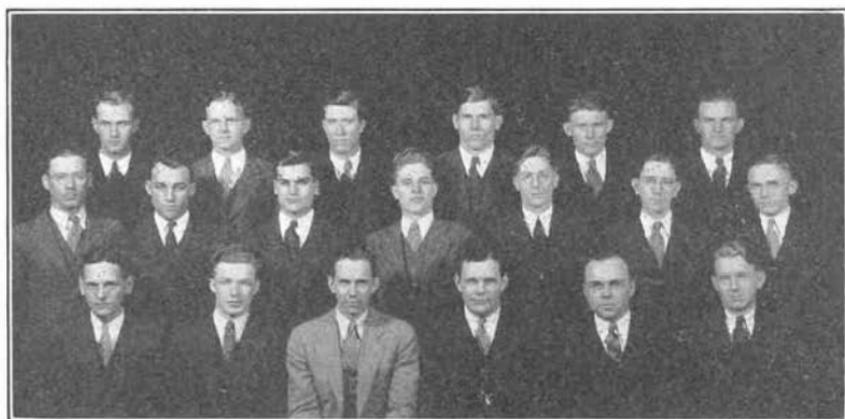
Founded at
UNIVERSITY OF OHIO
1894

Local Chapter
LA GRANGE
1905

ACTIVE MEMBERS

CLYDE BAUMHOFFER
WILLIAM N. BROWN
KENNETH CHAPMAN
EARL COOK
DONALD FISH
HAROLD ENGSTROM
CLARENCE EVENSON
LEO FENSKE
LESTER GILMORE
LEIGH HARDEN

GRENFALL HARMS
NELVIN HAUGLAND
TED HOLT
JOHN C. KOPITKE
JACK McCULLOCH
EUGENE NELSON
DALE SANDERS
RUDOLPH STOLEN
STANLEY SWENSON
WALTER SWENSON



Back Row—S. Swenson, Harden, Stolen, Engstrom, Fenske, W. Swenson.
Middle Row—Baumhoffer, Sanders, Chapman, Nelson, Evenson, Cook, Gilmore.
Front Row—Kopitke, Harms, McCulloch, Fish, Brown, Haugland.

AGRICULTURAL STUDENT COUNCIL

Student Governing Body

REPRESENTATIVES

KEITH BARONS
ERHARDT BREMER
BERNICE BROWN
RUTH CAMPBELL
DORIS FISH
LAURA FROST
JOHN C. KOPITKE

HARVEY KECHENBECKER
THOMAS RAINE
WALTER SWENSON
JEANNE TELLIER
FRED WANGAARD
RUSSELL WHEELER



Back Row—Kechenbecker, Wheeler, Frost, Campbell, Bremer, Raine.
Front Row—Kopitke, Brown, Swenson, Tellier, Wangaard, Fish.

ALUMNI NEWS SECTION



H. H. CHAPMAN, '99

1899

Perhaps it is only fitting that the first of our graduates should be one of the most successful. The good influence of H. H. Chapman, '99, continues, year after year, to bear fruit in the form of greater aggressiveness and ability in forestry throughout America. Mr. Chapman, author of several forestry textbooks, is at present instructing at Yale University.

1905

Harold Cuzner is in the Forestry Department College of Agriculture, Laguna Province, Los Banos, P. I.

1906

W. T. Cox, who has recently been appointed to head the new Minnesota Conservation Committee had many very interesting things to tell at the Forestry Club banquet this year concerning his recent stay in South America, where he organized the Brazil Forest Service.

S. B. Detwiler is Chief of the Office of Blister Rust Control, Bureau of Plant Industry, Washington, D. C.

1909

Walter M. Moore is with the U. S. Air Service, and is located in Osborne, Ohio.

1910

Donald R. Brewster, Utilization Engineer for the National Lumber Manufacturers' Association, is located at Memphis, Tenn. He is engaged in wood utilization research and sends encouraging reports relative to the increasing demand for wood products in the face of competition from other materials.

Robert Deering is Assistant Regional Forester in charge of operation in the California Region.

N. G. Jacobson, 511 Spaulding Bldg., Portland, Oregon, is in charge of the research department of the Western Forest and Conservation Association.

A. O. Benson is busily engaged in Forest Research at the Forest Products Laboratory, Madison, Wisconsin.

Charles L. Lewis, Jr. is in the cranberry business at Beaver Brook, Wisconsin.

Members of the class of 1910 will be sorry to hear of the death of Norman M. Baker in Davenport, Iowa in 1930.

1911

David A. Arrivee is Assistant Supervisor of the Targhee National Forest, Ogden, Utah.

J. V. Hoffman is Chief of the Forest School at North Carolina Agricultural College, Raleigh, N. C.

A. F. Oppel is with the State Forest Service here in St. Paul and is engaged in fire control work.

W. H. Kenety is General Manager of the Northwest Paper Company, Cloquet, Minn.

1912

Grover N. Conzet, Commissioner of Forestry and Fire Prevention is located in St. Paul. We've heard several fine reports of the manner in which he handled the Red Lake fire last fall.

G. Grant Harris, Jr. and Sigvald Norman are with the Page & Hill Company in Minneapolis.

Robert Wilson is managing a government lemon grove at San Fernando, California.

Harry Blodgett is with the Harvey Blodgett Printing Company, St. Paul.

1913

Andrew Erstad is with the Weyerhaeuser Forest Products Company at Klamath Falls, Oregon.

Ernest O. Buhler is Sales Manager with the Merchants Bank Building Company in St. Paul.

Robert Haworth is connected with the Red River Lumber Company at Los Angeles, California.

Charles Simpson is Supervisor of the Lolo National Forest, and is located at Missoula, Montana.

Paul Tobin, formerly at Cloquet with the Weyerhaeuser Company, is now at the new mill at Lewiston, Montana.

G. H. Wiggin is located at the Robinson Experiment Station at Quicksand, Kentucky, a comparatively new station which is in conjunction with the University of Kentucky.

1914

S. A. Graham is teaching forest entomology at the University of Michigan School of Forestry. His recent textbook on entomology is being used by Minnesota foresters.

