

E. J. George

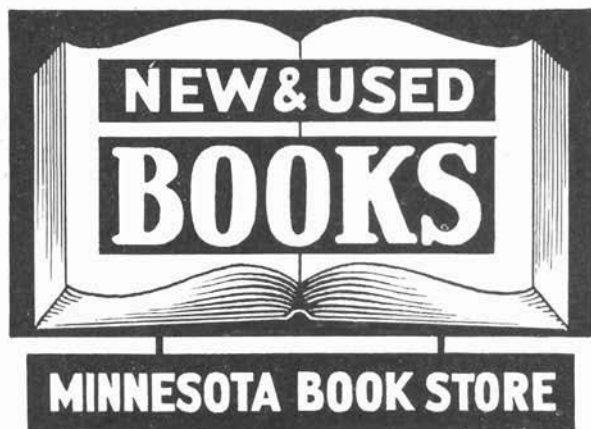
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*The reflection of those soft colors
Of every description and hue,
No paint brush can e'er catch its magic.
No word I can think of will do.*

—B. BROWN

DEDICATION

To Commissioner E. V. Willard, and to The Hon. John R. Foley, The Hon. Richard R. Bailey, The Hon. Ernest Reiff, The Hon. Wm. E. Ericson, and The Hon. Frank Yetka, members of the Minnesota Conservation Commission, the 1934 GOPHER PEAVEY is dedicated in grateful appreciation of their unselfish devotion to the cause of conservation. Despite the many difficulties and divergent opinions which inevitably attend the administration of a far-flung and far-reaching public activity, the conservation of the state's resources has moved forward on all fronts and the Conservation Commission is blazing a trail which, if constructed and maintained, will make Minnesota one of the foremost states in the Union in the successful administration of its natural resources.

Foreword

Here you are, boys! The GOPHER PEAVEY is born again. Minnesota foresters make good, and so does the GOPHER PEAVEY, but you fellows may not realize the agonies through which its mothers have passed. In case you do not know it, the depression is still on. What with cancelled advertising contracts and slow subscription responses, the issue was in doubt for a while, but of course it came through. The editors kidded themselves that the alumni would be bitterly disappointed if the PEAVEY did not appear. Whether that is true or not, the editors feel that it must never come about that the alumni even have had an opportunity to be disappointed in the undergraduates, at least not through them. They have done their best for you fellows. Take it and like it!!

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CONCERNING PHOTOGRAPHY

L. B. RITTER, '29

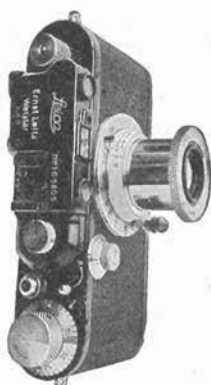
THAT the use of the camera, large and small, expensive and inexpensive, is a popular pastime of the American people is testified by the discarded film boxes at America's beauty spots. The average person takes pictures (as they are popularly called to the disgust of those having artistic inclinations) of friends and relatives at the seashore and on the mountain top. The forester, in common with other professional men, has other reasons for making photographic records of individuals, events, and places. The camera is indeed a professional tool. The public relations man finds uses for photographs in the illustration of magazine and newspaper articles and in lantern slide lectures. The forest administrator and research men find them of value in record keeping and in the preparation of reports and papers. As is often said, "A good picture is worth a thousand words".

The sensitiveness of certain silver salts to light makes photography possible. The exposure of these salts to light results in their slight reduction to metallic silver which is completed when the photographic material is developed in chemical solutions. In the preparation of photographic films and papers the silver salts are cooked in gelatine, and the resulting emulsion coated on glass, film, or paper. The photographic properties of the emulsion depend on the salt or mixtures of salts employed, the length of the cooking period, and in the case of films, the dyes which may be added.

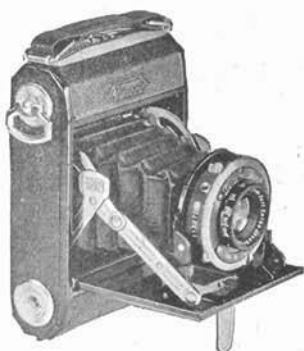
Cameras

Photography and vision are kindred phenomena, the camera being essentially an artificial eye of glass, metal, and leather. The shutter may be compared to the eyelid in that it is opened to admit light. The rays of light pass through a lens to form an image that is projected on the retina, or on a photographic plate or film. In the human eye, the rays of light pass first through the pupil which contracts or expands, automatically controlling the volume of light admitted. In the camera the speed with which light enters is controlled by the diaphragm or stop.

Every lens has a definite focal length. In a camera this is the distance from the center of the lens to the surface of the film or plate when a clear, sharp image of a distant object is thrown on the latter. The standard camera lens has a focal length slightly greater than the longest side of the picture size. Telephoto lens have long focal



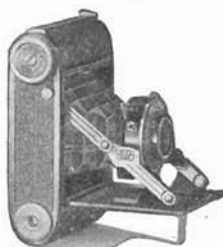
*General Utility
Miniature*



*Roll Film Folding
Camera*



Miniature Camera



The Vest Pocket



The Plate Camera

lengths and smaller angles of vision. Their use results in an increased picture size of distant objects. A lens of shorter than standard focal length will cover a wider angle of vision. This permits the photographing of large subjects such as interiors and architecture at shorter distances. Soft focus lens are used for portraits and pictorial work.

Definite amounts of light are necessary to produce the desired reduction of the sensitive silver salts. In the camera this amount of light is regulated by the length of exposure and the size of the lens opening through which the light passes. The rapidity of light transmission by a lens is not solely dependent upon its diameter, but upon the ratio of its diameter to its focal length. As an example, the focal length of a lens is 8" and the diameter $1\frac{3}{4}$ ". The rapidity or effective aperture of the lens will be $1\frac{3}{4}:8 = 1:4.5$, which is written F 4.5. The diaphragm consists of a series of thin sections so arranged as to form a circular opening in their center, the diameter of which may be varied within certain limits. Diaphragm apertures are designated in exactly the same manner as the effective aperture of the lens, that is, by the relationship of their diameters to the focal length of the lens. The scale by which the diaphragm (stop) is set, is usually engraved so that each progressive change of openings calls for double or half the exposure. Thus, double the exposure with an aperture opening of F 6.3 will be required for the opening F 7.9.

Several types of shutters are in use. The shutter on the box camera usually consists of one or more holes of various sizes that move across the front of the lens when the button is snapped. The inter-lens shutter consists of a series of thin metal sections which can be opened and closed at a number of speeds; they can be secured timed to give exposures as short as 1-500 of a second. They are the common shutter in amateur cameras. A focal plane shutter consists of a curtain of cloth or thin metal plates having openings (slits) of various sizes that moves across the face of the film. Two factors govern its exposure time: first, the size of the opening used and second, the speed with which the curtain moves. The fastest common focal plane shutter time is 1-1000 second. This type of shutter is standard equipment on the better reflex and miniature cameras. The essential part of the camera is its lens and shutter, and the cost and suitability of the camera for different types of work depends upon them.

A camera can be constructed of a plain box with a piece of sensitive photographic material placed in the back and a pin hole to admit light placed in the front. To produce a clear picture the pin hole must be small. Therefore a long exposure is necessary to admit the required amount of light. The replacement of a pin hole with a fixed focus lens and a shutter results in the simple box camera.

A great variety of cameras, as to make, sizes, and patterns of both American and foreign manufacture are available. No one system of classification can be applied to these many models. Box cameras stand all alone. They are essentially for the novice and are

of rather restricted use. The folding cameras include by far the greater proportion of both amateur and professional models. Reflex cameras are equipped with a mirror set at an angle which reflects the image of the subject into a ground glass set in the top of the camera. The "Graflex" was for years the reflex camera but today many makes are available. The reflex camera is suitable for many types of work and is especially valuable in photographing sports events. All cameras may be subdivided again into roll film and plate cameras. (Plates include cut film and film packs). Many cameras are available that permit the use of both roll film and plates.



The chief advantage of the plate camera is that a ground glass can be used for critical focusing (the ground glass must be used in most professional cameras). When equipped with a double extension bellows small objects can be photographed full size. In professional cameras the lens can be quickly changed to meet the demands of the particular job.

The miniature camera deserves special mention. The vest pocket camera may be considered in this class and models are on the market with very fine lens and shutter equipment. The true miniature camera is a precision built instrument using 35 mm. motion picture film. Some miniature cameras have built-in range finders coupled to the

lens mount with resulting auto-focusing. A variety of lenses are available and in a number of makes can be changed in a few seconds. Miniature cameras are used by many amateur and professional workers for all kinds of photographic work. In fact it is only in the miniature camera class that an all around camera can be found.

The advantages of a good miniature camera are: Its small size, its cheap cost per negative, and its versatility. Its disadvantages are: Its comparatively high original cost (this cost is low considering their versatility), and that negatives must be enlarged.

The following points must be considered in buying a camera: First, the money available for its purchase; second, the type or types of photographic work for which it is required; third, the amount of photofinishing the individual cares to or is prepared to do himself.

The ordinary button pusher requires only a box camera or a folding camera costing up to ten dollars. Good roll film cameras for ordinary work at distances of not less than six feet are available in this price class. The individual desiring a camera that will take pictures through most of the day will need a better lens equipment and will have to pay more for it. In addition to snap shot work if it is desired to do close up, copying and similar work requiring critical focusing, a camera equipped with a ground glass back and double extension bellows is in order. The reflex camera can be used for much the same purposes as the cameras equipped with ground glass backs and are as already stated especially suitable for photographing sports events. Many of them are bulky and heavy, however.

Those who want an all around camera, and who can afford a comparatively expensive camera and who are prepared to do their own enlarging can well consider a miniature camera.

Many different kinds of films are available to meet the many photographic needs and they can be classified in a number of ways: First, we might consider their ability to register color in tone values.

Ordinary film is sensitive to essentially only blue light; thus, for example, it photographs red black. Orthochromatic film is sensitive to blue and green light. It is therefore suitable for scenic and ordinary snapshot photography. Panchromatic films are sensitive to the entire photographic spectrum, blue, green and red. They are essential if reasonably correct renderings of all tone values are wanted and are required for color separation work. Process films are used for copying, especially if pure whites and blacks are wanted. Infra red sensitive material is available. It is used for extreme telephoto work of distant buildings, mountains, etc. It may also be used to take photos of hot objects without visible light.

A discussion of films is not complete unless it includes filters. The filters used for normal photography are designed to reduce the amount of blue light reaching the film. In scenic photos, for example, their use results in better tone values of the sky and clouds. Several yellow filters are available. The sky filter is deep yellow in

the upper portion, decreasing in color density until the bottom half of the filter is clear. Filters having factors K1, K2 or their equivalent and the new green X1 and X2 are in the normal yellow filter group.

Contrast filters are available for special work and for color separation. They are used only with panchromatic materials. Examples of the use of these filters are cited to further explain their value. A red filter is used to bring out the grain in reddish woods, such as mahogany. Similarly, a yellow filter accents the grain of wood such as oak. I have found a red filter necessary to differentiate between dead and green branches on white pine in photographing blister rust damage; brown and green otherwise having the same tone value when rendered in monochrome.

An increasing variety of films are becoming available. Verichrome and plenachrome offer an orthochromatic emulsion that is not exacting in exposure. Supersensitive panchromatic film is available in roll film. This material has twice the speed of the old style film; the only roll film available until the past couple of years. Fine grain panchromatic film is available in sizes up to 116 ($2\frac{1}{2} \times 4\frac{1}{4}$). Cut film has almost entirely replaced plates and is available in almost all emulsions.

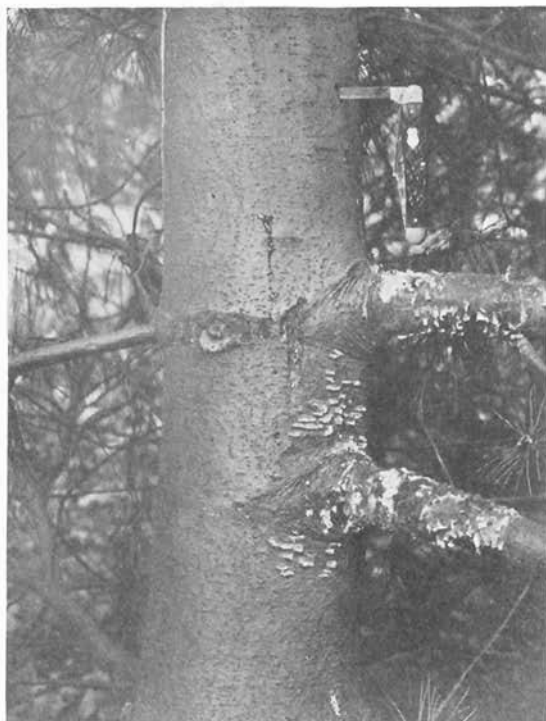
Extensive research in motion picture photography has resulted in great film improvements. This is especially true in the miniature camera field where the use of "fine grain" film and "fine grain developers" permit enlargement of tiny negatives up to 3 feet or more.

Taking The Picture

The selection of the subject is the first step toward securing a picture. The next step in order is securing a view of the subject that will present it in a pleasing way. The art of securing good composition is much more difficult than the mastering of the mechanical details of camera manipulation. If another person can pick up a picture and observe first of all your intended center of interest, that picture possesses good composition. The next steps are inter-related. The selection of the stop (diaphragm aperture) to be used depends on the depth of focus desired. When the diaphragm is wide open all of the lens is being utilized and the depth of focus is small. This is desirable for example in taking closeups of flowers, animals, and birds as the resulting fuzzy background does not distract from the subject. With the closing of the diaphragm the depth of focus is increased, with corresponding increase in the depth of the picture.

It is very important that the distance from the camera to the subject be quite accurately measured or estimated. This is especially true when short distances are involved. The next step in order is the choosing of exposure time. Three factors must be considered here: amount of light, speed of film, and diaphragm stop to be used. The amount of light is determined by the latitude, time of year, time

of day, weather conditions, subject and distance from the subject. A guide for making exposure usually accompanies the camera or can be secured from a photo supply dealer. The use of an exposure calculator is suggested. A considerable variety of exposure meters are on the market; however, only a few of them eliminate the human judgment factor. I have found the "Welcome" exposure calculator to be very accurate. This forms a part of a little cloth bound note book that sells for 75c. While exposures up to 1-5 second may be successfully secured with camera held in the hand, it is suggested that snapshots be timed for 1-25, 1-50 of a second or faster.



A discussion of a number of photographic problems is in order and first we will consider the most common novice picture, snapshots of individuals and groups. One thing detestable is sharp, harsh shadows resulting from taking this type of picture in the full sunlight. Place your subject in the shade and double the exposure time. The main source of light, the sun, should be shining across the face of the subjects at an angle even tho it be hidden by clouds, trees or buildings. The results of utilizing a softer light will please you. When a group to be taken consists of two or more rows of people, the distance to be considered in focusing should be measured to the ap-

proximate center of the group. Thus, if three rows of people are involved, this focusing distance would be the center row. If possible a pleasing background should be chosen. Trees and shrubs are fine; buildings (usually) and the sky are not. The subjects should be some three to six feet in front of the background to give the picture depth.

In the taking of scenic pictures, it must be remembered that the light reflection from snow and water is intense with resulting short exposure time. This is the place to stress the fact that the sun need not be looking over the shoulder of the photographer, when the picture is taken. In scenic and pictorial work especially, shadows crossing the picture at various angles, even pointing toward the camera give beautiful results. Trees to have roundness must have sunlight shining on them at an angle so that the lighting consists of part shadow and part full sunlight. Photographs taken directly into the sun are frequently very soft, and this is not always desirable. The sun must never shine directly into the lens. The hand or hat may be used to shadow the lens. The use of a sunshade will improve the quality of a great portion of your scenic negatives. One can be made from a piece of black paper. A collapsible drinking cup less the bottom plus the addition of a small piece of velvet or cork and some black paint makes a good sun shade.

In securing pictures of moving water, pleasing results can be secured dividing the exposure into a series of short exposures. The camera must be placed on a tripod to do this and care must be taken not to move the camera. The use of a camera with a ground glass back and double extension bellows and a tripod is necessary to handle close ups of plants, fungous, fruiting bodies, insect damage, etc. The camera is set up, the shutter set for time and opened and the subject arranged and focused in the ground glass. The shutter and aperture are reset, the plate holder or film pack placed in position, the dark slide removed and the exposure made. This type of picture often can better be made in subdued light such as in the shade or as furnished by a cloudy day.