Stanley L. Ringold is in the haberdashery business in St. Paul.

Harold W. Spink is the new owner of a lumber company at Kansas City, Missouri.

1915

Thorvald S. Hansen is director of the Cloquet Experiment Station and gives the juniors much practical forestry knowledge during their stay there each spring.

Henry M. Dennis is with the Tacoma Lumber Company, Tacoma, Washington.

1916

Ralph E. Rhoads sends his best regards to his old classmates. He is in Chester, Pennsylvania, where he is Secretary of the Scott Paper Co.

E. R. Swartz is with the Michigan Electro-chemical Company, Menominee, Michigan.

1917

Parker O. Anderson is Extension Forester, Department of Agriculture, and is located at University Farm.

1918

George Hauser is assistant football coach at the University of Minnesota.

1919

R. L. Bacus is living in Hollywood, California, and is exercising his interest in tree growing in his own front yard.

1920

R. H. Grabow is working for Los Angeles County in California.

Leo Isaac is working on the Northwest's forest problems at the Pacific Northwest Forest Experiment Station, Portland, Oregon.

1921

P. H. Bryan is engaged in administrative work on the Ozark National Forest in Ogden, Utah.

H. L. Person is Associate Silviculturist at Berkeley, California and is in charge of the silvicultural studies in the redwood region.

A. E. Wackerman, Southern Forest Experiment Station, New Orleans, La.

Leyden Erickson is with the National Lumber Manufacturers Association in Washington, D. C.

1922

Alvin A. Anderson is with the Chicago Mill and Lumber Company.

Ralph M. Nelson is with the Forest Pathology Department and is located at Asheville, N. Carolina.

1923

Charles Dockstader is cashier of the Minnesota Mutual Life Insurance Company of St. Paul.

Orcut W. ("Jack") Frost is with the Wood Conversion Company at Cloquet, Minn.

Augustine Streenz is Assistant Professor in the Forestry Department of Louisiana State University, Baton Rouge, La.

1924

Harold Betzold is busy in St. Paul keeping Como Park beautiful and looking after the conservatory there.

Victor A. Lynne is City Forester of Winona, Minnesota.

Walter G. Hoar is located on the Coeur d'Alene National Forest, Coeur d'Alene, Idaho.

Albin Nelson is Assistant in Public Relations in the State Forest Service, St. Paul, Minn.

Harold Ostergaard is Assistant Forester in the Minnesota State Forest Service, in charge of State Forests.

1925

Victor Jensen is engaged in fire, silviculture and mensuration work at the Northeastern Forest Experiment Station at Amherst, Mass.

William Maughan is on the staff of the Dicke Forest School, at Durham, N. C.

L. G. Baumhofer has been engaged in entomology work in various parts of the country since his graduation.

Roy Thompson is connected with the Forest Taxation Inquiry of the United States Forest Service, and is located at New Haven, Conn.

1926

Lyle Jackson is with the Forest Diseases Investigations, Bureau of Plant Industry at Washington, D. C.

Ralph M. Lindgren is at present on leave from the Office of Forest Pathology, U. S. D. A. and is continuing his graduate work at the University of Wisconsin.

Leslie Henry is in charge of timber surveys on the Washakie National Forest, Landers, Wyoming.

John G. Kuenzel is at the Yale School of Forestry, New Haven, Conn.

George Sargent is technical assistant on the Klamath National Forest.

1927

Roy A. Chapman is a member of the silviculture division of the Southern Forest Experiment Station at 348 Baronne St., New Orleans, La.

Warren W. Chase is assisting in the Division of Forestry, U. of M., and studying for his doctor's degree.

Leslie W. Orr is teaching forest entomology to student foresters at Minnesota, and is also in charge of entomology work in the state.

Ernest Kolbe is with the Pacific Northwest Experiment Station at Portland, Oregon.

Fentan Whitney is ranger in charge of the Fort Rock Ranger District, Deschutes National Forest, Bend, Oregon.

1928

Merrill Deters is assisting in mensuration and dendrology in the Division of Forestry, U. of M., while studying for his doctor's degree.

I. Lee Deen is instructing and working for his Ph. D. degree at Yale University, Forest School.

Albert Grant is with the Scott Pole Company in Minneapolis.

Edgar Clark is with the Wood Conversion Company of Cloquet and is located at Sioux Falls, South Dakota.

I. N. Van Alstine has just completed his third year on the White Mountain National Forest. He is located at Laconia, New Hampshire.

Ben Whitehill is in charge of timber sales on the Washakie National Forest, Du Nair, Wyoming.

1929

W. H. Fischer is a district ranger in the Black Hills. He was married last fall and is living in Rockford, South Dakota.

W. R. Anderson is working on timber sales on the Olympic National Forest and is located at Headsport, Washington.

Dale Chapman is at New Orleans with the Southern Forest Experiment Station and the Bureau of Plant Industry, and is engaged in pathology work.

Ernest George is at the Northern Great Plains Experiment Station at Mandan, North Dakota, and is in charge of an extensive shelter belt demonstration project.

Clyde Christiansen is teaching forest pathology at University Farm, St. Paul.

John Neetzel is working on forest fire investigations for the Lake States Forest Experiment Station.

Thad Parr.

Lawrence Ritter is blister rust control agent for the Minnesota State Forest Service.

David M. Williams is with the Mac Geillis and Gibbs Company, New Brighton, Minn., in the pole treating industry.

Harry A. Peterson is with the Bell Telephone Company at Chicago, employed in the research department of the company.

1930

Bob Anderson is taking graduate work in mensuration and is working part time for the Lake States Forest Experiment Station.

"Ike" Benson, "Happy" Forder and Milton Anderson are over on the New Mesabe purchase unit at Virginia, Minn.

Bill Brener is working at the Lake States Station for the Wisconsin Economic Land Survey.

Dan Bulfer is hard at work as a J. F. on the Targhee National Forest, Ashton, Idaho.

Rolland Lorenz left last fall for Liberia, Africa, where he is now employed with the Firestone Rubber Company.

Ralph Lorenz is taking graduate work here and is assisting in the Division of Plant Pathology.

Avid Tesaker has been jack-of-all-trades on the Superior National Forest for the past year.

Irwin Puphal is working on the Cabinet National Forest, Trout Creek, Montana.

Richard Wittenkamp is with the Wisconsin Land Economic Survey, Madison, Wisconsin.

1931

Like most foresters C. E. Anderson is keeping abreast of times by taking graduate work at Ames, Iowa.

"Porky" Anderson is taking a little graduate work at Minnesota and is planning strongly on taking the J. F. should it ever be given.

"Kelly" Beardsley came all the way from Idaho to take graduate work or something. Write your own ticket. Resting at the present time, however.

"Gus Bjorgum is around the cities doing everybody.

"Stan" Buckman got a break and is working for a Ph. D.

"Soup" Campbell, "Rob" Hunt, Webster Sterba and "Skinny" Stoudt are working for a masters in game management.

Maurice Day went all the way to Berkeley to accept a fellowship at the U. of California.

"Joe" Dolence turned up married to take the J. F. and remained to enroll in the graduate school.

"Ben" Fredrickson found a job with the Minnesota State Forest Service.

"Bill" Grady got a job driving somebody else's car around the cities.

"Barney" J. Huckenpahler came up working for a masters in Entomology.

"Kark" Karkula is bounding about taking a little work toward an M. S. in Wood Preservation.

"Abe" Keehn bought himself the Keehn Cash Grocery Establishment at Lewisville to make a little money.

When we last heard of "Leakey" Moore he was at home in Iowa. Well that's something when you consider the state.

"Elf" Nelson landed a job on the Superior National Forest.

"Long Ole" Olson is spending his time in the laboratory of the Weyerhaeuser Wood Conversion Plant at Cloquet.

Roy Osborne works now and then at the Lake States Experiment Station.

Latest reports from "Vendome" Peterson indicate that he has at least chosen an honest profession for a substitute to Forestry. Lyall has become a big real estate man in Minneapolis.

"Chuck" Randall still flits around the campus with a load of books on his shoulder and has registered in the graduate school. Name his major, we can't. A combination of S. L. A., Forestry and Field and Stream with smeary sunsets.

"Fatty" Rigg and "Sam" Frisby are both working for an M. S. in Silviculture.

"Mac" Risbrudt is wheeling hod for a St. Paul Construction Co.

"Frog" St. Amant and kid brother "Bob" have been up on the Superior National most of the year.

"Don" Stuart and "Pee Wee" are spore hunting with Clyde for a masters in Pathology.

"Ed" Niles went Y. M. C. A. for a while but is back in the Forestry profession selling insurance for the New England Mutual.

"Don" Gray divides his time between the graduate school and the Lake States Experiment Station.

ALUMNI DIRECTORY

1899

Chapman, H. H. Yale School of Forestry, New Haven, Conn.

1904

Erickson, M. L., Flandreau, S. D.

1905

Cuzner, Harold, College of Agriculture, Laguna Province, Los Banos, Phillipine Islands, Forestry Dept.

1906

Cox, Wm. T., Commissioner Conservation, State of Minn., Old Capital Bldg., St. Paul, Minn.

Detwiler, S. B., Chief, Office Blister Rust Control, Bureau of Plant Industry, Washington, D. C.

Rockwell, F. I., Marion, N. Dak.

Tierney, D. P., Castle Rock, Minn.

Cleator, A. W., 514 Lewis Bldg., U. S. M. A., F. S., Portland, Ore.

1907

Canavarrro Geo. de S., 2739 Huuanu Ave., Honolulu, Hawaii.

1909

Moore, Walt M., U. S. Army Air Service, Box 234, Osborne, Ohio.

Orr, George R., deceased.

1910

Baker, Norman M., deceased.

Benson, Arnold O., Forest Products Laboratory, Madison, Wis.

Berry, J. B., Winter Haven, Fla.

Brewster, D. R., 1315 Bank of Commerce Bldg., Memphis, Tenn.

Derring, Robert, Ferry Bldg., San Francisco, Calif.

Jacobson, N. G., 511 Spaulding Bldg., Portland, Ore.

Krauch, H. G., Ft. Valley Exp. Station, Flagstaff, Ariz.

Lewis, C. L., Jr., Beaver Brook Wis.

Underwood, C. L., 305 N. 4th Ave., Yakima, Wash.

1911

Arrivee, David A., Targhee National Forest, St. Anthony, Idaho, Box 644.

Beard, F. W.

Bowen, C. W., Jr., Fullerton, Calif.

Brownlie, J. R., Thompson Yards, Livingston, Mont.

Campbell, Hugh B., Prairie, Wash.

Eisenach, Walter, 1410 E. 10th St., Duluth, Minn.

Gilles, J. R., Box 248, Zamboanga, Phillipine Islands.

Hamilton, C. L., 808 Merchants National Bank Bldg., St. Paul, Minn.

Hauge, A. G., U. S. F. S., McNary, Ariz.

Hofmann, J. V., Forest School, North Carolina Agriculture College, Raleigh, N. C.

Kenety, W. H., Cloquet, Minn.

Martin, D. W., Lanham, Maryland.

Oppel, A. F., 1523 Branston, St. Paul, Minn.

Underwood, Wm., deceased.

Weber, Henry, Northern Oil Co., Virginia, Minn.

Williams, Donald, Washington, Wood Preserving Co., Spokane, Wash.

Young, Paul.

1912

Beyer, W. F., Marine Ins. Co., 59 Maiden Lane, New York City.

Blodgett, H. P., 1376 Portland Ave., St. Paul, Minn.

Clymer, W. R., 1626 Laurel Ave., St. Paul, Minn.

Conzet, G. M., Commissioner of Forestry and Fire Prevention, Old Capitol Bldg., St. Paul, Minn.

Harris, S. Grant, Jr., Page and Hill Co., Minneapolis, Minn.

Hodgman, A. W., Westport, Ore.

Norman, Sigvald, 2253 Scudder St., St. Paul, Minn.