Sunset pictures are taken when the sun is entirely or almost entirely covered by clouds. The sky should be given the proper exposure; the foreground as a result being under-exposed. Some very pleasing pictures are secured this way.

Moonlight pictures can be taken by setting the camera on a tripod and giving the negative the proper exposure (30 minutes is suggested). The moon itself should not be included in this exposure, but can be secured by swinging the camera to place the moon in the proper position in the picture and making a second exposure.

In photographing interiors that do not include animate subjects, the double exposure can be profitably used. The first exposure and longer exposure is made with the shades down; the second, shorter

exposure with the shades up. If only one exposure is used to secure this type of picture, the windows are a blur of light and some of the corners of the room under exposed. Interior pictures at night can be taken by using photoflood bulbs, photoflash bulbs or other flash light material. Photoflood bulbs are low voltage lamps which when placed in a 110 volt circuit give an intense light. (As a result the life of these bulbs is short averaging about two hours). Using three or four of these bulbs and a fast film such as supersensitive panchromatic roll film, snapshots can be taken. Photoflash bulbs in three sizes are available. The small size costing 15c gives enough light to secure portraits of one or two subjects. A reflector or cardboard, or cloth is used opposite the light to throw it back on the face of the subject. Folders illustrating this lighting are available. Interior photography is quite the thing now. It is not difficult and adds to the value of the camera.

Campfire pictures can be secured by wrapping a small amount of flashlight powder in paper and tossing it into the fire. One of the subjects should be between the resulting flash and the camera. Unless smokeless powder is used subjects beyond the fire and in line with the fire and the camera will be obscured by smoke.

The following rules are presented for your further guidance:

1. Have camera set for proper distance.
2. Use stop and exposure that result in properly exposed negatives.
3. Use filter to secure proper rendering of sky, clouds, and colored objects.
4. Do not have sun shining directly into lens.
5. Use a tripod for exposures longer than 1-25 of a second.
6. Follow a regular routine in camera manipulation or spoiled negatives will result.

The purchase of a book on elementary photography such as "Making Good Pictures", (Eastman Kodak Company, price 50c) is suggested. A variety of free literature is available on request from your photographic supply dealer. The photographic field is broad and complex. This paper barely dips into the surface. However, it is hoped that it will increase your interest and improve your ability to secure not more but better pictures.

LAKE ITASCA

B. BROWN

*Itasca, I'm loath to be leaving,
A gem of the Northland are you.
A gem in so perfect a setting,
You seem 'most too rare to be true!*

*Itasca, I know now your meaning
True source, a beginning 'tis true
For you cradle the Father of Waters
And contentment and peace flow from you.*

*In your forests the deer roam serenely,
As all other wild life here can.
You're a refuge for wild game, I grant you
But you are also a refuge for man.*

*A release from the noise and confusion,
Of man's maddening race toward his goal,
An escape from that taskmaster—Duty.
A garden of thought for the soul.*

*The pines on your shores e'er will guide you
I know to their charge they'll be true.
Their tall spires bent lovingly o'er you
Reflect their dark forms in your blue.*

*I'll be missing at dusk that bold heron
As he glides so majestically by,
Leaving earth for the cloud-gates of heaven
With his harsh, metallic-like cry.*

*At evening when darkness is falling,
E'er the blush of the sunsets erased,
From your calm and silvery surface
I'll be missing the smile on your face.*

*The reflection of those soft colors
Of every description and hue,
No paint brush can e'er catch its magic.
No word I can think of will do.*

*I wish, as I look at the blending
And the shading of color, so rare,
I could catch a glimpse of the artist
And beg him his paint pots to share.*

*I'll be missing you always Itasca.
I'll be longing and wishing for you.
I'll stop living, 'til once more
I find you
Up north where the pines pierce
the blue.*



A cool, clear stream from forested uplands merging with a silt laden stream from cutover, eroded hillsides.

THE MISSISSIPPI DELTA

FRANK KAUFERT, '29

“YO FOLKS sho nuff has a picnic in de woods every day.” A picnic in the woods every day, that, according to an old darky lumberjack, who watched us with envious eyes as we grumblingly munched our noonday meal of cold, soggy sandwiches, is the life of a forester in that vast area of swamps, marshes, flats, bottoms, batture lands, and bayous, more often called the hardwood bottomlands of the Mississippi Delta.

I often thought of that remark as we started new survey lines on the bluffs in northern Mississippi and followed them west across 50 miles of lowland to the levees confining the Mississippi River. Every mile of the way presented something new in the line of obstacles. Bayous that were too wide to jump, even by the long-legged member of our party, too deep to wade, and not quite wide enough to warrant removal of clothing and rafting them across, blocked the way. They look treacherous to the uninitiated. The quiet black water, floating logs, with sleek brown water moccasins perched thereon, the fringe of willow brush, and the usual scum of algae and water weeds look rather uninviting. But bayous were but a part of the picnic. So with Jacob staff in one hand, increment borer tied to your belt, chain around your neck, you plunged in, swam, waded, cursed your way to the other shore. If water moccasins threatened, you bashed their heads in with your bolo knife, or, as another darky, who watched us cross a particularly bad stretch of cypress swamp remarked, “jes go right in and kick their teeth out.”

Upon gaining the bank you again start to lift your water-soaked boots to your chin at every step in an effort to avoid getting tangled in the three foot layer of buck vine and green briar that covers the ground. Catch your toe on a vine and down you go into a soft bed of luxuriant poison ivy and more cat brier. Here is where *Rhus toxicodendron* reaches its maximum development. The forest floor is covered with it. It covers the old logs and dead wood. It grows to bush size in places. It climbs trees to a height of more than 30 feet. It is everywhere so thick and vigorous that you can't avoid it. If you are tough or gifted with a natural immunity, life in the bottoms is bearable. If you are susceptible you paint yourself morning, noon, and night with ferric chloride and other vile compounds that are equally as bad as the effects of the poison.

A mile of dry going and your boots have ceased to gurgle at every step, your shirt is less clammy, and your breeches have ceased

to rasp your legs; then you stand on the edge of another bayou, just a little deeper, blacker, quieter, more sinister, more thickly infested with moccasins than the last one. Again the process of absorption and drying out. For diversion they may throw in a cypress swamp or two during the day, where the water is usually just deep enough to cover all the cypress knees and protruding roots. The bottom fortunately is solid, so if you don't trip on a cypress knee you can make good time. In such places one's toes are more useful than one's eyes in picking out obstacles. The slightest impact and you step over or detour to left or right. You become so adept at feeling your way with your toes that you seldom take a ducking.

But cypress knees and roots are not half the impediments to progress that floating logs and trees are. It is a bit discouraging when waist deep in a swamp to suddenly find your path blocked by a floating tree trunk a hundred feet long. You can't go around, for distances must be chained with some accuracy; you can crawl under, but that means total submergence in water as thick as soup with animal and plant life; so you attempt to crawl over. A pair of 16 inch boots under ordinary circumstances are heavy enough at the end of a long day, but fill them with swamp water with a specific gravity just a bit less than mercury and it is like trying to walk with a six year old boy sitting on each foot. Add to this the gallons of this heavy water in your canvas breeches and you can picture what climbing over a floating tree means in physical exertion and vocal effort.

If you want to rest in the north you pick out a nice log or better yet a good sized stump. You try that only once in the south, for the chiggers or red bugs soon teach one to respect their haunts. No, when you stop for lagniappe in the south you clean away all the brush, all the leaf litter, down to good mineral soil, just like you do when building a fire line, and sit down. Then if you carefully bathe with 2 per cent disinfectant soap at night you will escape the red welts that these fiery little insects cause if they dig themselves in.

But the Mississippi Delta is too big, too interesting, it harbors too many remarkable things to permit condemnation because it contains a few swamps, water moccasins, poison ivy, and other impediments to timber cruising. It is a tremendous region, stretching from Cape Girardeau, Missouri, to the Gulf of Mexico, and comprising the present and former flood-plains of the Mississippi and portions of the bottomlands of such tributaries as the White, Arkansas, Yazoo, Sunflower, Tallahatchee, Black, and Red rivers. The Delta occupies a north and south belt 600 miles long and 30 to 115 miles wide. The rich alluvial soils are a composite of all the soils washed from the slopes and ridges of 30 different states. What the northern states have lost in fertility the Mississippi Delta has gained. Through this vast expanse of rich alluvial soil flows the muddy and mighty Mississippi River.

The history of the development of the Delta is the recent history of the Mississippi. By the river the Delta was built and even now, despite the efforts of engineers, it occasionally returns to claim its progeny. From Memphis to New Orleans the river progresses in a series of sweeping curves. Although the actual length of the river from Cape Girardeau to the Gulf is nearly 1200 miles the airline distance is but half this. The natural tendency is for the river to bring the ends of these curves ever closer together while making the mid-ports more and more sweeping. This eventually results in a "cut-off" across the base of the bend. The land enclosed by the bend then becomes an island and the bend itself, no longer the main channel of the river, becomes a quiet crescent of backwater—a so-called "oxbow" lake. Cutoffs, islands, and ox-bows are characteristic features of the Mississippi in its progress through the Delta. This habit of cutting off ox-bows has resulted in a considerable shortening of the river. Mark Twain writes of this characteristic of the river in this way: "In the space of one hundred and seventy-six years the Lower Mississippi has shortened itself two hundred and forty-two miles. That is an average of a trifle over one mile and a third per year. Therefore, any calm person, who is not blind or idiotic, can see that in the Old Colitic Silurian Period, just a million years ago next November, the Lower Mississippi River was upward of one million three hundred thousand miles long, and stuck out over the Gulf of Mexico like a fishing rod, and by the same token any person can see that seven hundred and forty-two years from now the Lower Mississippi will be only a mile and three-quarters long, and Cairo and New Orleans will have joined their streets together, and be plodding comfortably along under a single mayor and a mutual board of aldermen. There is something fascinating about science. One gets such wholesome returns of conjecture out of such a trifling investment of fact."

The old title "Father of Waters" is a misnomer, for that suggests some degree of stability and consistency, whereas the Mississippi is as inconsistent and unstable as any female. Since the days of Mark Twain and the height of steam-boating the river has wandered here and there until it is doubtful whether in that entire stretch from Memphis to New Orleans it occupies the same channel it once did for more than a few miles of the way. Even while on the survey line you strike some interesting examples of the river's trickery and wandering habit. In Mark Twain's time Beulah, Mississippi was a thriving river town. The steamboats passed her very doors on their way up river, and he mentions having coffee at the coffee shop next to the landing. Today Beulah is six miles from the river and all that remains to bear witness to her former fame as a river-town, is a shallow, quiet ox-bow lake with neither inlet or outlet. Napoleon, Arkansas, is another example of a town that suffered from the river's wandering habit. In the heyday of steamboating, Napoleon

was rated as one of the finest river towns. Then the river decided to change its course. The main street became part of the main channel and when Mark Twain made his last trip up the river, only a leaning brick chimney remained to mark the former town site. Now even that is gone, and people have forgotten about it. Other towns have sprung up to take its place and perhaps eventually to enjoy a like fate if the river so wills. A farmer with a fertile farm upon the river's bank in Louisiana this year may find himself on an island next year, a part of the State of Mississippi the year after, and if the river again decides to change its channel, he may find himself once more subject to Huey Long's rule.

Engineers and river commissions have built levees for 50 years; they have increased the height of the old levees; they have built wing dams, dredged, put in spill-ways, done everything possible to keep the river in control. But it is a safe guess to venture that when the river gets ready to cut off another ox-bow, it will do so; when it decides to push over a levee and spread out over villages, no commission or engineer will stop it; it is still the same river that Mark Twain knew and described so well.

On both sides of the river stretch the hardwood forests of the Delta. Much of the best soil has been cleared of timber and turned into cotton fields; a great deal of the remainder has been cut over and so badly damaged by fire and decay that there is little valuable timber left; but there are still spots where virgin stands still exist to give one some estimate of what the original stands of the region were like. Red gum and a half dozen species of oak make up the bulk of the valuable timber. From these stands we obtain over half of the hardwood lumber used in this country. Here we find individual persimmon 24 to 30 inches in diameter and clear for two logs or more. A lot of shuttles or golf club heads in a tree like that. White and green ash may also be found in quantity in some localities. In the batture lands, the land lying between the levee and the river, cottonwood and willow predominate. Most of the box lumber mills along the river are kept going by logs coming from this fringe of timber lining the river front. Other common species in the forests of the Delta are: pecan, hickory, elm, hackberry, tupelo gum, black gum, and cypress.

The forests are interesting and varied in nature, but the types of wood working industries dependent upon them are even more so. Stave mills, making both loose and tight cooperage, are scattered throughout the region. Some mills make only rounds for baseball bats; some specialize in making ski stock; some in handles for hammers and other tools; some turn out material for shuttles or golf club heads; whereas the larger mills turn out lumber for furniture. Every wood has its special uses and every locality has or has had a wood working plant of some type. In the past the people have been

as dependent upon the forests for a living as upon cotton, and the future looks equally as promising.

The future of at least some forest industries in the Delta looks promising because trees grow rapidly here. If a farmer abandons a cotton field today, it may be covered with a stand of red gum 6 to 8 inches in diameter and 40 feet tall 12 years hence. Along the river front and in the batture lands, one strikes the most astounding examples of tree growth. Whenever the river builds a new piece of land, cottonwood immediately takes possession. At the end of 2 years the young trees may be 10 to 20 feet tall; at the end of 30 years the stand may average 20,000 to 25,000 board feet to the acre. With such growth the future of box mills and other wood working plants depending upon cottonwood is certain.

There are a thousand and one other interesting things about the Mississippi Delta that one could mention. It is an interesting country for a forester to work in, and with sufficiently wide interests, the swamps, mud, and brush can be turned into somewhat of a picnic in the woods every day.





CONSERVATION AND PUBLIC RELATIONS

ALFRED NELSON, '28

Of all the unusual experiences of the World War, the art of organizing and influencing public opinion through oratorical campaigns, newspaper publicity and spectacular extravaganza, lived to grow to new and undreamed of uses in the following decades. It was generally called propaganda. Today it is a campaign of advertising, education, or high pressure salesmanship.

Not that war propaganda was not useful; not that the peace-time campaigns have been wholly lacking in public blessings and good results; far from it. The general effect, however, of such high-pressure tactics to arouse hysteria and large group action has been the inevitable back-swing to the opposite extremes.

Take for instance: The War Propaganda was calculated to engender hatred of the enemy and the fighting instincts of the Allies, and promote a more ready sale of Government securities. It would be interesting to know just how much the back-swing of this propaganda was a factor in the peace parleys and colored the unhappy years which followed. The same art used in selling War bonds to the American people was employed in the peace-time campaigns of commercial bond salesmen which ended with the crash of 1929. Likewise the back-swing of war propaganda and of unlimited prosperity resulted in the unreasoning, though natural, panic and distress of depression.

Almost lost in the maze of commercial, governmental and political campaigns for public attention has been the campaign for Natural Resource Conservation. Even so, there has been, during the past fifteen years an increasing accomplishment of educational and informative progress on this subject. It has been spasmodic and for the most part, without proper direction. It has been small and ineffectual, when compared with the least of others. It has, however, accomplished that wherein most others failed, i. e.: permanency. Inasmuch as this Conservation has not been sold to conservationists by high-pressure salesmanship, there should be no back-swing of public sentiment against it.

There is now an unknown strength of public support for Conservation practice which should assure a better understanding and growth in the future.

Evidence? Almost every organization of state-wide and national scope has registered its interest in natural resources by appointing a standing committee on Conservation. It is probable that such committees have functioned only on rare occasions, but the fact that the importance of the undertaking is recognized and the organization stands ready to support every worthwhile proposal is a distinct achievement.

Almost every political platform and every candidate for office has a wooden plank on conservation. Perhaps not all the conservation speeches and pledges were accepted by the voters, but a fair percentage of information must have been added to the conservational knowledge of the citizens.

The state and national conservation departments have expanded through support afforded by both state and national legislatures. This may have been slow and disappointing to many, but the national growth has been healthy and permanent. Each year new areas are being set aside as parks or forests for public use. Extended facilities and uses for all outdoor areas are being provided. The public conception of forestry as merely tree planting and fire fighting is being supplanted by forestry as the art of administering land for the growth of tree crops. The old order of farms following forests is being disproved by the bitter experiences of thousands who are find-

ing that not all lands which have produced wonderful forests will make profitable farms. Forest communities are beginning to realize that their most valuable asset for permanent prosperity can be a green and producing forest.

These and countless other points indicate the trend of public thinking and the result of years of conservation publicity. Much has had the power of organization behind it, some has been individual effort, and both have been aided by State and National Conservation Departments; but none of it has been accomplished by the black art of propaganda.

I have concluded that the most important factors and causes of public sentiment for conservation may be enumerated as follows:

Outdoor recreation: With the advent of the reliable automobile, paved highways, and increasing leisure time, the American people took to the roads to see the country. Back in 1918 there were a few thousand; in a few years the number rose to hundreds of thousands, and for several years it has been over the fifty million mark. They visited the forest areas of which they had read. They visited the national and state parks and forests. They viewed with amazed eyes what had happened to the wealth of natural resources. Perhaps they encountered the unexpected experience of a forest fire. It is impossible that fifty million people should travel from one end of the country to the other, year after year, without forming some very decided and definite opinions regarding the condition and need of natural resources. They have demanded, and received, increased opportunities to use the forests. They have influenced Conservation trends in every state in the Union. Each has, consciously or not, been forming the opinion and desire for a conservation program that would perpetuate the opportunity for him to enjoy the outdoors for the future.

Youth: Since 1910 the youth of the country has had an opportunity to absorb knowledge as the pioneer youth learned—out in the woods. In that year the Boy Scouts of America was organized. Similar organizations have been formed since, for girls as well as boys. All are built on the principle of understanding and wise use of the out-of-doors, and they have had a very large part in the spread of this principle to the American people. There can be little doubt but that the influence of 5,800,000 Boy Scouts who have graduated from that organization and become the voters and leaders of every community in the land, must be given credit for valuable services in the cause of conservation. Each year hundreds of thousands of boys and girls have the opportunity to spend a week or more in the organization camps. This experience has given the American youth a contact which their parents probably did not have. Elementary conservation is being taught in most schools. As a consequence the young people know considerably more about the fundamentals of conservation than any previous generation. The knowledge thus obtained will prove

of immense value in planning and building for the future.

State and National: For about a decade the State and National Park, Forest and Conservation Departments have been organized to give systematic and extended service to the public. This has been in the form of published literature, moving pictures and illustrated lectures, and exhibits. They have been offered and given only upon request: there has been no effort to force them upon an unwilling public. Since 1924 the State Forest Service thru its division of Public Relations has had a lecture service, during which time several thousand meetings have been attended by hundred of thousands of people. Each year exhibits have been placed at county fairs, the state fair, and dozens of state organization conventions. Hundreds of thousands of pieces of literature have been distributed, much to school children who will carry the knowledge into adult life. These state and national services have been the source of authoritative conservation information used by individuals and organizations. They have fostered and aided in every possible way the interest which the individual or the organization had.

Organizations: The list of organizations interested in conservation is an imposing one. Many of them, such as the American Tree Association, the Forestry Association, American Game Protective League, Isaac Walton League and scores of others have a direct interest in one particular phase of conservation. Others, such as the Womens Federated Clubs, Parent-Teacher Association, American Legion and the Y. M. C. A. have other primary interests, but give a very vigorous and helpful support to conservation matters. The individual member of an organization may not be an active conservationist but the commitment of his organization to the cause will be an important influence when he is faced with the necessity of making a decision on conservation questions. This potential strength needs only the call of leadership to blossom into active support, and in this there is reason to be very hopeful for the future. The unselfish and persistent work of the various organizations has been of tremendous service in the moulding of the public mind.

These four then, are the major factors which have made today's public opinion: first, the personal experiences of millions of individuals on their vacation trips; second, the conservation training of the youth; third, the public relations of the States and National Conservation Departments; and, fourth, the activities of large organizations. Doubtless there are other factors which have been important, but the power behind them may be found rooted in one or more of those above named.

As here indicated we have today a well organized source of conservation campaigning, and a more or less unknown and unvoiced public opinion for conserving natural resources. What of the future?

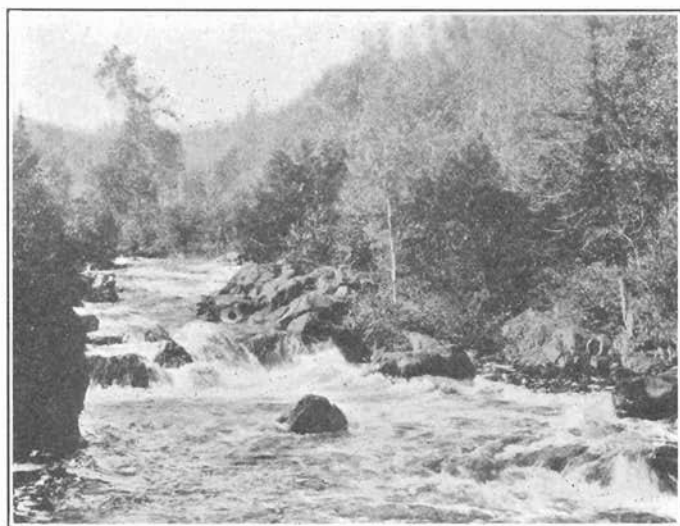
Just a year ago a new and unexpected factor entered the picture, the Emergency Conservation Work. This is the national plan to further conservation on a scale never before attempted. President Roosevelt presented the plan to Congress, which authorized its accomplishment. While its major purpose is the rehabilitation of the young men, its co-major aim is the rehabilitation of natural resources. The first is a story in itself, which cannot be dealt with here. The second concerns us, not only for the moment, but even more for the future.

There are two parts to E. C. W., the actual operation of work in the field and the effect of public opinion toward the work and conservation as a whole.

No doubt the status and plight of natural resources all over the country are somewhat the same as those in Minnesota, and therefore Minnesota is being used as the specimen or example. You will doubtless accept the definition of forestry as the art of administering lands for the purpose of growing tree crops. You will also agree that there are various uses of tree crops or of forest lands. There can be no argument over the fact that in addition to wood, the forests produce game, protect and conserve water, grow medical plants, aid in the prevention of erosion, regulate water movement and levels, have an undetermined effect upon weather, provide recreational opportunities, and play a decidedly important part in the economic stability of the community, state and nation. The administration of forests and forest lands by the State Forest Service and the work of the forester is a rather complicated job if it is to properly conserve the natural resources. The public, however, has not recognized this, thinking of forestry as fire fighting and the State Forest Service as a fire protection organization. For twenty years this has been true and progress of conservation can be measured by this public attitude. With the gradual change of the people's understanding, the type and scope of the State Forest Service has changed. This has varied with States, the most progressive being in the east where the elapsed time from the original forests has been the greatest. The administration of forests has followed a somewhat regular path in every section: lumbering the original forests, homesteading, failure and abandonment, land idleness and tax delinquency, state ownership, reforestation and conservation administration. Minnesota is in the third and fourth stages, on the verge of state ownership.

For almost a year the Emergency Conservation Work has been carried on, accomplishing work in the forests and public lands, which, in most cases, has been planned by the forestry departments. Under normal conditions neither the Federal or State departments could have hoped to accomplish these plans for years; some of them might never have been completed. The E. C. W. will bring the state and national conservation program almost up-to-date. The state lands are being inventoried; cultural work, thinning, releasing and weeding

is being done in good stands; the available planting stock is being put out on state owned lands; fire hazards, such as old slashings, debris of old burns, and along roadsides is being cleared away: protection measures, such as firebreaks, roads, trails, telephone lines, towers, cabins and other structures are being built; recreational facilities, such as camp grounds with water and sanitation, summer homesites, picnic grounds, vistas and highway beautification, are being provided: game production by the conservation of water, game refuge boundaries and preserves, is being aided; and the administration of these public areas for the future will be easier by the acquisition and blocking out of forest areas, by the location of corners, and all of the work listed above.



Thus, when in another year Emergency work is completed, the natural resources of the state will be put in such a condition that wise administration will begin to return to the American people something of true worth and value. The work will bring dividends not only in the production of wood products, and the payment of funds to the community and the state in lieu of taxes, but will also provide enlarged opportunities for the ever-increasing desires of the American people for outdoor recreation.

The other result of Emergency Work is the public opinion toward the work, and conservation as a whole. This may precipitate and crystalize public opinion. It may be the crisis and the historical point from which the movement will go forward with a big step, or come to a dead stop.

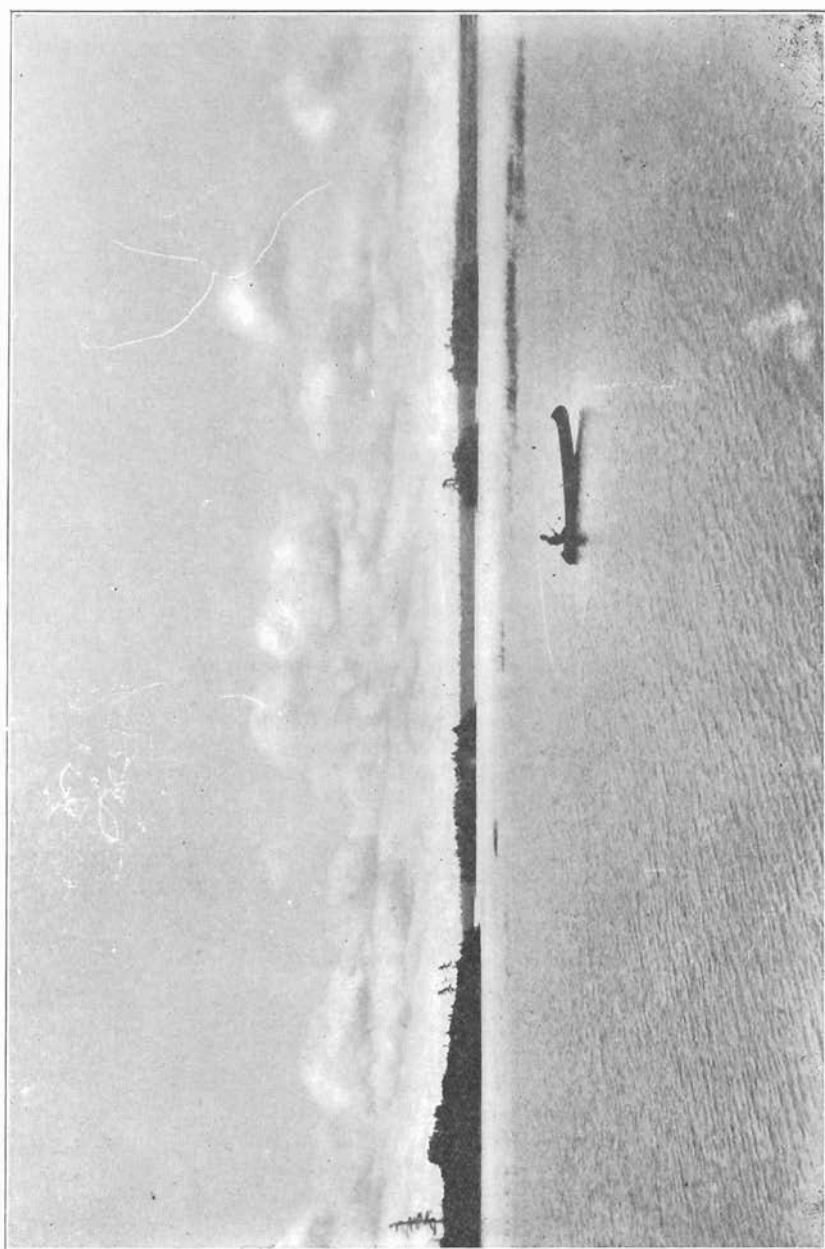
There are some 275,000 young men in the 1,300 camps over the country, and the personnel changes from period to period. During the two years, divided into four periods, there will be nearly a half million boys who have been in the camps. It is the opinions they form and the reports that they carry back to be passed on to their family circles and friends that may determine the future of conservation.

In 1933, at the start of the Emergency Work, there was a public opinion which would have supported and carried on the normal growth of conservation work from year to year. During the last and in the coming year a program of Emergency Conservation field work equal to ten or twenty years of normal progress will be accomplished. Public understanding and opinion should increase at the same pace, if it is to intelligently support the 1935 conservation.

I believe this to be true and that there is every evidence of a greater and more active public approval for the future.

This belief is based solely on the assumption that the conservation campaign of the past twenty years has produced a permanent public opinion, that it has effected a correct understanding of the values and uses, and molded a desire to perpetuate the greatest of all American heritages. There is a well laid foundation upon which the superstructure of Emergency Work will take form. The superstructure will enable the people to realize more fully the human and national need of the outdoors. It is the ultimate and complete use of those resources, which will return "the greatest good to the greatest number of people". This is indeed fitting. America began with forests, but grew and prospered by their destruction. Now the forests are to be brought back, not for the one original product of wood, but for additional products and uses as well. When this is done, then, and only then will forestry assume its rightful place beside agriculture, manufacturing, mining, commerce and industry, the things that constitute the humanistic, economic and social structure of American stability and prosperity.





Where troubles vanish—in deep, quiet waters.

BALLAD OF A FLYIN' SQUIRREL

ROY DINGLE, '35



We once had a smarty guy
 Up in our summer camp;
 He knew all the birds and bees;
 At bugs he was a champ.
 Aloysius we named him;
 The reason why you'll see.
 He found a flyin' squirrel
 Up in a red pine tree.

Aloysius went out one day,
 Just for recreation;
 He thought he might find something new
 In this great God's creation.
 Something new he found, all right,
 And mighty pleased was he.
 It was a flyin' squirrel
 Up in a red pine tree.

He looked up in his guide-book,
 And this is what it said,
 "No flyin' squirrels up this far;
 The cold they rather dread."
 Think you this thwarted 'Loysius?
 Not a bit, not he.
 Instead he rather liked it;
 He'd show them up, you see.

Now 'Loysius stopped to scratch his head;
 He didn't know what to do.
 Should he go back and tell the boys,
 Or, well, what should he do?
 Sir Flyin' Squirrel seemed fast asleep,
 But maybe he would move
 As soon as 'Loysius turned his back,
 And spoil his chance to prove—.

No, he had better stick around;
Indeed it wouldn't hurt
To try and catch the flyin' squirrel
(It seemed so blamed inert).
If he could catch the little squirt,
He'd be a big success.
He'd get an "A" from Dawson;
He couldn't give him less.

So up the tree Aloysius scrambled;
Oh, he was quite a climber.
He had his pole-spikes on his feet;
From she-bears he could clamber.
He sure was glad he had his spikes;
His name would soon be made,
And all those guys that called him fool
Would say, "He used his head."

Yet, though he was quite joyful,
He did proceed with care,
For flyin' squirrels in pine trees
Must be of all most rare.
Slowly up the trunk he climbed,
So's not to chip the bark;
The sweat ran down his face and chin;
This wasn't any lark.

He reached the branch the squirrel was on;
Oh boy, was he relieved.
His flyin' squirrel just sat there,
Waitin' to be seized.
A million hours it seemed to take
To get his hand out to him,
But when he did, Great God Above,
A million pins went through him!

'Loysius got in late that night;
His hand looked rather lame.
He didn't have a thing to say;
His spirit was quite tame.
What his thoughts were might have been
Great stuff for Walter Winchell,
But 'Loysius never told us of
His prickly flyin' squirrel.

On board S. S. President Lincoln
Enroute to Manilla

Forestry School,
University Farm,
St. Paul, Minnesota

Dear Gang,

On a windy grey afternoon last August, the S. S. President Lincoln stood out to sea. By a twist of luck I was one of the group that stood in lee of the poop deck watching Miss Liberty and the Narrows slip by, the bold skyline fade in the haze. Finally all that was left to remind us of land were the blinking lights further down along the Jersey Coast line. From then on we kept clear of land until down in Florida waters, three days later.

The first few days were spent in getting used to the work. My rating or "capacity" as the discharge termed it was, "wiper." One of the first jobs we had was to chip three steam drums. Now a steam drum was neither the roomiest nor coolest of places, being some four feet in diameter and mightily uncomfortable to sit in, without a protecting plank underneath, even tho it cooled some forty odd hours before we crawled in.