Orr, J. E., Bay City, Mich.

Pearce, Wm. R., Eotsford Lumber Co., Faribault, Minn.

Pettibone, H. M., 500 Webster Place, Milwaukee, Wis.

Spellerberg, F. E., deceased.

Stevenson, J. A., Office Forest Disease Investigation, B. P. I., Washington, D. C.

Wilson, Robert, Mission Block, Woodley Rd., San Fernando, Calif.

1913

Buhler, E. O., Merchants Trust Co., St. Paul, Minn.

Erstad, Andrew, Weyerhaeuser Products, Klamath, Falls, Ore.

Griffin, Thos. A., 3529 Humboldt Ave. S., Minneapolis, Minn.

Hall, Edwin H., 2000 Fairmont Ave., Eugene, Ore.

Haworth, Robert, Red River Lumber Co., 702 Slauson, Los Angeles, Calif.

Henchel, Norman, Bushong, Kan.
Moir, John, 1501 Pioneer Bldg., St. Paul, Minn.

Nuffer, Harry

Renshaw, David, deceased.

Rogers, Ernest, deceased.

Savre, Oliver M., Northwood, Iowa.

Simpson, Chas., Lolo National Forest, Missoula, Mont.

Tobin, Paul, Lewiston, Idaho.

Wiggin, G. H., Robinson Expt. Station, Quicksand, Kentucky.

1914

Aldworth, Donald, 456 Fourth Avenue, New York City.

Allen, P. T.

Braden, Kenneth, Detroit, Mich.

Cummings, Thos. S. C., Fort Benton, Mont.

Freeman, George, 131 Hooper Ave., Toms River, N. J.

Graham, S. A., School of Forestry, U. of Michigan, Ann Arbor, Mich.

Lindeberg, Geo. C., Spencer, Iowa.

Mueller, A. T., Princeton, Wis.

Ringold, Stanley L., 2124 St. Clair St., St. Paul, Minn.

Rose, Logan, Mankato, Minn.

St. Marie, A. A.

Spink, Harold W., H. R. Smith Lumber Co., Kansas City, Mo.

Torgim, J. R., deceased.

1915

Chance, Jenner D., 719 7th Street S. E., Minneapolis, Minn.

Dennis, Henry M., Tacoma Lumber Co., Tacoma, Wash.

Dunn, Frank M., 3110 4th St. S. E., Minneapolis, Minn.

Hansen, Thorvald S., Forest Experiment Station, Cloquet, Minn.

Hawkinson, Carl, Jr., Virginia, Minn.

Sischo, Paul C.

Wyman, Hiram, Dundas, Minn.

1916

Bartelt, Harry, 2091 Buford Ave., St. Paul, Minn.

Bell, Ernest, deceased.

Blake, Philip, Glendora, Calif.

Broderick, Martin, c-o Nicaragua Mahogany Co., Bleufield, Nicaragua.

Crane, Leo F., Post Recruiting Office, Fort Sam Houston, Texas.

Gjerlow, Atle B., c-o Nicaragua Mahogany Co., Bleufield, Nicaragua.

Hyde, Luther, deceased.

Johnson, Oscar, Philadelphia, Pa.

Rhoads, Ralph, Scott Paper Co., Chester, Pa.

Schwartz, E. R., 1821 Liberty Street, Marinette, Wis.

1917

Anderson, P. O., Extension Forester, Dept. of Agri., University Farm.

Burnes, J. D., 5008 Vincent Ave. S., Minneapolis, Minn.

Forsberg, Carl, 3444 32nd Ave. S., Minneapolis, Minn.

Tuttle, L. S., Odell-Tuttle Lumber Co., 1645 Hennepin Ave., Minneapolis, Minn.

1918

Danson, Robert.

DeFlon, Leland L., Moody Bible Institute, Chicago, Ill.

Hauser, Geo., Line Coach, Football, University of Minnesota.

Pendergast, Earl, 13215 Birwood St., Detroit, Mich.

Swanson, Herb., c-o Kimberley Clark Co., Appleton, Wis.

1919

Backus, Romaine, 1953 Cheremoya Ave., Hollywood, Calif.

1920

Brayton, S. C., Grand Rapids, Mich.

Frudden, Clyde M., Greene, Iowa.

Grabow, R. M., 202 No. Broadway, Pasadena, Calif.

Isaac, Leo A., Pacific Northwest Forest Exp. Station, 514 Lewis Bldg., Portland, Ore.

Palmer, Paul, Lake City, Minn.

Schmid, Walter W., 50 Church St., New York City.

1921

Anneberg, Robert D.

Armstrong, J. J., 2132 Dayton Ave., St. Paul, Minn.

Bryan, P. H., Ozark National Forest, Russellville, Ark.

Dwyer, Daniel F., 969 Goodrich Ave., St. Paul, Minn.

Ericksen, Leyden, National Lumber Mfrs. Association, Transportation Bldg., Washington, D. C.

Grapp, Lloyd, Indian Agency, Neopit, Wis.

Ostrowski, Francis, Waldorf Paper Co., St. Paul, Minn.

Person, Hubert, Calif. Forestry Experiment Station, University of Calif., Berkeley, Calif.

Wackerman, A. E., Crossett Lumber Co., Crossett, Ark.

Whiton, Arthur L., 111 West Washington St, Chicago, Ill.

1922

Anderson, Alvin A., 111 West Washington Street, Chicago.

Anderson, Otto W., deceased.

Nelson, Ralph M., Federal Bldg., Asheville, N. C.

Sheehan, John A., Cudahy Packing Co., Duluth, Minn.

Thayer, Burton, 2400 Bourne Ave., St. Paul, Minn.

1923

Burton, Sidney S., Woodward, Okla. Cheesebrough, Herbert S., West Liberty, Iowa.

Dockstader, Chas., 1605 Juliet Street, St. Paul, Minn.

Fegraeus, Thorbern, deceased.

Fenger, Gunnar, supervisor Huron Nat'l Forest, U. S. F. S., Tarvas, Michigan.

Frost, Orcutt W., 18 Fourth St., Cloquet, Minn.

Hamilton, Herbert, McCloud, Calif.

McCreery, Otis, Assistant Dean of Student Affairs, University of Minnesota, Minneapolis, Minn.

Nelson, Arthur L., Nebraska National Forest, Halsey, Neb.

Probsfield, E. E., c-o Holland-American Plantations, Kiseran, Asahan, Sumatra, D. E. I.

Stevens, Raymond, Minn. Forest Service, Old Capitol, St. Paul, Minn.

Streinz, Augustine, Asst. Prof. of Forestry, State University, Baton Rouge, La.

Sunday, Clarence W., Redwood Falls, Minn.

Tilden, Floyd, 412 Prior Ave., St. Paul, Minn.

1924

Berggren, Harold, Lewiston, Idaho.

Betzold, Harold, 1224 Lexington Ave. North, St. Paul, Minn.

Bryan, Philip H., Ark. National Forest, Hot Springs, Ark.

Christopherson, Clifford, 1129 West Lawrence, Appleton, Wis.

Hoar, Walter G., Coeur d'Alene National Forest, Coeur d'Alene, Idaho.

Kribs, D. A., Bussey Institute, Cambridge, Mass.

Leffelmann, L. J., c-o Walter C. White, R. F. D. 3, Sumter, South Carolina.

Lynne, Victor, A., City Forester, P. O. Box 382, Winona, Minn.

Maturen, H. F., Lake States Forest Ex. Station, University Farm, St. Paul, Minn.

Nelson, Albin C., Dept. of Conservation, Old Capital Bldg., St. Paul, Minn.

Ostergaard, Harold, Dept. of Conservation, Old Capital Bldg., St. Paul, Minn.

Pillow, M. Y., Forest Products Laboratory, Madison, Wis.

Ritchie, Wm. A., Marathon Paper Mills, Ashland, Wis.

Sheffield, Ernest F., Robbinsdale, Minn.

Upton, Nelson.

Weswig, Carl, 1456 Branston St., St. Paul, Minn.

Youngers, P. W., Southern Surety Co., San Francisco, Calif.

1925

Barrett, Wilford.

Baumhofer, L. G., Bureau of Entomology, Washington, D. C.

Blandin, H. M., Quincy, Ill.

Cooper, Geo., Yale School of Forestry, New Haven, Conn.

Flanagan, Clement.

Gay, Chester, 1305 Pioneer Bldg., St. Paul, Minn.

Gordon, J. R., 1511 Belmont Road, Duluth, Minn.

Jensen, Victor S., Northeastern Experiment Station, Amherst, Mass.

Litchfield, Wickliffe, Mankato, Minn.

Maughan, Wm., Duke Forest School, Durham, N. C.

Peel, Wm. F., White Bear, Minn.

Racey, Chas., 1003 8th Street S. E., Minneapolis, Minn.

Thomson, Roy, U. S. Forest Taxation Inquiry, 360 Prospect St., New Haven, Conn.

Wilson, Walt, c-o Meyer Engraving Co., 316 8th Ave. So., Minneapolis, Minn.

1926

Bjornstad, E. G.

Blage, Arland C., Anoka, Minn.

Christenson, D. A., Hinckley, Minn.

Coffey, John J., 1731 Laurel Ave., St. Paul, Minn.

Erickson, Eugene T., Millbrook, N. Y.

Everts, Ambrose, U. S. F. S., Quincy,

- Calif. Plumas National Forest.
 Goldberg, Hyman M., 711 Dayton Avenue, St. Paul, Minn.
 Henry Leslie, U. S. F. S., Lauder, Wyo.
 Hyatt, H. H., 3700 Penn Ave. No., Minneapolis, Minn.
 Istrup, Marshall, deceased.
 Jackson, Lyle, Botanical Laboratory, U. of Pa., Phila., Pa.
 Janssen, Geo. R., 911 Carroll Ave., St. Paul, Minn.
 Kelsey, H. B., 2817 17th Ave. S. E., Minneapolis, Minn.
 Kuenzel, J. G., Yale Forest School, New Haven, Conn.
 Lingren, R. M., Graduate School, U. of Wisc.
 Lystrup, Herbert, Warrendale, Greenhouse, Como Ave., St. Paul, Minn.
 Manuel, Ronald, Buenos Aires, Argentina, S. A.
 Shaddock, Nobel, Law, University of Minnesota, Minneapolis, Minn.
 Sargent, Geo., U. S. F. S., Yreka, Calif., Klamath National Forest.
 Umbehoeker, Kenneth, 4633 Oakland Ave. S., Minneapolis, Minn.
 Watts, Paul Kenneth, 1824 East 1st Street, Duluth, Minn.
 Whitchurch, Gale M., 2618 Polk St. N. E., Minneapolis, Minn.
 Zierke, E. A., Princeton, Minn.
- 1927
- Carlson, C. Homer, 3838 22½ Ave. S., Minneapolis, Minn.
 Chapman, Roy A., So. Exp. Station, Customs House, 348 Baronne Street, New Orleans, La.
 Chase, W. Warren, Div. of Forestry, U. of M., St. Paul, Minn.
 Clement, Raymond, Minn. Forest Service, Old Capitol, St. Paul, Minn.
 Duclos, E. P., 2371 No. 70th St., Wauwatosa, Wis.
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 Hartupee, Chas. H., Red Wing, Minn.
 Himebaugh, W. K., Route 2, Hopkins, Minn.
 Holmberg, R. E., Hastings, Neb.
 Horton, Gerald S., U. S. F. S., Deer River, Minn.
 Kaner, Arnold, Cloquet, Minn.
 Knutson, Clarence, U. S. F. S., East Tawas, Mich.
 Koelbe, Ernest, U. S. F. S., Portland, Ore., 514 Lewis Bldg.
 Krueger, Carl G., U. S. F. S., Shoshone National Forest, Ishawooa, Wyo.
 Lawson, Edward L., Minn. Forest Service, St. Paul, Minn.
 Leaf, Geo., 932 Westminster St., St. Paul, Minn.
 Martilla, Uno, Eveleth, Minn.
 Nelson, Stanley C., 3241 18th Ave. S., Minneapolis, Minn.
 Orr, Leslie W., Dept. of Entomology, U. of M., St. Paul, Minn.
 Sheridan, E. P., 2526 Bloomington Ave., Minneapolis, Minn.
 Swanbeck, H. J., 813½ 12th Ave. S., Minneapolis, Minn.
 Verrall, Arthur F., U. Farm, St. Paul, Minn.
 Whitney, Fenton, Deschutes National Forest, Bend, Ore.
 Wilson, Earl G., 3128 20th Ave. S., Minneapolis, Minn.
- 1928
- Blatter, Paul, Olympic Forest Products Co., Port Angeles, Wash.
 Clark, Edgar, 1006½ So. Oak Ave., Sioux Falls, So. Dak.
 Cook, Oliver, Flour City Paper Box Co., Minneapolis, Minn.
 Cooper, Arthur, Park Board, Minneapolis.
 Deen, Lee J., Yale Forest School, New Haven, Conn.
 Deters, Merrill, 1141 Hague Ave., St. Paul, Minn. Division of Forestry, U. of M.
 Fischer, Wm., Slack Hills, Rockford, So. Dak.
 Foster, Ellery, School of Forestry, U. of Michigan, Ann Arbor, Mich.
 Grant, Albert, Scott Pole Company, Minneapolis, Minn.
 Halvorson, George, Page & Hill Pole Co., St. Paul, Minn.
 Harvey, Harry, 1189 Hague Ave., St. Paul, Minn.
 Homola, Jerome.
 Kirkham, Dayton, U. S. F. S., Big Horn, Wyo.
 Knudson, Ray, Gully, Minnesota.
 Knutson, Clifford J., 3236 18th Ave. S., Minneapolis, Minn.
 Limstrom, Gustaf, Yale Forest School, New Haven, Conn.
 Lotti, Thomas, Lake States Forest Experiment Station, St. Paul, Minn.
 Norgorden, Emil, Veronia, Ore. P. O. 41.
 Piras, Stanley, 83 Douglas St., St. Paul, Minn.
 Rathbun, Harold, National Pole and Tie Co., Minneapolis, Minn.
 Rudolf, Paul, Lake States Forest Experiment Station, St. Paul, Minn.