It didn't take long to find out that the fo'c'sle was any place but to sleep in. It was too hot. And after the first night of it I joined the procession with mattress and blanket under arm up to the after deck. I awoke in the early dawn to see Moro Castle silently towering above us as we glided thru the neck-like narrows leading into the bay. The city seemed abnormally quiet. Some hours later, when we received a brief shore leave, the reason became apparent. Havana and the whole island of Cuba was on a general strike. Soldiers with rifles were everywhere throughout the city, some clad in plain khaki, others in voluminous raincoats, and even in black (in front of the Presidential Palace). The whole population must have been out of doors jostling up one street, down the next. The first time our walk was of short duration. No more than two blocks off the waterfront we met Red, the fireman, doing a lively gallop toward us.

"Beat it back, they're coming!" he flung at us, as he dashed by. "Aw, yer drunk". Then around the next corner swarmed a murderous looking crowd of Cubans and Negroes. We didn't stop to investigate, but later we tried again, choosing this time a wider street, and reached our goal, the Capitol. Here the crowds were thicker, constantly shooed on by the police and soldiers. I didn't see any barricades on the street curbs, which was contrary to all revolutionary practice, i. e., my idea of it. But they didn't need them, for peeping over all the adjoining roofs, were heads, rifles, and machine gun barrels,—probably just as effective.



Iron donkeys . . . Panama.

Panama, in contrast, was dead. Just the place to sleep in, the Captain must have thought, for we spent the whole night there. The American section, Cristobel, was slick, which mattered little to us, for the Y. M. C. A. and clubhouses, the swimming pools were all barred to anyone but government employees. So, we spent the evening haggling with the Hindu traders, eating bananas, ice cream, and sampling the beer at the numerous bars. Early the next morning the ship nosed for entrance into the first lock. Even as we awoke we heard the clanging of the "iron donkeys" and shouts on deck as the first lines were made fast. By the time we went below at eight o'clock (wipers are on day work only, from 8 to 5) the Atlantic set of locks were behind us. It was rather hard keeping one's mind on the work, twenty feet below it all; but at that we didn't miss much; for there were always duties to perform up on deck which gave one an opportunity to catch glimpses of the jungle-land that bordered either side of the Canal. Most surprising were the tumble-down shacks which swung in view around almost every turn. These shacks were usually perched high up on the bank, in the center of a two-by-four clearing. The inhabitants getting a bare subsistence from the garden patches and the surrounding jungle. Eight hours later the ship was tied up in Balboa. From there on up the Mexican coast we had our first taste of a long stretch of ocean travel, some eight days in all.

California, the land of sunshine! Never did see such raw foggy weather as 'Frisco had on hand. Market Street, The Embarcadero, both had their glamour. The first with its brilliantly lighted theater crowds, the Embarcadero, murky, restless, skirting the waterfront. Nowhere, it seems, does so varied a crew congregate. Sailors of all

descriptions: gobs, wops, spiks, squareheads, and limies; hobos plain and simple, old and young, many with packs; bootleggers and drunks; everything but ladies. Nevertheless it seemed tame, and we were impatient to be off, for the Orient lay ahead of us.

Afer a five day run;—Diamondhead—Honolulu. The Chamber of Commerce generally sent a band down on the pier to pep up the passengers with "Aloho" as the ship docked. This time we fooled them by coming in an hour early, but 15 minutes later the welcoming committee hit it up. After work, I got into the suit (something out of the ordinary by this time as dungarees do while on board), and took a car out to Waikiki Beach. The driver let me out right next to the water. In spite of my hurrying it was already dark. Querulously, I halted and took stock. To the right was a somber park of palms. Behind me autos buzzed quietly back and forth on the asphalt, while white breakers broke and roared in subdued undertone out from the beach. The tide must have been in, for there was only a scant strip of sand some three to four yards in width between the water and the sidewalk.

"Hey," I yelled at a taxi driver nearby, "Where's this Waikiki Beach?" The fellow only glared, then burst out, "Why boy, you're right on it!" What I'd like to know is, where those fellows get the nerve to advertise the place the way they do.

The days that followed strung out monotonously despite the fact we jumped from Monday to Wednesday when crossing the 180th Meridian. The ship was following the much advertised "Sunshine Route," which may be good and well for the passengers but made it hotter than hell below. To top it off the First Engineer put us to work chipping the port bulkhead in the engine room, a tiresome, hot, soaking job, especially up in the far corner. Tex voiced the sentiment of us all one morning when he came up to Hunt, the surly storekeeper, for some wrench or other.

"Wada-ya want now?"

"Quitting time!"

The evenings after washing up were spent lying around reading, talking and getting really acquainted with each other. A varied bunch to be sure. Schultz was a true Brooklynite, coming from "just above t'oid avenue". Tex, a likeable fellow, had been busy seeing the world for some six years since his graduation from a southern agricultural college. His stock of tales were without end, including experiences on tankers, in Nebraskan potato fields, the Northwest, wheat harvests, oil fields, Europe. Shorty had his accomplishments too, having started out as a water boy in Panama while the canal was under construction, he was shot thru the shoulder by some sniper from a German U-boat when his crew abandoned their torpedoed freighter just off the coast of Ireland; and, finally, he served as a watertender on the S. S. Levianthan. The fact that he, age 44, having

sailed the seas for twenty years, was again a wiper (the lowliest of low incidentally) rather aptly brought out the uncertainty of this trade, sailing.

George, another shipmate, came across with a story about Benny, the farmer from Iowa. This had all happened some years before. Benny's uncle, whose influence with the line was strong, got Benny aboard the "President Madison," then bound for Manilla. The voyage turned out to be a calm one, but, nevertheless, Benny became violently seasick as soon as the ship nosed outward. In this condition he remained much too weak to fill his job as a wiper. During the crossing Benny said little, but when the ship drew near the dock in Yokohama, George came across the fellow, bags in hand, on deck.

"Where do ya think you're going?"

"Just waiting for that gang plank to drop. When I get off this damn ship, I'll never put my foot on another one long as I live." George reasoned, but Benny remained firm; others reasoned, finally the first lent an oar with the result that Benny went below again and donned his dungeries.

"Did he get to like it after a while and stay on for some more trips?"

"He did not, soon as the ship docked in Seattle, he cleared out for the corn country. Didn't even wait for payoff."

One evening after supper, two sailors and I crawled up in the bow. Comfortably settled, the subject of telepathy came up. The three of us joined in enthusiastically. After a while, the idea hit me with remarkable clarity that I knew nothing about the subject, and that neither of my companions paid any serious attention to what I said, rather were busy with their own oars. The evening was too calm to spoil with a lot of meaningless hubbub. I lay back and watched the sky while the argument roared merrily on. White cumulus clouds floating above the horizon picked up the stray colors of the sunset behind us. Gradually all became less real, faded. Don't think I dozed, more likely dreamed a bit, and then suddenly became aware that the sky was night against which the whole ship super structure weaved back and forth in black silhouette. Unknown to us, the moon had arisen. Suddenly it bobbed up over the bridge, flooding the whole fore deck. Scotty, stout defender of "there ain't no such thing," gave up at last; left us while the other fellow and I wandered back onto the poop deck. Full moon on a fairly calm Pacific with scudding clouds above. One tries to think; vague memories crowd about; some half familiar line borders the conscious, then withdraws, lost out in the sparkling wake perhaps. For the rest one sits, drinks and gapes. Oh, well.

Yokohama was naturally Japanese, but nevertheless westernized in plan and architecture, thanks to the earthquake and fire of 1924. Kobe, on the other side of the island, presented a much more satisfying and oriental character. The streets were narrow, teeming with

Japanese men, women and children. Some of the men and boys wore western trousers and clothes, but the majority strolled or dashed about in kimonos (the degree of dignity more less directly proportional to their age). The streets were bordered with stall-like stores. The merchandise lunged out from deep within the interior to fall sprawling on tables in the streets. The autos, not so few in number, plowed thru the melee creating a certain sense of confusion which lingers whenever I think of the place. The streets so packed, so restless, were brilliantly lighted by the most modern electric lights. But this intrusion was in part compensated by the hanging flags and banners in front of every establishment proclaiming—only God knows what.



The Author.

Shanghai, how often one hears the expression "western barbarianism imposed on ancient Chinese culture." A culture, frankly speaking which was so remote or so diluted in the contingent we came in contact with, that it ceased to be impressive. The hundreds of coolies that came aboard to paint the ship from forward to aft, (in little more than 24 hours) appropriated everything within reach; rags, clothes, tools, chow, anything. Shoreside sellers of ivory trinkets and thrash guides, riksha runners, all clamored about. Persistent? Plain language such as, "no" "I don't want any," "scram," "beat it," was ignored. The same, considerably emphasized and elaborated with certain theological phrases, discouraged the more timid ones.

Threats of physical violence dispersed some more. The rest we had to tolerate, jibbering at our heels until some dusky sikh crossed our path. Sikhs are Indians really, dark brown, bearded, tall, dressed in khaki and turbans. They were imported by the British from India to police the Chinese. And this works out quite well, for the sikhs and the Chinese hate each other intensely. To get back, we had no more trouble. What did we see? Well, we spent the evening cruising about partly on foot or in rikshas thru the International, the French Settlement, and portions of the native city. No one, when speaking about Shanghai, fails to put in a word about the bubbling springs. My word will necessarily be brief, very brief. Fact was I didn't know of their existence before we were well under way again.

Hong Kong, reeking with its British atmosphere gave one a sense of stability and permanence. The massive buildings, the hotels and the mansions scattered up the side of the mountain, the very island of Hong Kong itself rearing high into the sky, looked as if they were put there to stay. Interesting place that island—especially the out end. Wild, rugged, uninhabited to look at, but bristling with concealed batteries ready to be raised to the surface at a moment's notice.

The trip was all a creampuff would wish for as far as weather was concerned. One night the sea became ripple-less, just rolled out flat as a mill pond. Venus came out alone as it grew dark and cast a reflection, faint and small to be sure, which made a bee line for the ship, almost creepy. The next morning the deck hands became busy, lashed everything down in short order. A little later some rain fell, the wind snorted a bit and all was over. For some reason the typhoon reported directly ahead had shifted out of our course. Sort of rough stuff, those typhoons, the sailors say. Just the same my hunch is, they're slinging it.

Since this morning was Sunday, we had to turn out at 5:30. However from breakfast time on, we were off for the day. There's no rest for the wicked, especially if one lets the wash get behind. The next two and a half hours I was busy walloping dirty shirts, dungarees, skivies, socks, and whatnot. Anyhow that part is up to date and now that my correspondence is, like-wise, I have a feeling much akin to the one experienced when one of Brown's mensuration reports were finished and ready to hand in.

Best regards. Will be seeing you in the coming year.

Bugs.

P. S. Reached Manilla yesterday, got a much needed hair cut, am enclosing a couple of snapshots from along the way.

PLANTING ON THE ST. JOE NATIONAL FOREST

ART FERBER, '35

THE holocaust of the fall of 1910 burned over thousands of acres of fine timbered land in northern Idaho and western Montana, destroying everything in its path and snuffing out the lives of approximately 80 men engaged in fighting its progress. The Northern half of the St. Joe was almost completely denuded of trees, including many acres of excellent White Pine. Much of this burned over area was soon logged, thereby reducing some of the loss to the public. Subsequent fires have destroyed the reproduction that came up after the original fire, and the soil on these areas is subject to constant deterioration, with the watershed protection reduced to minimum. It is these areas that are of utmost importance in the Regional planting program.

The northern half of the St. Joe Forest drains into the shadowy St. Joe River, the highest navigable river in the United States, which finally terminates into the picturesque Lake Coeur D'Alene. The elevation on the St. Joe ranges from 7000 down to 3500 feet above sea level. It is a region of sloping, long ridges and divides, intersected by numerous draws and canyons which drains into its network of creeks and streams. It has only been during the last few years that any attempt has been made to construct a system of roads, thereby opening up its inaccessible areas and giving efficient fire protection to both denuded and timbered lands alike.

Planting in Region 1 during the last few years has taken place chiefly on those forests which have the more favorable sites for the survival and growth of the young seedlings. Annual allotments have been made available which permit the planting of approximately 4000 acres each year. Theoretically this acreage should be divided equally among the forests having the largest planting program. Several factors prohibit this undertaking however, some of which are: the labor supply available, the trained planting personnel on the forest, the location and accessibility of the planting site, suitable sites for species available at the nursery, blister rust protection, and the status of the planting surveys. On the basis of the above, several of the forests receive more than others in their share of planting.

On all areas, not restocking satisfactorily, a report is submitted by the district ranger to the supervisor, calling the supervisor's attention to those non-restocking areas. Upon the supervisor's recommendation a planting survey is made of those areas.

The planting survey crew plots the areas for planting and ties them in definitely with the section corners, besides recommending species and type best suited to the various sites, elevations, etc.

As a general rule fall planting is not as satisfactory as spring planting. Moisture conditions are more unfavorable; the season is shorter; and the survival is usually lower. On the other hand, the spring planting season is rather inconsistent at times. Heavy winter snowfall and a late spring may retard the job so that hot weather



Satisfactory restocking, under seed trees.

and advanced growth in the nursery stock may end the work before the stock can be planted. Unused stock in the fall can be used for planting the following spring, the unused spring stock is usually lost. Snow covers the higher elevations during spring planting, and this among other reasons makes fall planting necessary.

By allowing 1 acre per planter per day and twenty to twenty-five planting days for fall camps, and thirty days for spring camps, an approximate estimate can be made of the size of camp necessary for the allotted acreage.

The camp superintendent is directly in charge of the camp and is responsible to the supervisor. Directly under the superintendent are the foreman, timekeeper and clerk, the packer or truckdriver, the cooks, the bull cook and flunkies. One foreman usually supervises 16 men, which include a tree and water packer, the end man, the flag man, and 13 planters. A typical camp has two or three crews of planters.

A central location of the camp relative to the area to be planted is desirable, with wood and water close at hand, along with the other prerequisites for a suitable camp site. Simplicity in the camp layout is the main objective in establishing camp. Camps are often subject to disagreeable weather and reasonable comfort for the men is usually provided.

Planting equipment including tents, stoves, sleeping bags, mess equipment, tools, etc. is requisitioned from the Forest Service warehouse. Pack stock is borrowed from the protection organizations if available. Food and commissary are obtained thru General Purchase or purchased locally.

Planting should begin in the spring just as soon as the ground is clear of snow, and in the fall as soon as the soil becomes moist. Fall rains usually begin around September 15. Fall camps are sometimes constructed before the coming of the fall rainy season. They should be complete and ready for occupancy when the crew arrives.

Before the work begins the superintendent and foreman should go over the work together and plan a system for working the crews, whereby they will start work each morning throughout the job as near camp as possible. The hollow square or inverted L system of planting usually works up the area best. Another factor to consider is keeping the crew supplied with trees and water, which should be packed on animals whenever possible. The cost of a pack mule is much less than the cost of having the men pack their trees and water. The foremen are further instructed on the site and species to be planted. Englemann spruce is best suited to north, east and west slopes at elevations ranging from 4000 feet to 5500 feet above sea level. Western white pine does best on north slopes up to 4500 feet and on east, northeast, and northwest slopes up to 4000 feet. Yellow pine is best suited on south, southwest, and southeast slopes from 3500 to 4000 feet. Douglas fir is suitable on north slopes up to 6000 feet.

Nursery stock is ordered from the nursery at Haugan, Montana. All data relating to the order is included, such as the means of transportation, the time of shipment, etc. A number of short wave transmission and receiving sets were put to this use last year on the St. Joe. Rush orders should be avoided; and a supply of several days planting stock should be accumulated, this margin to be maintained throughout the planting season to safeguard against unforeseen delays.

Problem of transportation of trees, equipment, and food varies with every camp depending on its location and accessibility with respect to roads. The problem is simplified if the camp is located on a road direct to Haugan; however if the camp is not on the road, a pack train will be needed to transport supplies directly into camp.

The packer usually meets the train or truck transporting the trees and immediately manties them into pack loads, taking special care that the trees and packing are sufficiently moist. At the nursery the trees are tied into individual bunches, 100 each. These bunches are then packed in bundles in a special packing device which bundles them into a most convenient pack for the pack mule.