- Sheridan, Edgar, 2526 Bloomington, Minneapolis, Minn.
 Strimling, Harry, 139 W. 84th Street, New York, N. Y.
 Van Alstine, J. Neil, Woodstock Dist., U. S. F. S., White Mt. National Forest, Laconia, N. H.
 Whitehill, Benjamin, Washakie National Forest, Du Noir, Wyoming.

1929

- Anderson, W., North Route, Hoodsport, Wash.
 Andrews, Shirlee B., c-o Michigan Tie & Pole Co., Reed City, Mich.
 Wogenson, Adolph K., Tyler, Minn.
 George, Ernest, Northern Great Plains Experiment Station, Mandan, N. D.
 Kaufert, Frank, Southern Forest Experiment Station, 348 Bronne St., New Orleans, La.
 Christenson, Clyde, Pathology Dept., U. Farm, St. Paul, Minn.
 Crew, John, 3233 21st Ave. S., Minneapolis, Minn.
 Chapman, Dale, So. Expt. Station, Bureau of Plant Industry, New Orleans, La.
 Hallin, Wm., U. S. F. S., Bend, Ore.
 Light, James, Ottawa, Ohio.
 Marks, Elmer, Division of Forestry, St. Paul, Minn.
 Neetzel John, Lake States Exp. Station, St. Paul, Minn.
 Parr, Thad., Armstrong Tree Service Co., Box 169, Poughkeepsie, N. Y.
 Peterson, Harry A., 208 W. Washington St., Chicago, Ill.
 Ritter, Lawrence, 1400 Raymond Ave., St. Paul, Minn. Blister Rust Control.
 Roar, Audray, c-o Gamble Store, Moorhead, Minn.
 Robinson, Winfield R., I n d i a n Agency, Neopit, Wis.
 Thomas, Jr., R. D., International Paper Co., Glen Falls, N. Y.
 Tilden, Ray B., 253 Louis St., St. Paul, Minn.
 Williams, David M., New Brighton, Minn.
- Anderson, Robert, Land Economic Survey, Lake States Experiment Station, St. Paul, Minn.
 Bulfer, Daniel, U. S. F. S., Ashton, Idaho.
 Benson, Eynar, Proctor, Minn.
 Boettcher, Paul, Retail Lumber Co., Arthur, N. Dak.
 Brener, William, Wisc. Conservation Commission, Gordon, Wisc.
 Clough, Robert, 253 Louis St., St. Paul, Minn.
 Clarence Wiese, Land Economic Survey, 411 N. 8th St., Watertown, Wis.
 Chase, Clarence, Div. Forestry, U. of M.
 Forder, Milton, Buhl, Minn.
 Freeman, Victor, Upton, N. Dak.
 Olson, George, Lake States Forest Experiment Station, U. Farm, St. Paul.
 Lorenz, Ralph, Division of Plant Physiology, U. Farm, St. Paul.
 Lorenz, Rolland, Forestry Laboratories, Monrovia, Liberia, West Africa.
 Maki Tenho, U. of Minn.
 McQuoid, Donald, 1623 University Ave. S. E., Minneapolis, Minn.
 Mitchell, Harold, Graduate School Harvard.
 Nelson, Henry O., 2225 West 4th St., Duluth, Minn.
 Parish, John, Alpha, Minnesota.
 Pawek, Hugo, Duke Forest School, Durham, N. C.
 Puphal, Irvin, U. S. F. S., Froust Creek, Mont.
 Royer, William, 605 So. Scoville Ave., Oak Park, Ill.
 Tesaker, Avid, Crosby, Minn.
 Wittenkamp, Richard, Land Economic Survey, Wis.
 Wogenson, Adolph K., U. S. F. S., Region 7, North Carolina.
 Woodford, Reinald, 928 E. Lawson St., St. Paul, Minn.