Upon reaching camp the trees are "heeled in" at the "heel-in-bed", an area of ground approximately 20 feet wide by 30 feet long especially suited for this purpose. This ground should be well

drained, free from rocks and roots to permit easy digging, located close to water, and in a place located near the means of transportation. The bunches of seedlings are placed close together in deep trenches so that the roots are well covered with moist soil and are not doubled up. The soil in the heeling bed is kept moist at all times; and if natural shade is not available, a pole frame work is erected and covered with canvas. This structure should be high enough to allow a free circulation of air and to permit the men to work under it. Trees of different species, age classes, and sources of seed are kept separate. An orderly arrangement in the bed is necessary at all times, so that an inventory of stock on hand can be taken quickly, the timekeeper being held responsible.

A pole rack is constructed near the seedling bed on which each man hangs his mattock and planting bag at the end of each day's work. The bags are filled in the morning by the foremen and the end men to insure that the trees are properly wrapped and moistened and that each man takes out the required number of trees, which is usually 400 trees per man. Wet burlap is wrapped around the roots and is kept moist at all times, for they must not approach dryness for even an instant.

In order that the efficiency of the camp organization be maintained up to standard, about seventy-five per cent of the men should be actually planting trees. Efficiency drops when the same overhead is maintained with a dwindling crew of effective workers. It is also desirable to get the full quota of men working as early as possible.

The crew works in a straight line, not in the ordinary sense of an abreast straight line, but in a trailing line formation. It can be likened to placing the men on the hypotenuse of a huge right triangle and having them work out at right angles to the base of the triangle. The leading end man, number one, should be the best planter in the crew. He sets the pace for the crew and follows the flagged line of the strip previously planted. The number two man follows him at a distance of eight feet to his right or left, as the case may be, and six to eight feet behind. The number three man lines up on the number two man, and so on down the line. This avoids confusion in going around slopes and curves and it is essential that each man hold his place. The flag man, the number fifteen man, should also be a good planter for he must flag the line in addition to the planting of his row of trees. The line is usually marked with white paper fastened onto brush.

The desired result of planting is to establish a growth of five hundred or more trees to the acre after the heaviest loss of the first year has been sustained. To this end the trees are spaced eight feet by eight feet apart, or six hundred eighty trees per acre. Western white pine of 2-0 stock is often planted seven feet by seven feet apart to allow for the greater losses that can be expected. Horizontal dis-

tance is used. To gain the protection afforded by adjacent logs and stumps, the men are allowed to plant their tree a maximum distance of two feet in any direction from the spot where the regular spacing would fall.

The tool used in planting, the mattock, has a long slim blade three inches by eight inches, by one-fourth inch thick, sharpened at the end, and fastened onto an eighteen inch handle. This tool is best suited to the stock generally planted, which is 2-0, 3-0, or 2-1, 2-2, et cetera. A canvas planting bag which will hold five hundred trees of white pine 2-0 stock is hung at the planter's side and fastened by a strap running over the right shoulder and by another fastened around the waist. The strings are removed from the bundle before planting is begun from it.

The men are taught to "throw" their mattocks into the ground, or rather, to release the handle just before the blade strikes. This prevents bruised knuckles and also reduces strain on the wrist. It is very important that the few simple motions in the operation of digging the hole properly and setting the tree be done correctly. The first step consists in striking the blade into the ground, burying it to the eye in one stroke if possible, then lifting up on the handle and pulling it straight toward the body. This results in the formation of a square-bottomed hole as deep as the blade is long, into which the tree's roots are placed straight down and not curled up. While still holding the tree with one hand the soil is tamped with the mattock blade, which closes the hole and presses the soil firmly against the roots. With the mattock blade inverted the soil is then tamped firmly on the right and left sides of the tree. On the way to the next tree the planter presses his foot in front of the tree to more firmly pack the soil against the roots. About an inch of clear stem should be above ground when the tree is planted.

Sod, loose rock, twigs, and dry earth should be removed from an area at least eight inches square and not replaced in the holes. After the tree is set the dry earth can be pushed back and be made to serve as a mulch. Care must also be taken that pronounced depressions will not be left, since they may catch sliding debris which may cover and smother the plant.

Trees and water are supplied throughout the day by the tree-packer, and the men eat their noon-day lunches in the field.

It is obviously necessary that constant supervision be given the crew. Every cent spent on planting work goes through the foreman's hands. Successful plantations depend largely on his efforts in teaching the men correctly and uniformly. Unless constant attention be given the crew, the efforts spent in producing and planting the trees may be entirely lost, for in no other part of the work does the result of carelessness show so clearly. Careless work may be wholly responsible for failure in planting operations. Planting holes dug im-

properly, root systems curled up in the hole, and light, poor tamping are the most serious faults. Speeding up the crew in order to make a record accounts for much carelessness. A crew should do careful and conscientious work at a reasonably rapid rate, thus insuring planting at reasonable cost. From eight hundred to one thousand trees per planter per day, is considered to be the average rate of planting on the St. Joe, depending of course on the topography and ground cover.

After an area has been planted, a continuous row of stakes is set out beside the trees selected for further examinations. These stakes are usually of cedar, one and one-half inches square and eighteen inches long, and painted white on top to facilitate their finding in later years. The staked trees should cover all conditions of the area. This can best be accomplished by running across contours. A post four feet long by four inches square, usually marks the beginning of a staked row, on which are nailed metal markers, consisting of enameled stake row signs and copper corner signs. The principal corners of areas lying near roads, trails or creeks are also marked by posts with metal markers.

All areas are posted against grazing, the ridge tops at the upper boundary of the area generally being selected for the location of these notices.



ARIZONA AND ITS NATIONAL FORESTS

VICTOR O. SANDBERG, '33

THE popular conception of Arizona is that of endless miles of desert and mesquite, rugged mountains containing gold, silver and copper, breathless chasms miraculously colored; where the sun shines the year round, and the chilling blasts, so familiar in the Northlands, never penetrates. If not taken too literally, most of this is true in the lower altitudes, but where the topography juts its way into the thinner atmospheres the climes are comparable to those of the Northern States. And up in these upper stratas, hemmed in from all corners by deserts bristling with the Giant Sahâaro cactus, the golden cholla, the bayonet leaved yucca, and many other forms of the prickly desert vegetation, and the drab colored impenetrable foothills of manzanita and scrub oak, lies the verdant, cool forests of Arizona.

The National Forests of Arizona are nine in number, and cover 11,605,054 odd acres. In general they are located in the north central, central, and southeastern part of the state.

The Kaibab National Forest is the most northerly one, the upper part of it falling just below the southern edge of the state of Utah, the southerly edge on the border of the Grand Canyon National Park. The Indian meaning of Kaibab is "Mountain Lying Down," and it is well named for outside of the ascent to the forests of yellow pine, the topography is consistently even, with undulating swells to the upper limits. This forest covers 723,411 acres and is divided into two parts.

Adjacent to the northeastern portion of the Kaibabs, and in a long arm of the Grand Canyon lies a spacious, rolling, grazing ground called Houserock Valley. Here a small herd of the American Bison, about a hundred, spend a secluded, protected life. There are just enough of them to create a distinct rumble with their hoofs as they pound over the turf, so reminiscent of their vanished kin that roamed the Western grazing grounds in countless numbers from the southerly boundaries of Canada to the Southwest. Once a year the State sells permits to kill off the surplus for the year, and a "great hunt" is staged. The papers herald the coming event, and the "mighty nimrods" are named. The hour arrives, the warden singles out the unlucky bison and separates them from the herd; the unerring aim and fire brings down the game, and the hunt is over. The hunter gets one hundred pounds of meat, the head and hide, and the State the rest of the carcass.

Progressing up into the Kaibabs from Houserock Valley, one encounters the usual succession of forest types, different only from the rest of the forests in Arizona in that there are no signs of logging.

The Kaibabs are virtually, a virgin forest in every sense of the word. Its complete isolation from the civilizations by its natural barriers, namely the Grand Canyon on the south and east, and miles of badlands on the north and west, has prevented man from exploiting the natural resources. Above 5000 feet the yellow pine grows large and majestic. Progressing toward the Grand Canyon the altitude gradually increases, and at about 6500 feet the forest type changes to the white and Douglas fir, intermingled with patches of trembling aspen, and an occasional Englemann spruce. Above 7500 feet, the forest gives way to Englemann spruce with larger groups of aspen. In the fall of the year, the aspen takes on such a brilliant golden hue that many botanists have been tempted to give it a new specie name, namely, *aura*. The only forms of surface water that show up are pools in the midst of long, grassy, treeless parks. The long eared, buxom mule deer are seen here by the hundreds when at evenings they come down to feed on the succulent grasses and to drink.

Another animal which is abundant here is the Kaibab squirrel. This rodent is indigenous to the Kaibabs only and is protected the year round. It has long ears, coal black fur on its body, and a broad, bushy tail as white, in the vernacular of the natives "as the driven snow." In size it compares with the gray squirrel of the east.

At one time the Grand Canyon National Park was a part of the Kaibabs. It takes in the area for about fifteen miles north of the rim of the Canyon, and an east-west distance to the extremities of the Grand Canyon proper. Thousands of tourists visit this wonderland every year to gaze upon the fickle, colorful, stupendous, awe inspiring Grand Canyon of the Colorado—and to tarry awhile in the virgin forests unmarred by the hands of man.

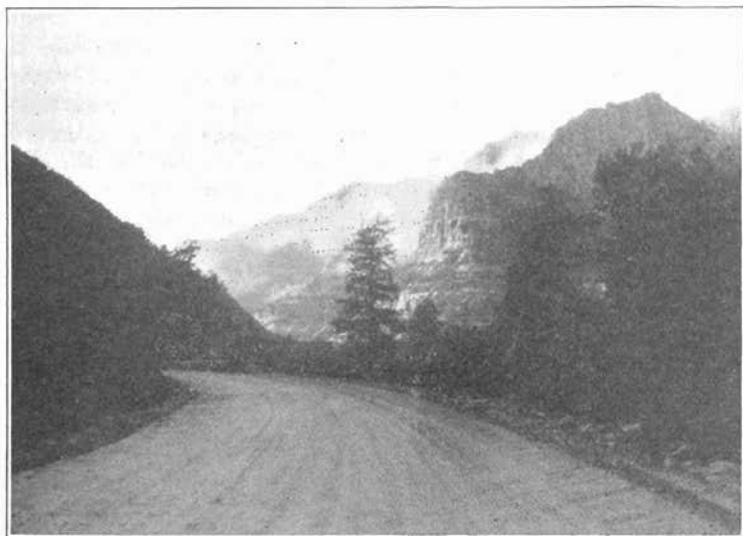
Across from the North Rim of the Canyon, and south of the border of the National Park lies one portion of the Tusayan National Forest. The other portion lies south of this some fifteen odd miles. The total acreage of the Tusayan is 1,230,798 acres, and the elevation varies from 3800 to 10,418 feet above sea level. Most of the virgin timber has been cut from this forest, and in general, a luxuriant growth of new pine is well on its way to maturity.

The C. C. C. afforded a splendid opportunity to improve the condition of these dense stands of young pine coming in, and many hundreds of acres were thinned. This was under the direct supervision of technically trained men. Elmo "The Great" Nauman, '33 was one of these men, and Harley "Yelrah" Johnson, '33 was another.

East of the Tusayan is the Coconino National Forest. Its total acreage is 1,717,697, and the extremities of elevations is more divergent than any other forest in Arizona. From the crest of Mt. Humphrey, in the San Francisco Peaks north of Flagstaff, to the bottom of beautiful Oak Creek Canyon, not more than 30 miles away, there is a drop from 12,611 to 3000 feet above sea level. On the top of the "Frisco Peaks" the snow is want to linger the year around,

while in the depths of Oak Creek Canyon precipitation other than rain is a rarity. Here, where a clear trout stream gurgles the year round over-shaded with sagacious sycamores, where bluish Arizona cypress climb up steep taluses from 1500 foot walls of sandstone, lavishly splashed with intriguing colors of red, yellow and white; summer is ever present. It was in this environment that Zane Gray wrote many of his best novels.

North of Flagstaff is located the Fort Valley Experiment Station, where most of the research for the Forest Service is carried on in the Southwest. The effects of grazing are markedly noticeable close to the numerous sample plots where inside of the plots, reproduction is coming in abundantly while outside the ground is almost destitute of vegetation.



One soon drops over the Tonto Rim into the Basin.

The Coconino is blessed with an attraction of which the whole state of Arizona is envious, and that is the presence of more than a few natural lakes, the largest of which is Mormon, and the next largest, Mary. The shore lines of these lakes are much rougher than most of the eastern lakes; they are composed of jagged pieces of basalt (Malipi). At one time this country was the source of a goodly portion of the yellow pine logged in Arizona. There are still many solid patches attesting to the glory of bygone days. There is vigorous growth coming up.

Hardly a year has passed, but the success of the eradication work is already an accepted fact. Very little is known of the organism

which causes the blight, but several interesting things have been found out about it which should reveal some identities in the very near future.

Timber culture operations were carried on in the forest under the supervision of Lyall E. Peterson '31 last summer. The stand "Pete" worked in happens to be about the finest second growth in the State. Strangely enough, this stand was not attacked by the deadly twig blight although the Forest Service is gravely concerned about it.

South of the Coconino and the rugged Mugollon (pronounced Muggyown) Rim, the Tonto National Forest begins. It is composed of some two and a quarter million odd acres, a large part of which consists of semi-desert lands. The Mazatzal Mt. range closing in the picturesque Tonto Basin on the west is the highest in the forest. The other mountains are much lower, many of them being nothing but barren, chocolate colored upheavals of rock.

Driving southward from the little Mormon town of Payson, one soon drops over the Tonto Rim into the Basin over a road so crooked that the exhaust pipe is forever coughing fumes into one's face. After miles, the road finally reaches the bottom and skirts along the northerly reaches of the Roosevelt Reservoir. It is in this area that "Fatty" Milford T. Riggs '31 and "Allefeles" Harold Tysk '32 practice the manly art of boulder tossing to stem the ravages of the torrential waters rushing down from the mountains, in other words—erosion control. The C. C. C. camps are more permanent here. They are not being moved about like so many of the camps, to the valleys in the winter, and to the "hills" in the summer. The Roosevelt Reservoir is having a lot of attention paid to it by the C. C. C. Most of the irrigation water for Phoenix and the surrounding country is fed by this large reservoir.

About six miles from Pine, a small Mormon village located in the north western part of the Tonto Forest, there is a natural bridge which has been visited by all of the eminent geologists in the country besides thousands of tourists every year. Its interest lies in the fact that it is the only one of its kind in the world; it is composed wholly of travertine, a white concretionary carbonate of calcium. The bridge was formed by the escaping of concentrated lime water over a precipitous canyon. The water welling up from subterranean depths gives up its load of lime when it comes in contact with the air. The bridge is over one hundred and fifty feet high, about 500 feet long, and the gorge is strewn with huge boulders of travertine which have fallen from the roof of the amphitheatre-like bridge. The escaping waters from the deep springs form clear pools in the shade of the bridge, and then rush off down a rocky canyon.

Another point of interest in the Tonto is the Tonto National Monument. This consists of a series of prehistoric cliff dwellings easily discernable from the Apache Trail east of the Roosevelt Dam.

The most active forest of Arizona as far as logging is concerned today, is the Sitgreaves National Forest. This is located northeast of the Tonto and southeast of the Coconino, and comprises 794,394 acres. Most of this forest has an elevation of over 5500 feet, and as a result, a luxuriant growth of western yellow pine is found there. Game, such as the mule deer, wild turkey, antelope, bear, and the tawny mountain lion are found abundantly here, as well as the trout in the never failing streams. Precipitation is so regular and sufficient that dry farming is practiced with success in the small fertile valleys.

A saw-mill of considerable size is located at a small town by the name of McNary. This mill takes care of all of the logs from the Sitgreaves, and the Apaches forest located adjacent to the east.

Eighty miles due north of McNary, over rolling, treeless semi-desert country is located the Petrified Forest. It is well worth the while of any person to stop and stroll amongst the fallen monarchs of another age. Some of the trees are 250 feet long, and eight to ten feet at the butt. The knots are as plain as though they were on a tree of today, and many of the butts showed distinctly the effects of some fungus. All of the trees are coniferous. A story comparable to the Minnesota forester who was sent out in search of a fence pole stretcher, is told of in the Southwest when a budding woodsman was sent to the Petrified Forest to do a little thinning!



A typical erosion check dam.

The Apache National Forest is somewhat larger than the Sitgreaves, if the portion falling within the State of New Mexico is taken into consideration. Comparing that portion of the forest within Arizona, however, the two are about the same in acreage. And they are about the same in character also, for the Apache still holds many acres of untouched timberlands. There are the same fertile valleys, and dry farming is practiced exclusively up in the mountains. Several portable mills are busy sawing up the trees felled on extensive

road operations, and from small timber sales. The lumber is being sold chiefly to Government agencies hard by.

In this forest also, much timber culture work under the C. C. C. has taken place. Howie Smith '33 had charge of a crew within the very shadows of the Frisco Peaks. He is now in the Verde Valley on erosion control preparatory to a huge dam and reservoir project now up before the people of the State.

The eastern boundary of the Coconino is located on a decline which drops off into the boundless Painted Desert, where nature has run amuck with her colors in a country heavily eroded by wind and water.

The Prescott National Forest is located west of the Tusayan and Coconino Forests, and about in the very center of Arizona. It is divided into two parts by the broad Williamson Valley which runs north and south. The acreage is 1,164,829 and the elevations fall between 3000 feet in the Verde Valley to about 8000 in the small, colorful mining town of Crown King located in the southern end of the western portion of the forest. Much of the forest lands fall above the 5000 foot; rains are numerous, and the snows usually heavy. Consequently a dense forest growth is present, practically all of which is second growth. Some of the finest of such stands in the state are found here.

Many acres of the forest fall within the confines of the spacious Verde Valley. Here, as in the Coconino, much erosion control work is being carried on for the winter months by the C. C. C. The rains rushing down off of Mt. Mingus to the west, have cut deep arroyos in the reddish soils of the Valley. When the proposed dam is finally constructed, the value of these check dams in the widening gullies will most certainly be felt. Silt surveys of the Roosevelt reservoir have resulted in almost unbelievable figures representing the tons of soil carried from the slopes by the waters.

The western portion of the Prescott forest has come in for much publicity in forestry circles this year. A twig blight on western yellow pine, reported in 1917 for the first time, in a comparatively small area, has spread to close to 50,000 acres and is threatening to spread to all parts of the forest. In places it has taken as high as twenty per cent of the trees. The organism attacks the twigs and girdles them leaving the tree spotted with the needles of these dead twigs a reddish brown. Wherever this disease is present, the country side takes on a very somber appearance as compared to the green prior to infection.

Eradication of this disease was taken up by two C. C. C. camps when they moved in last June, but later on men under N. I. R. A. and C. W. A. appropriations joined in with the work. The work consists of pruning the blighted twigs and burning them. Trees infected fifty per cent or more are felled, and all of the foliage burned. Hand pruners and six foot pole pruners are used by the men climbing and pruning the trees.

In the southwestern part of Arizona the fore altitudinous mountains break up as isolated peaks or ranges, and so do the National Forests. The Crook National Forest is such a unit, being made up of six parts with a total acreage of 1,424,025. One of the largest portions of it is adjacent to the southeast corner of the Tonto Forest around the thriving copper towns of Globe and Miami.

Within this unit of the forest and close to another copper town, Superior, is the Boyce Thompson Southwestern Arboretum. This paradise, in the midst of a cactus forest, contains both exotic and native forms of plant life characteristic to warm climes. There can be found here ten thousand varieties of flowers, trees, ferns, grasses, and cactus. The late William Boyce Thompson, copper magnate, founded the place with the object in mind of finding those plants which could grow in the desert, or semi-desert areas, and be of benefit to man. In connection with this Arboretum, a small C. C. camp has been built for the prime purpose of raising plants suitable to transplant on the eroded banks, and in the soil washed into and checked by the erosion dams now under construction. The plants are just beginning to show up, and although some difficulty has been encountered from damping off, a good deal of the plants will be ready for the dams this coming Spring.

Four of the units of the Crook Forest are located west of Safford, Arizona in the southwestern part of the State. Mt. Graham, just out of Safford, rises to an elevation of 10,500 feet, and has snow on it most of the year. Northwest of Safford is the Coolidge Dam, the San Carlos Reservoir, and the spacious San Carlos Indian Reservation. This country is dotted with large flat topped mesas, ruddy brown in color.

The last portion of the Crook Forest is located south and adjacent to the Apache National Forest along the eastern boundary of Arizona. The Mule Creek highway is the main thoroughfare through this region, and is a very picturesque one. Rising from semi-desert country east of Safford, the road climbs rapidly. Just before the pine begins, the road goes through Needles Eye Pass, a passageway chiseled out of a mighty out-thrust of conglomerate hanging on the edge of a yawning canyon. After several miles of yellow pine, the country gives way to miles and miles of undulating grasslands beyond which the Mogollan Mts. of New Mexico are boldly outlined.

Still further south, and even more chopped up, is the Coronado National Forest. This forest is divided into eight units, and aggregates 1,500,000 acres. A part of the Coronados stretch into New Mexico.

The Santa Catalina and Rincon Mts. in one unit of the Coronados just east of Tucson, the largest city in southeast Arizona, is a popular resort for the public when the thermometer soars, as it is wont to do, in the blistering atmosphere of the desert wherein Tucson is located. Several of the more popular places have benefitted greatly

by emergency monies in the way of improvements. Sabina Canyon, in the Santa Catalinas, has had its waters dammed up in several places, and deep clear swimming pools have resulted. Miles of good horse trail have been built also.

Three large units of the Coronado are south of Tucson toward Nogales and Mexico and are located along the sides of the Santa Cruz River Valley. This Valley is steeped with the legendary of several civilizations. Old Indian ruins can be found most anywhere. The Mission San Jose de Tumucacori, built under the supervision of the Jesuits by the Indians in 1691, contains the names of many early settlers of the West upon its crumbling adobe walls, and a grave filled churchyard still shows the signs of executions upon its ramparts breast high where the ponderous musket slugs entered. The Santa Rita Range Reserve is located in the first unit of the Coronado south of Tucson, and it is located at the base of the Santa Rita Mt. The Forest Service conducts experiments here with the various problems confronting the cattle men of the country.

The Dragoons and the Whetstone Mts. are the smallest units of the Coronado, and are located east of the Santa Rita Mts. Close to the border, still further east are the Chiracahua Mts. Within this mountain range is located another Arizona phenomena, namely; the Chiracahua National Monument. It commemorates President McKinley, and was unofficially done so by a group of United States soldiers when news was received by them that the President had been assassinated. A monument of stone was constructed, and all of the company had their names chiseled in it. These stones now compose the fire place in the ranch at the foot of the Monument which is a beautiful canyon. This canyon is several miles long, very narrow, and its walls are composed of needles of rhyolite projecting upward for two hundred feet or more. Balanced boulders hang above everywhere on pedestals but a few feet square as though a slight gust of wind would send them toppling into the dense verdure of the canyon floor. The chief tree of the Monument is the Arizona Cypress, and it adds a distinctive charm to the whiteness of the grotesquely shaped rocks about with its deep blue. Two strangers to the Arizona tree world are found here. One is the long needled Apache pine, the other is the black bowled, short needled Chihuahua pine.

Leon Hill '33 is located in a camp in the southern end of this same unit of the Coronados. Most of his work has had to do with release cuttings in a forest composed chiefly of juniper and oak, juniper being favored.

The last part of the Coronado National Forest lies in the southeast corner of the State, with about four-fifths of the area falling in New Mexico.

And so this article of colorful Arizona comes to an end, but before doing so, the Author takes this opportunity of extending a "Howdy" to the Faculty, Grads, Classmates, and under-Grads with whom he has had the good fortune, or misfortune, of being affiliated.

THE RIVER'S VINDICATION

F. W. NASH

*It's true I've gone on the warpath,
I've smitten your cities and homes,
I've cracked the walls of your stately halls,
I've threatened your spires and domes.*

*I've spoiled your gardens and orchards,
I've carried your bridges away,
The loss is told in millions of gold;
The indemnity you must pay.*

*But had I not cause for anger?
Was it not time to rebel?
Go, ask of the springs that feed me;
Their rock-ribbed heights can tell.*

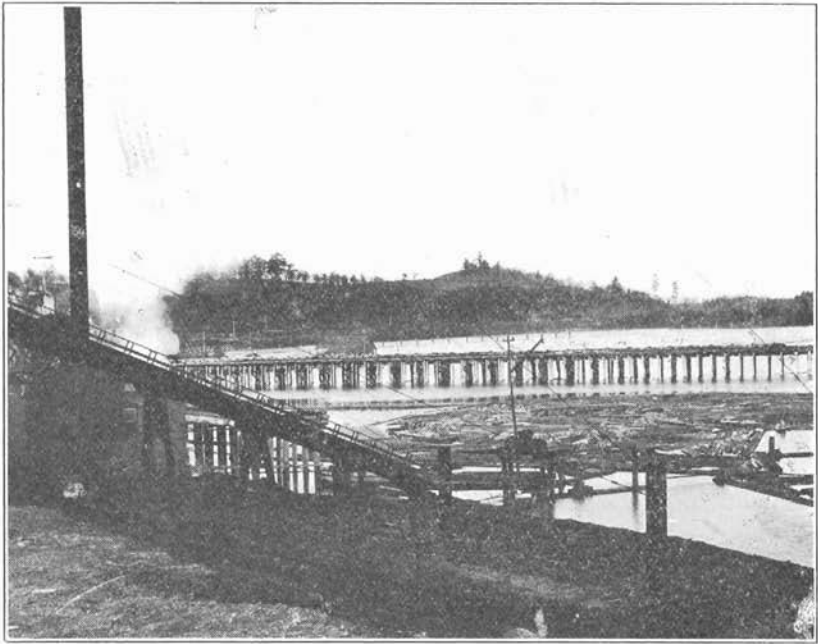
*Go to my mountain cradle,
Go to my home and see,
Look on my ruined forests
And note what ye did to me.*

*Those were my sylvan bowers,
My beds of bracken and fern,
The spots where I lie and rest me
E'er to your valleys I turn.*

*These you have plundered and wasted,
You've chapped and burned and scarred,
Till my home is left of verdure bereft,
Bare and lifeless and charred.*

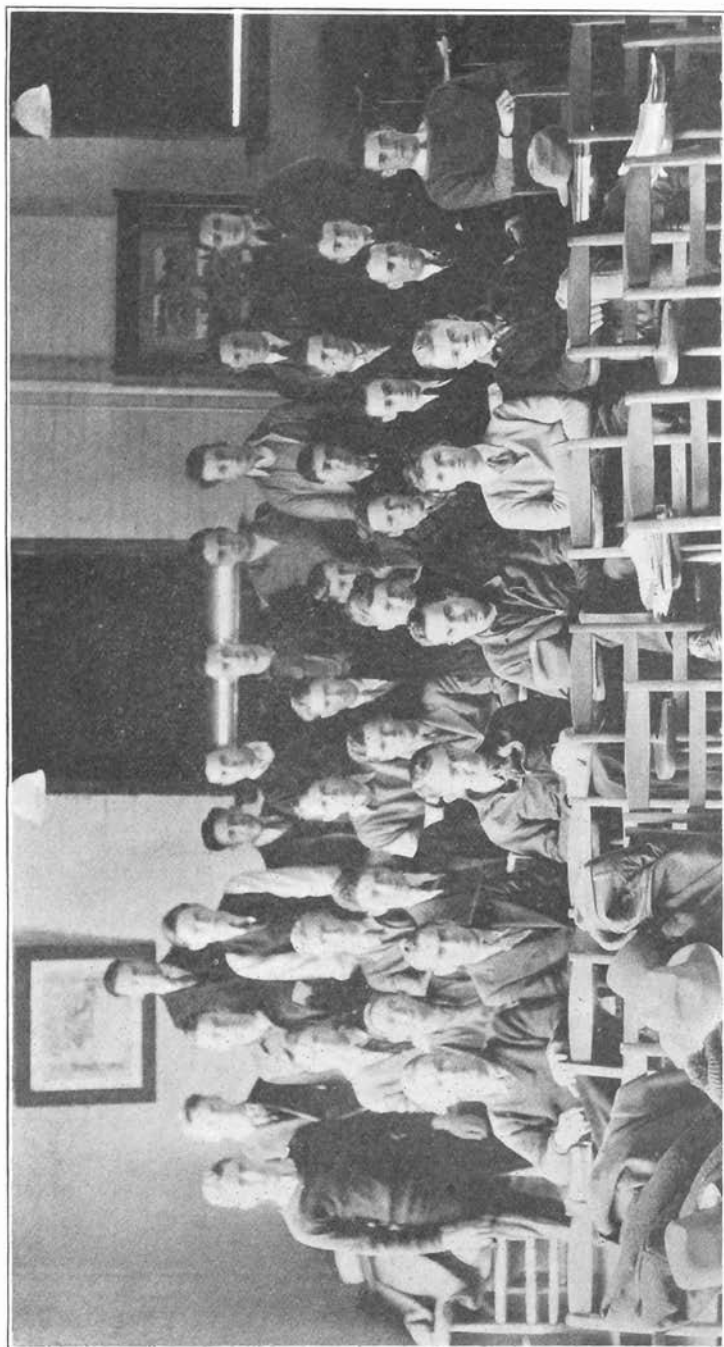
*So I have gone on the warpath;
I've harried your lands with glee.
Restore with care my woodlands fair
And I'll peacefully flow to the sea.*

—AMERICAN FORESTS, 1928



*Where the logs are boomed and sorted—and,
finally sawn into useful lumber.*

The School



CLASS OF 1937



*Free at last,
from the Binding Chain,
Enjoying all
in God's domain.*

FRESHMAN CORPORATION '33

EVAN SANDERS, '37

There died once a forester, who having made the Great Change, was called up yonder to supervise ribes eradication in the Celestial Forests. While at work one day he was trampled underfoot by the outsize boots of the Spirit of Paul Bunyan. 'Twas while he rested his crushed spirit on a soft cumulus cloud that the Great Boss met and comforted him.

"You are new here, I take it," says the Old Man, generously handing over a plug of Old Tarantula.

"Yes. Came in about a week ago."

"We needed you up in these woods. Paul's all right but his feet are too big. He's grown clumsy lately and keeps knocking down good timber whenever he moves about. Tell me, what do you think of it here? Anything missing you're used to down below?"

"Well," mused the forester. "I do miss somebody to sit with and reminisce about Itasca. Nobody here will listen to me. Old Paul says he knows it by heart and the others don't know any of the fellows who were there with me."

"But I know them all by name," pointed out the Grand Old Man. "I used to hear from that bunch last summer once in a while but I was too busy to look down and see what all the excitement was. I remember once a voice called me and my son several times in a sort of wailing tone but I didn't answer."

"I guess that was when Bill Laing stubbed his toes in the bunkhouse that afternoon. I'm not surprised you heard him."

"What's the nature of this place, Itasca?" He asked. "It sounds fraught with interest."

"Well, you see, they send us up there freshman year. We live in a big log bunkhouse, about fifty of us. There's a downstairs room called-er-uh-, well, we'll just call it "The Alley", where lived a gang of hoodlums, Wyatt, Meacham, Ceder, Mulally, Schuft, and Loomis, as I remember. They used to fight the lads on the upper floor, and though few in number, they put up some good scraps. A bucket of water was the common weapon but Mulally used to do wonders with his trusty wet towel. They had the more peaceful folk on the upper floor terrorized for quite a time, until one night after the fiftieth bucket had been hurled up the stairs a crew of indignant fire-eaters girded their loins and fought the Alley to a standstill."

"Is that all you do there, heave water at each other?"

"Lord, no! Or rather, no, Lord. There were classes in the daytime that kept us on the move. Part of the time we'd single out the elusive notes of the well-known Pittidew bird and the enchanting love call of the Oven bird, the forester's friend, under Dawson, who could hear birds that had left the county the year before. Then some of the time we hiked through the woods with Rosendahl, gathering stuff that we'd always just stepped on and forgotten before. Some of us kept on doing just that. "Rosey" initiated us to the flames of hell in the form of Indian turnip. This formed a staple part of Boyer's meals from then on. I don't think he ate a 100 per cent spud after that.

"Cheyney used to have us out on our own, gathering information about some damn old swamp or something. We all developed our imaginations and more trees were counted in the bunkhouse than in the woods, I fear. One bloke, whose name shall be kept secret for obvious reasons, instead of counting every herb in a strip sixty yards by one yard just ran a four inch strip up the middle and multiplied by 9. We used to work as near to the store as possible so we could dash in frequently and quench an ever-present thirst.