1931

- Aamor, A. Loren, Spring Valley, Minn.
 Anderson, Carl H., 1245 Hamline, St. Paul, Minn.
 Anderson, Milton, 519 5th St. S., Virginia, Minn.
 Anderson, Clarence E., Graduate School, Iowa State University, Ames, Iowa.
 Anderson, Frank H., 823 Queen Ave. No., Minneapolis, Minn.
 Day, Maurice W., Division of Forestry, University of California, Berkeley, Calif.
 Dolence, Frank, Box 1994, No. Hibbing, Minn.
 Donehower, Weston, Dept of Forestry, Cornell University, Ithaca, N. Y.
 Huckenpahler, Bernard J., Graduate School, University of Minnesota.

- Beardsley, Charles, 1395 Raymond Ave., St. Paul, Minn.
 Bender, Edwin, Chaska, Minn.
 Bjorgum, Eldar, 2520 24th Avenue, Minneapolis, Minn.
 Buckman, Stanly, Graduate School, University of Minnesota.
 Campbell, Donald, Graduate School, University of Minnesota.
 Dahl, Ernest, Lake Mills, Iowa.
 Frederickson, Frank, Minnesota Forest Service.
 Grady, William, 638 Ashland Ave., St. Paul, Minn.
 Hunt, Robley, Graduate School, University of Minnesota.
 Janelle, Harley, 618 N. 59 Ave. W., Duluth, Minn.
 Karkula, Alexander, Graduate School, University of Minnesota.
 Keene, Henry F., Lewisville, Minn.
 Knoblauch, Chas. J., Excelsior, Minn.
 Lidberg, Carl L.
 Mayer, Arthur, 4229 30th Ave. So., Minneapolis, Minn.
 Moore, Lee L., 918 So. Paxton, Sioux City, Iowa.
 Nelson, Alf, 3903 Stevens Ave., Minneapolis, Minn.
 Niles, Edwin, 437 Oliver Ave. S., Minneapolis, Minn.
 Olson, Clarence, Alexandria, Minn.
 Osborne, Raymond, Lake States Experiment Station, University Farm, St. Paul, Minn.
 Peterson, Lyall E., 1606 Penn Ave. N., Minneapolis, Minn.
 Quick, Russell, 1166 Ivy Street, St. Paul, Minn.
 Randall, Charles, Graduate School, University of Minnesota.
 Rigg, Milford T., Graduate School, University of Minnesota.
 Risbrudt, Clifford, 541 Capital Ave., St. Paul, Minn.
 St. Amant, Paul, Wayzata, R. F. D. 3, Minnetonka, Minn.
 Schneider, Arthur, 836 N. 43rd Ave, West Duluth, Minn.
 Sterba, Webster, Graduate School, University of Minnesota.
 Stewart, Donald, Division of Plant Pathology, Univ. Farm, St. Paul, Minn.
 Stoudt, Jerome H., Hastings, Minn.
 Sword, Wayne, Mack, Minn.
 Wellberg, Ernest, Graduate School, University of Minnesota.

ENROLLMENT

FRESHMEN

- George Amidon St. Paul
 Claude Asp Floodwood
 Daniel Bliss Minneapolis
 Michael Brinda Minneapolis
 Burton R. Carlson Minneapolis
 Paul Carlson Minneapolis
 Russell Carlstrom St. Paul
 Jack Earl Collard Red Wing
 Jack Densmore Edgewood, Iowa
 Bernard Efron St. Paul
 Birger W. Ellertsen
 Brooklyn, N. Y.
 Carl D. Feltman Minneapolis
 Wilson Hall St. Paul
 Edward Holbrook Minneapolis
 Eugene J. Hurley St. Paul
 Olaf Jacobsen Minneapolis
 Russell W. Johnson St. Paul
 Carlton T. Kenning Minneapolis
 Rollin A. Lanpher Mahtomedi
 Kenneth W. Larson St. Paul
 Arnold Lee Glenwood
 Robert Lindeberg St. Paul
 Don Lynch Minneapolis
 L. G. MacMaster Sleepy Eye
 Robert W. Merz Minneapolis

- Marius Morse Minneapolis
 Raymond C. Nease St. Paul
 Robert C. Nord St. Paul
 J. Raymond O'Neill
 Fessenden, N. Dak.
 James E. Phillips Minneapolis
 Garold Pugsley Elmore
 John Riss Worthington
 Alvin John Robertson, Minneapolis
 Casimir R. Romanowski
 Milwaukee, Wis.
 Roman Schwartz St. Paul
 Robert Sharp St. Paul
 Richard C. Smith St. Paul
 John Stephens, Mandan, N. Dak.
 Arthur W. Sturtevant, Minneapolis
 John M. Sunderson Fairmont
 Vernon Watters Alexandria
 Williams L. Webb St. Paul
 Henry Westby Minneapolis

SOPHOMORES

- Thorolf Bergh Minneapolis
 Don Burcalow St. Paul
 Edward Berntson Minneapolis
 Harold Dierke St. Paul
 Harry Doncht Glencoe