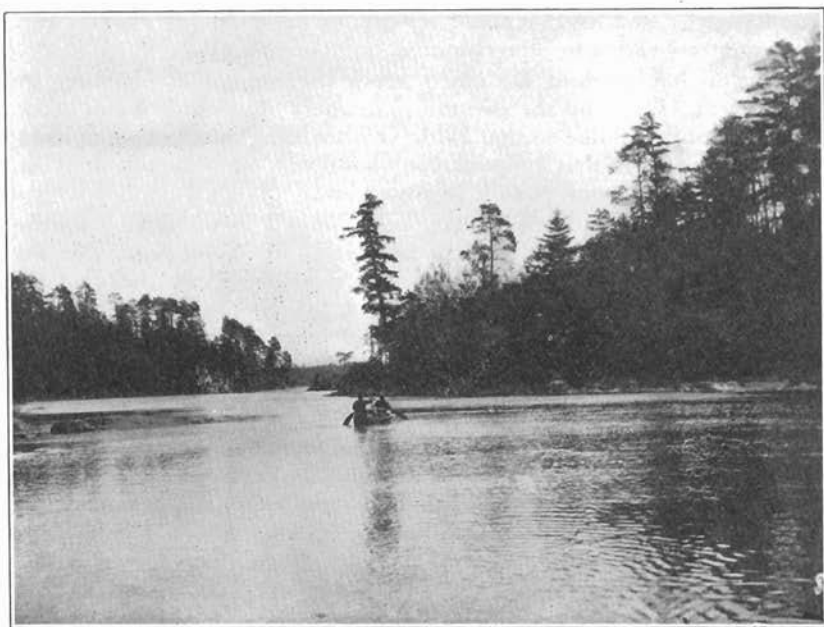
"There was another prof called "Brown" who sure gave us hell out in those jungles. It's no joke trying to hold a compass still while mosquitoes qall long, soul-satisfying draughts of blood from each finger. Of course, there were bright spots even in this kind of work, such as losing Zeff in the tall thickets, or watching Boyer and "Snipe" Hall bitterly cursing each other for yanking the steel tape through the other's hands.

"Speaking of Hall, he was the year's victim to the ancient "snipe" hunt. I suspect our prexy, "Smokey" Adams, of putting him wise so that he was home in bed before the others. One thing he didn't escape, though, was disfigurement at the hands of that demon, Weinstein. "Wein" muscled in on Tom Evan's territory and cut Hall's hair one dull afternoon. After a few snips, Hall's head looked like burnt-over wasteland. To carry out the idea "Wein" slashed out a fire-break down the center, in lieu of a natural part, and then annointed him with a hell-brew of gun oil and citronella to make

the alder thickets stay down. Hall took a good long swim around the lake a few times to sort of quell the thoughts of carnage and mayhem arising in his breast."

"Any night life up there at all?" asked the Most High wistfully.

"It's not so hectic as it might be. A lot of us, not satisfied with walking all day with some queer instruments draped about us, used to find solace in foot-slogging it up to the store, where a glass of the foaming might be had, then down to the Indian stockade to watch the aborigines practice up on their dancing for the coming pageant. Some of the boys even tried the intricate steps themselves, Art Sweet,



Carl Thiry, and Zeff, to name but a few. Boyer, after much coaxing by some strong-arm members of our crew was "prevailed upon" to tread the measure, and he made a noble figure interpreting the dance in praise of the Drying Up of the Crops.

"A lot of our time at night was put in up at Headwaters where there was music beside some well known brands. Some old fashioned bouts were held there, participated in by nearly half of the camp. Those were pleasant evenings, especially when hiking home afterward in a body, singing all the old favorites. They say we were heard clear out on the lake by one of Dawson's bird trips and all over faculty row. This, if true, is much to be regretted.

"Of course, the dances in town found about all of us putting away our bug-boxes and donning our best dungarees. A rock, thrown in any direction in town those nights, would have probably hit some forester on the head. Which would undoubtedly have been a good thing. The general opinion was that there seemed to be water in the "three-point-two."

"Some of the best times were had around the old battered piano in the bunkhouse singing the grand old ditties while that ace of botanists, John Moyle, worried out the accompaniment, somewhat handicapped by the fact that some bloke, in trying to make a harp out of the old Steinway, had reduced its range to a scant two octaves. (Yeah, I mean you, Buddha!) Even so, we went pretty well on "Home On the Range", "Red River Valley", "Bury Me Out On My Forty", and the countless verses to "Revelling".

"You haven't told me much about the individual members of your outfit," spoke up the enthralled listener. "I would like to know a little about each one so that I'll have something on them when their time comes to join that innumerable what-not. What do you think of first when some name pops into your mind?"

"Well, it seems unbelievable, but just as I was about to shuffle off the good old coils and join the immortals, the whole motley crowd passed before me. I could see each one clearly and even hear quaint remarks, peculiar to each individual. I saw the Burler King, Sulo Sihvonen, standing on a log in the water, telling his last opponent (also in the water), "We had her rolling that time." "Doc" Thompson was ghoulishly extracting liver flukes from the blue heron, and every now and then I could hear the phrase, "Now, when I worked in the museum....." Del Thorsen was eyeing a newly lit cigarette, asking out of force of habit, "How about shorts on that?" And Snipe Hall was stalking through the brush with his arms full of specimens, muttering under his breath, "Solidago rosendahlii. Or was it that other one, I wonder?"

"Boyer was protesting vigorously as he described a parabola into the limpid water of Itasca the Beautiful, and Joe Chowen and Phil Geiger were mauling the atmosphere with large sized gloves. Bernie Peterson and "Steve" Stevenson were arguing whether it was a Coleoptera or one of those other things, in the last few minutes before the "lights-out". I could hear "Buck" Linehan opening up for the tenth time on "it isn't the bed-roll getting swiped but the principle of the thing that gripes me." At the same time I heard "Wein" picking out "Stormy Weather", with variations on a wheezy old mouth-harp. There was old Laing, raving about his girl or cursing Chowen, his partner ("That damn Chowen") for counting too many herbs on their quadrat. Sanders was prowling about in the dark putting the fear of Yourself in Boyer with his maniac stunt, and Boyer was yelling, "I tell you he's gone crazy. Where's my axe!" Tom Schraeder was cursing his partner and saying, "You and your damn siestas."

"The sound of a plaintive wail asking the world in general "Have You Ever Been Lonesome?" told me that Art Hawkinson was near. Down in the Alley I could hear Wyatt going strong on the guitar, while Meacham and the rest called for impossible ditties. Little America was up in the messhall as usual burning the mid-night oil over what Brown calls "simple curve-fittling problems", and rehashing Lake George escapades. I could see them all, Ed Kron, Ray Ellstom, Buck Linehan, Harry Mosebrook, "Buddha" Erickson, "Swanee" Swanson, Rod Lindgren, and "Smokey" Adams.

"Arle was swinging wildly at two spectres who, though ethereal in appearance, were fleshly enough to run when horse-shoes and baseball bats were aimed at them by Herman, the Layer of Ghosts, who kept shrieking, "I see yuh, Sanders, and you too, Laing. Get out of here, now!"

"Heaven-eyes" Ambrosen came paddling along, bellowing "Alouette, gentile Alouette" for the benefit of the pageant gowers. In the same place I could see Art Sweet, dressed in imitation buckskin, getting shot by Indians and doing a dying-swan act with embellishments of his own origination.

"Myron Ostrander, the Woodtick's mascot, was impressing upon his partner's mind the great need for more action on their Forty, as was every second man up there. Thiry was saying "Goodnight, Weinstein" for the twentieth time and replying "I'm shut" every time he was told, "Shut up, Thiry".

"Severance was sitting up in bed telling some wandering ghoulie, "Down, Moko!"

"In front of one of the tourist's tents I could see "Red" Walz and "Ozzie" Krogfoss making life pleasant for some fair visitors. "Ozzie", by the way, was told he was the nicest boy in camp, which may or may not mean something. Russ Rosendahl, known affectionately as "Unc", was skipper on that illfated boat-trip down the lake when the engine gave up at last and the whole class swam around the old scow until "Unc" heartlessly got her coughing again.

"While the rest of us were still searching for non-existent section stakes, out "where the lunch-saw never rings" Puggsley and Hawkinson had surveyed their whole forty. How they were envied! Sometime I must tell you of Bill Laing's great contempt for other blokes' corner-stakes, but I won't now.

"Jim Henderson, that soft-spoken gentleman who interceded for Chowen one memorable occasion, is a person to mark well, oh Lord. You had better let him in here without a question because you'll never get anything on him. He's either damn smart or just plain virtuous.

"Our best fishermen were Romnes and Tom Evans, who also did a flourishing business shearing off the woodtick-infested locks of the Lochinvars who hoped to make a hit in Bemidji.

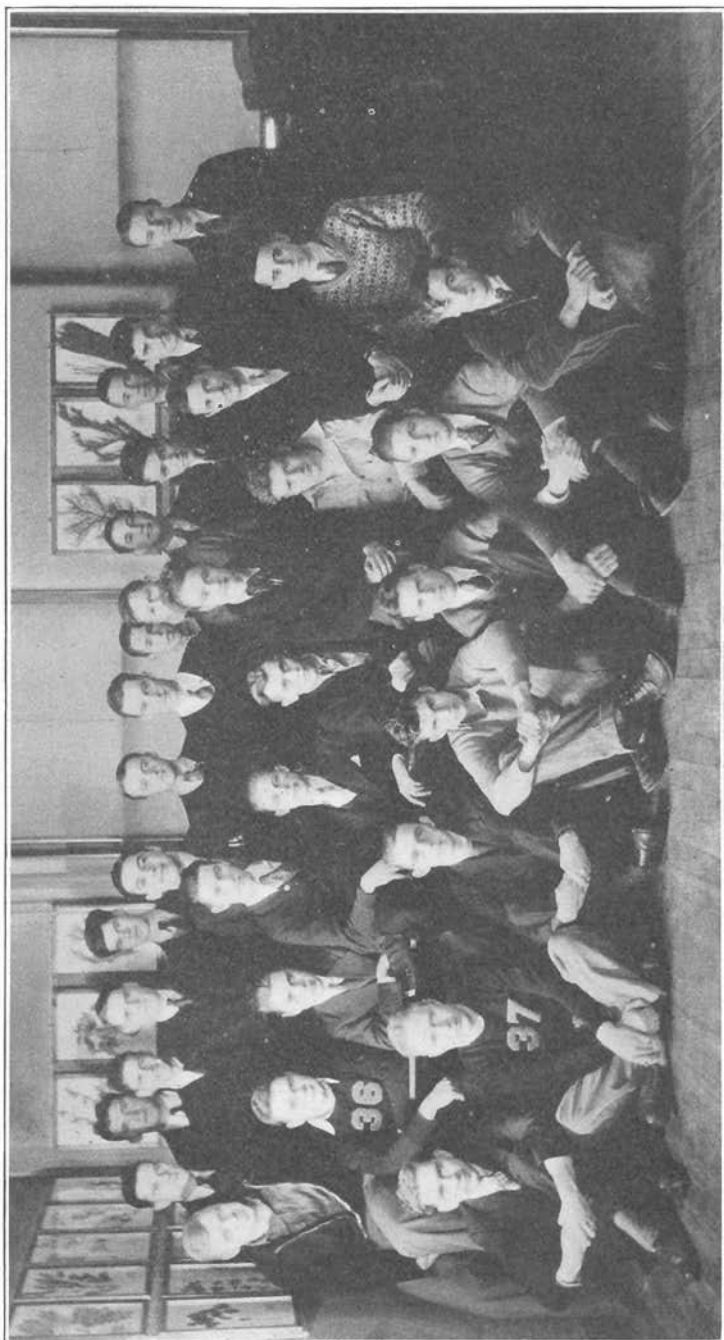
"A most vivid picture that came before me was a gang of thirsty lads yelling for another cup of milk and threatening Carter, our steward, with horrible deaths unless they got it. They didn't get it, but the refund at the end of the season made them all forget it. The only thing I blame Carter for is a mess of beans that were past the voting age.

"As the procession of visions began fading out, I knew that Hass, the official "lights-out" man, had pulled the switch, and by the loud wailing and tearing of hair, I knew that many had been caught in the middle of a delicate classification of some bug or other."

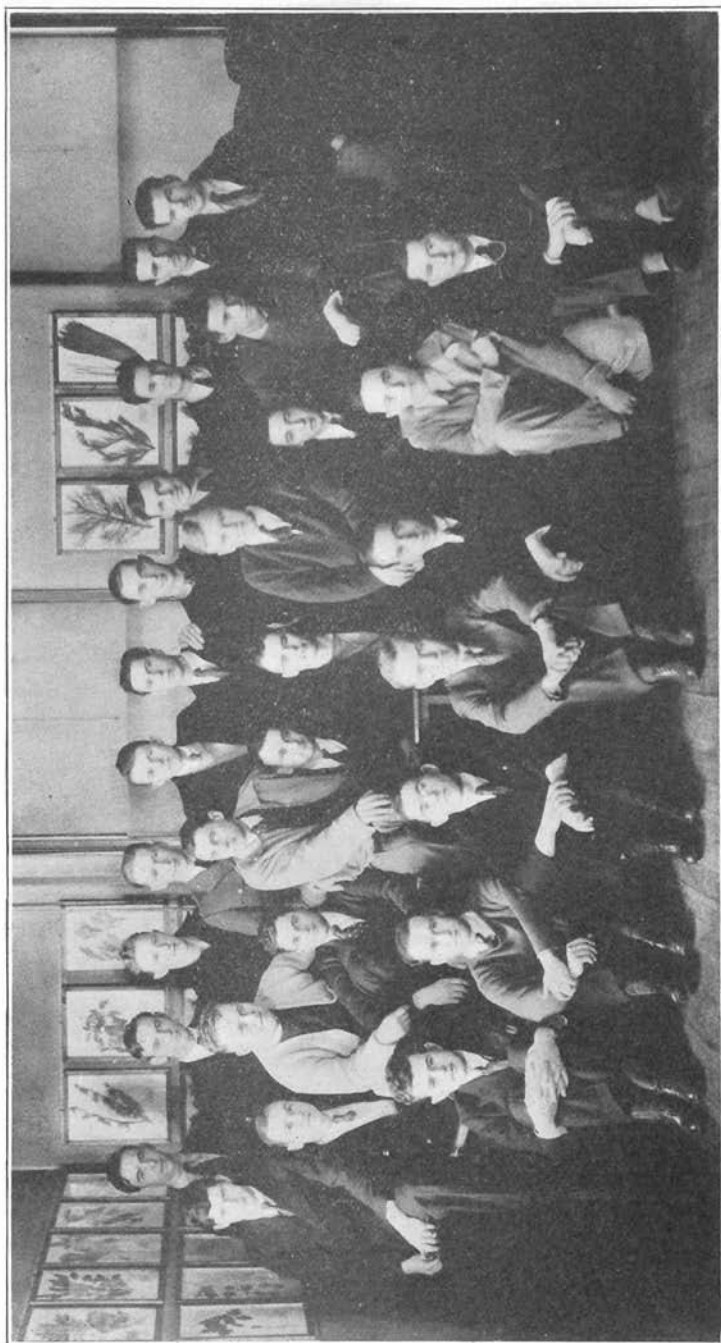
The forester stopped talking and glanced around at where the Great Spirit had been sitting. He was gone. Far below, on earth, the forester could see a youth hurrying up to Doc Schmidt's office, his registration papers in hand, obviously to consult upon a course.

"Wish I could go back with you," he murmured wistfully.





CLASS OF 1936



CLASS OF 1935



JUNIOR CORPORATION, 1933

Russ Wheeler, '35

The spring season of nineteen hundred and thirty three arrived to find thirty foresters traveling by hit and miss means to the frozen north country, to spend the best three months of their lives receiving practical forestry instruction, playing sports of all descriptions, and raising Hell in general at Cloquet.

Reminiscences of these three months come so consistently to mind, I set them down, memories of a period sublime.