William Emerson	St. Paul	Karl Kobes	New Bedford, Mass.
Roy Erson	Minneapolis	Wilfred Lauer	Minneapolis
Walter Fransen	St. Paul	Lorenz R. Lindstrom	Lakeland
Samuel Giltner	Minneapolis	Peder N. Lund	Clarkfield
Paul Gunstad	Minneapolis	Harry C. Miley	Moorhead
Jerome Hagen	Minneapolis	Francis I. Moore	St. Paul
Lynn Hatch	Neopit, Wisc.	St. Elmo Nauman	Minneapolis
Orville Hatle	Hartland	Ralph William Nelson	Duluth
Robert Helstrom	Minneapolis	Ervin Nerenberg	St. Paul
George Herion	Chicago, Ill.	Theodore Niehaus	Melrose
Barclay Infantino		Harold Nilsen	St. Paul
	Pundsutawney, Pa.	Edward Panek	St. Paul
Walter Jacobsen	Minneapolis	George Plant	St. Paul
Warren Josephson	Marine	John Rundgren	St. Paul
Robert Kolbe	Minneapolis	Victor O. Sandberg	Hibbing
Ero Laitala	Ely	Henry Stoehr	Chicago, Ill.
Anton Lindquist	Mahtowa	Philip Watterberg	Excelsior
Joseph Lorenz	Austin	Karl Fred Ziegler	Minneapolis
Waldemore Mohl	Minneapolis	Roan Anderson	Monticello
Lincoln Mueller	New Ulm	John Cann	Faribault
John Murphy	Stillwater	Conrad Carlson	St. Paul
Ralph Nelson	Minneapolis	H. Ray Kline	Aitkin
Roy M. Nelson	Gaylord	Floyd Colburn	Excelsior
Urban Nelson	Cokato	Thure Duvall	St. Paul
Herbert Norman	Cambridge	Don Ferguson	Detroit Lakes
Leonard Pulkrabek	Glencoe	George Forus	Richfield
Walter Ridlington	Cloquet	David Gibney	St. Paul
Paul Seastrom	Geneva, Ill.	Teddy Holt	Farmington
Randall Strate	Roseville, Ohio	Arthur Horn	Minneapolis
Peter Super	Minneapolis	Aatos Huhtala	Hibbing
John Wentling	St. Paul	Wilbur Isaacson	Embarras
Russell Wheeler	St. Paul	Clayton Jackson	Grand Marais
Don Wyatt	St. Paul	John Kopitke	Minneapolis
Russell Younggren	Virginia	Sulo Koski	International Falls

JUNIORS

William E. Ackernecht	Minneapolis	Charles Lazzaro	Nashwank
John J. Ahern	Taunton, Minn.	Joseph Lozinski	Taunton, Ala.
F. C. Alexander	Glenwood, Minn.	John McMillen	St. Paul
Gordon H. Carr	Minneapolis	Irving Moore	Minneapolis
Ralph Christopherson	Virginia	Leonard Moore	St. Paul
John Dobie	Minneapolis	Leiton Nelson	Burtrum
Don W. Egermayer		Stanley Olson	Minneapolis
	Des Moines, Iowa	Donald Price	Minneapolis
John L. Englesby	Minneapolis	Arthur Roe	Minneapolis
John R. Fry, Jr.	St. Paul	Robert St. Amant	Wayzata
Wiley Thomas Fuller	Minneapolis	R. Dale Sanders	Detroit Lakes
Ralph Graves	Morton	Roland Schaar	Hastings
Dewey V. Hahn	Onamia	Howard Smith	St. Cloud
Ross W. Haven	St. Paul	Orlo Soland	Oklee
Rutven Hedland	Elmore	Harry Stritman	Minneapolis
Leon O. Hill	Granada	Alice Stuart	Chicago, Ill.
Harlan G. Johnson	Minneapolis	Albert Tofte	Tofte
William W. Jolly	Minneapolis	Harold Tysk	St. Paul
Miles W. Kelly	Duluth	Frederick Wangaard	Minneapolis
		Walter Zillgitt	Lake City

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best results
are obtained by
using 120 line
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Public Utility Companies expect so much from "P & H PROCESS" poles that the standard we have set can never be lowered.

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For this reason, if for no other, we are intent on maintaining this leadership of "P & H PROCESS" Poles.

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» » » **FINIS**

It was as interesting as a fine book, Seniors. The end of your campus life draws near. The last chapter has always been attractive. Now it is at hand. Regrets mingle with happiness. Pleasant reminiscences make one wish to continue. They conflict with anticipation and eagerness to accomplish the next task.

But as all good books, remember there is another. Another interesting sequel. When you close this book, you will open another. Pleasant associates, ideals and aspirations will carry you forward.

Greetings and best wishes for the future.



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The Twin Cities Hoo Hoo Club extends its greetings to the Class of 1932 and wishes them the best of success in all their undertakings.

Hoo Hoo is a fraternal organization composed of those connected with some branch of the lumber industry. Its emblem is a Black Cat.

HOO HOO CODE OF ETHICS

Our Aims:

ONE

To fill with credit the sphere in which we are placed without interfering with the rights of others.

TWO

To promote human advancement and higher standards of civic, social and economic relations by developing in business the spirit of the Golden Rule, which we accept as the basic principle of peace and prosperity for the world.

THREE

To establish the spoken word on the basis of the written bond.

FOUR

To cultivate true friendship and therefore confidence between persons engaged in the lumber industry, modifying the freedom of competition with the good sense of understanding.

FIVE

To conduct ourselves and our business so that we may render service to society.

SIX

To consider our vocation worthy and to be worthy of our vocation as the Nation's home-builders.

SEVEN

To assist liberally and sympathetically all that seeks to elevate humanity, by charity of action and thought and by justice to all men through the "Square Deal".

EIGHT

To keep in view the world bonds of human interest and trade, seeking to promote justice and fair dealing to all nations and races and all world understanding consistent with the maintenance of Anglo-Saxon ideals and historic Americanism.

NINE

To recognize the abiding power of co-operation and organization and so to act as individuals that the Concatenated Order of Hoo-Hoo shall ever be regarded with honor as a source of community benefit and good-will.

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1435 Cleveland Ave.—Ross & Olson

APPRECIATION

The Peavey Board and the Gopher Peavey Staff wish at this time to express their sincere appreciation and thanks for the cooperation, use of cuts and valuable assistance given by the student body, the Alumni, the faculty, Mr. Depew of the University Press and the following organizations: The Alumni Weekly, Ski-U-Mah, The Gopher, Tau Phi Delta, The MacGillis & Gibbs Co., Wood Preserving News, The Minnesota Waltonian, The Ten Thousand Lakes Association of Minnesota and the State Department of Conservation.

The Peavey Board and The Gopher Peavey Staff also wish to thank the concerns advertising in this annual, as their support made possible the publication of the 1932 Gopher Peavey.



The Gopher Peavey of 1932 now comes to a close; but we earnestly hope that for students, alumni and faculty alike it remains an open book, keeping ever alive pleasant memories and friendships of the good old days at Minnesota.