Karl Ziegler, prexy of our illustrious group of merry woodsmen, fulfilled his presidential duties in a vain effort to protect Sid "Cupid" Rommel from the wiles of the fairest of many fair lassies in Cloquet. Karl's admonitions went unheeded however as "Cupid" continued to cause "Baby Picher" Hatch many sleepless nights in this, their inevitable triangle. Sid's most serious obstacle, however strange as it may seem, was neither the advice of "Prexy" Ziegler or Hatch, but the incessant talking of his partner, "Noisy," Steve White. No matter what the occasion, Steve talked every one under the table.

Perhaps most of the "Hell-raising" was led by the Farm Campus gang, which included Randy Strate, Pete Nelson, Don Burcalow, Bill Emerson, Linc Mueller, Rudy Hedland, Lynn Hatch, and Russ



Wheeler. Paul "Chiseler" Seastrom sold the gang a jalopy he thought wouldn't go; but chief mechanic Strate, and his assistant Rudy Hedland, showed their ingenuity and soon had a car as good as new. Speaking of Randy Strate: he spent all his spare time working on the Ford or reading sweetly-perfumed letters, written on expensive stationery.

Rudy Hedland, who kept everyone from starving, and most everyone from complaining, had a strange schedule. Arising at 6:30 A. M., he solemnly swore, "So help me Hannah! Never again! At intervals throughout the day when accosted Rudy repeated very emphatically the above statement. At 6:05 P. M. a cry of "Let's go to town!" rent the air. Investigation usually found Rudy leader of this "Call of the Wild". Treasurer Linc Mueller almost ran the corporation in the hole buying butter; a certain stenographer at the creamery had a very winning smile and courteous "thank you" when Linc paid the bill.

"Seven Buck" Bill Emerson was noted chiefly for two accomplishments. Finding grouse nests probably gave him less enjoyment but certainly was cheaper than his rather infrequent but expensive journeys to town. Bill and Strate should receive mention for their cheerful singing in spite of obstacles such as the memorable trip to a Haywire camp on the Chippewa National Forest. "Skinny" Fuller and Seastrom can furnish more minute details on the size and vicious-

ness of the eagles—or were they mosquitoes?—that resented our intrusion into their kingdom. “Grouch” Kolbe probably got more sleep in less time than anyone in history. At about 3:00 A. M., he ventured from the impenetrable seclusion of his pup tent to proclaim to the insect-bitten public how well he could sleep in the aforementioned tent. “Grouch” received his name due to his notable efforts to prevent a Corporation dance in the bunkhouse, because it kept the minors and Infantino awake. Infantino undoubtedly needed his sleep, however, as he worked all day under the contradictory supervision of Fuller and “Spook” Richardson. Incidentally, Fuller was probably the most repentant man of the season, the morning after, when he saw the mammoth Shell Gas Sign in the bunkhouse.

Don “Bickerdyke” Burcalow, formerly fair game for all the fair maidens wherever he might be, spent his time far from temptation in the sheltering haven of the small bunkhouse, keeping himself pure and innocent for the girl he left behind him. Pete Nelson also had good intentions until Orville “Hubby” Hatle broke down his indomitable will and led him astray to Finn Hall. It was here in this denizen of the underworld that he found slumming the society belle of Cloquet.

If it hadn't been for Wally Jacobson that devastating dueler, Pete probably would have had to vault the porch railing of Cloquet's elite more than once.

Russ Wheeler gave most of the boys the advance dope on the eligible young ladies of the town, but could not rate any for himself, so found himself playing the “Lone Wolf” as he waited for the more successful to break that clinch and start rolling those long five miles home, aided by the rays of the rising sun.

Thor “Bring 'Em Back Alive” Bergh, most famous for his derogatory remarks about the belles of the town, spent all his time in their company at the Tulip Chocolate Shop and the Rustic Inn. Perhaps their cold reception to his attentions were part responsible for the blessing he so elegantly bestowed on them during working?—hours.

Bergh's pal and companion, “Screwy” Russ Youngren never said much, but Hatch claims his actions with the girls were terrific. Try to explain your success with the “bigger” half Russ!

“Apeman” Bomberger who left us about midquarter to accept a position in North Carolina, aptly expressed his opinion of the “Farm Campus” group, “you're the rudest bunch———x———x———x I ever saw”. The courtesy extended in receipt of his many fine jokes was probably responsible for his very blunt statement on the merits of the gentlemen included.

“Grunt” Graves and “Groan” Hanson exiles from “Welfare Island” never took off their hats in public places. Wonder if “Barber” Bergh was responsible?

Pete Super and Ralph Nelson, devotees of the Sport of Kings, kept the bunkhouse boys in constant fear of their lives by the practical thrusts and parries of the foils. Super wanted to duel with Hedland over a fair maiden, then disillusioned over the fact that she smoked cigarettes, he retired to live the life of a hermit far from the haunts of bold bad women.

Chris Christopherson picked them young, taught them nothing, and discarded them so often that each gal favorite became known as the "Hit of the Week." His towering personality, or should I say personage must be due to a large part of his baffling success on either the East or the West end of Cloquet.



"Barney Oldfield" Brown had a secret love somewhere in town, whom he visited regularly on his motorcycle. Brown had quite a time with this bike of his, even losing it one day to find it about thirty chains down a section line. He still blames Burcalow for pulling a fast one, but everyone else knows that he rode down the section line one fine spring day while dreaming of his secret passion. Brown's partner, ya know, the fella who rode to work every day on the rumble seat of that motor-powered horse, was none other than "Snipe" Kopes. "Snipe" was all against dance in the bunkhouse for several unknown reasons. However, when the dance was held, no one had a better time than Kobes. Unlike "Grouch" Kolbe, Snipe was willing to pass up his share of the receipts to take active part in planning and enjoying the second dance, especially the refreshments for the gala affair.

Ed "Timekeeper" Panek almost finished his career when he failed to acknowledge two hours of work put in by Hatle. Hatle along with many other sufferers under Ed's 61-minute hours, threatened mutiny, endangering the popular (?) timekeeper's life. After checks were issued Ed always found himself deluged with complaints. He set them lightly aside, when showing them his time reports it was found they had worked only fifty eight minutes in an hour.

"Gladys" Dobie probably had the strangest loves of any of the gang. Lucky enough to have a car, "Gladys" experienced no difficulties in reaching town. Nevertheless it was seldom anyone spotted Dobie's swanky coupe on the streets of the city. Nite after nite no matter what the hour of return, one could invariably find "Gladys" constructing a study skin or mounting some strange bird in the quiet and solitude of the library.

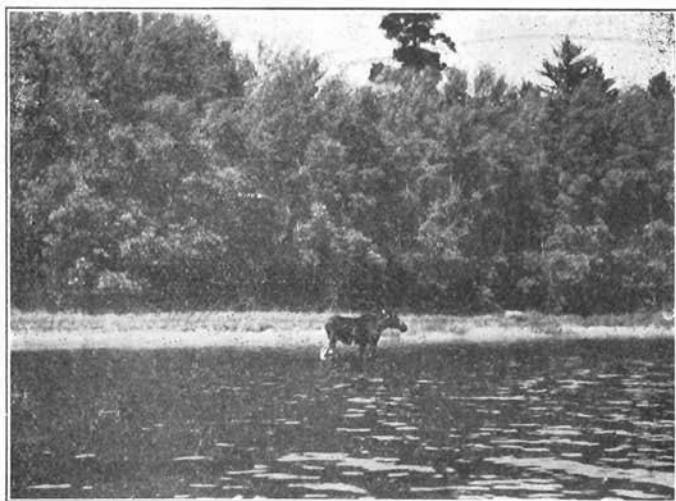
A greater portion of this may seem irrelevant and far from the thoughts that should be attained by student foresters who have advanced sufficiently far in their scholastic efforts to be termed Juniors.

It should, however, be recalled to mind that all achievements of these men socially and athletically, were acquired in a few free hours, after completion of a strenuous day's work, mapping, cruising timber, nursery work, thinning, taking a census of grouse or small mammal, and last but not least, the preparation of complete reports stating in minute detail, knowledge gained in the efforts of the day.

This short account and recount of the affairs at Cloquet would be very incomplete indeed without further mention of the three outstanding social events of the season. Two dances were highly successful despite some dissenting voices. High quality orchestras were transplanted from Cloquet to the cedar-bowered rooms of the large bunkhouse, where dancing and refreshments held sway until the wee small hours of the morning.

The affair however, which usually touched the stomach if not the hearts of all the merry woodsmen was that picnic of picnics given by Mrs. Stilwell at Jay Cooke Park.

All in all or piece by piece I recall no period longer, shorter, or of the same length of time that ever has or ever could furnish us the unrivaled enjoyment of this great experience at Cloquet.



SENIOR CLASS

1934



DONALD BALDWIN
Wentworth, South Dakota
General Forestry
Forestry Club
Y. M. C. A. Cabinet
Summer Work
Savenac Nursery 1930

Horticulture Division University Farm '31 and '32



RUTVEN E. HEDLAND
Blue Earth, Minnesota
General Forestry
Forestry Club
Junior Corporation 1933—Steward



GEORGE A. HERION
Chicago, Illinois
Commercial Lumbering
Tau Phi Delta
Xi Sigma Pi
Pi Phi Chi
Forestry Club
Gopher Peavey Board '32
Gopher Peavey Business Mgr. '33 - Editor '34
Interprofessional Council '33 - President '34
Union Board of Governors '32, '33, '34
Agriculture Student Council '33
Minnesota Gopher—Associate Editor '34
Summer Work—Superior Nat'l Forest '33



TED M. HOLT
Northfield, Minnesota
General Forestry
Tau Phi Delta
Xi Sigma Pi
Forestry Club
Gopher Peavey Board '32
Forestry Club Banquet Chairman '32
Alpha Zeta
Agriculture Student Council '31
Summer Work Blackfeet Forest '30, '31, '32, '33

BARCLAY INFANTINO
 Punxsutawney, Penna.
General Forestry
 Forestry Club
 Football '32, '33, '34
 Track '33, '34



RALPH W. NELSON
General Forestry
 Tau Phi Delta
 Forestry Club
 Gobblers
 Summer Work—Jay Cooke Park '33



LEO WILJAMAA
 Tower, Minnesota
General Forestry
 Tau Phi Delta
 Xi Sigma Pi
 Gobblers
 Forestry Club
 Virginia Junior College '31, '32



JAMES WILKUS
 St. Paul, Minnesota
Nursery Practice
 Tau Phi Delta
 Forestry Club





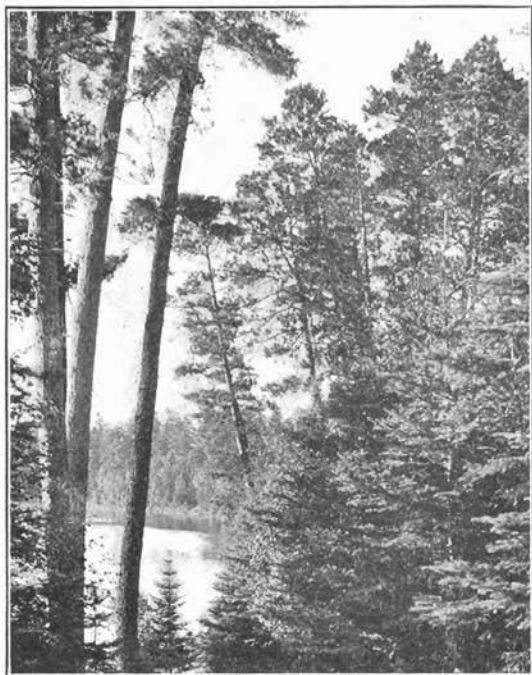
PAUL SEASTROM
 Geneva, Illinois
General Forestry
 Tau Phi Delta
 Gobblers
 Forestry Club



PHILLIP WATTERBERG
 Minneapolis, Minnesota
General Forestry
 Forestry Club
 Rifle Team '31, '32, '33, '34
 Camp Perry Rifle Matches '31, '32



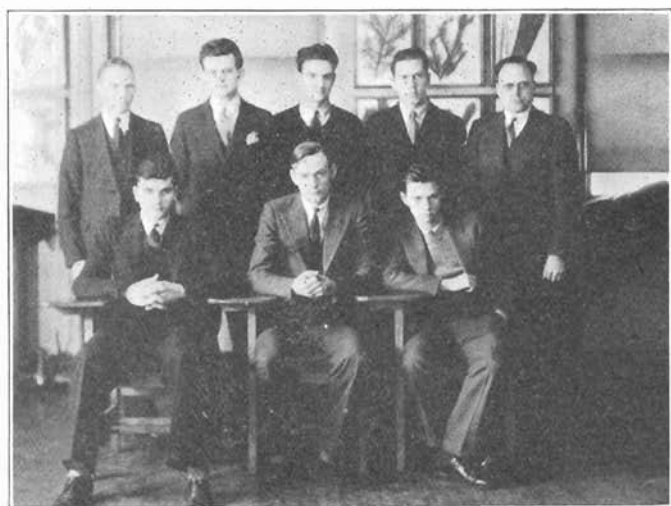
KARL F. ZIEGLER
 Minneapolis, Minnesota
General Forestry
 Xi Sigma Pi
 Forestry Club
 Junior Corporation - President '33
 Cross Country '31, '32, '33, '34
 Greene Scholarship Award '34



*We shall join together
to restore*

Organizations

THE FORESTRY CLUB



CHASE MERZ FERBER DINGLE REES
 MAJOR PARKER ELLERTSON

FORESTRY CLUB OFFICERS

LANSING PARKER	-	-	-	-	-	<i>President</i>
WILLIAM MAJOR	-	-	-	-	-	<i>Vice-President</i>
EVAN SANDERS	-	-	-	-	-	<i>Treasurer</i>
ROY DINGLE	-	-	-	-	-	<i>Secretary</i>

PEAVEY BOARD

L. REES	-	-	-	-	-	<i>Faculty Representative</i>
W. CHASE	-	-	-	-	-	<i>Alumni Representative</i>
B. ELLERTSON	-	-	-	-	-	<i>Sophomore Representative</i>
R. MERZ	-	-	-	-	-	<i>Junior Representative</i>
A. FERBER	-	-	-	-	-	<i>Senior Representative</i>

FORESTRY CLUB ACTIVITIES

BOB MERZ, '35

THE forestry club of the University of Minnesota represents students studying forestry and is instrumental in promoting general interest in forestry and providing a medium for the foresters to band together in a cohesive and fraternal group.

Interesting talks by outside speakers tend to make classroom knowledge seem more practical and interesting.

The first meeting of the 1933 school year was held November 8, for the purpose of electing officers. Lansing Parker was elected to control the destinies of the club for the coming year with William Major, Roy Dingle, and Evan Sanders serving as vice-president, secretary, and treasurer respectively.

Of course, tritely speaking, the "traditional bonfire" was held as in the past and a large turnout was seen although the evening was marred by a persistent, cold drizzle. (It being a group of foresters, no one admitted he was cold—at least we hope not.)

A roaring fire with the usual type of stories, apple-cider, cookies, apples, and a few songs thrown in kept everyone in good spirits. For one evening Brown, Cheyney, Allison, and Schmitz forgot curves, tolerance, policies, and species and beamingly submitted to witty introductions by the master of ceremonies.

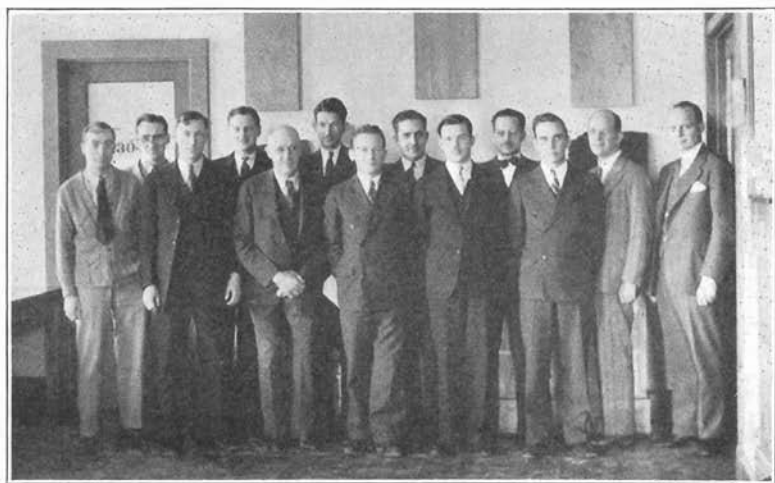
The main object of the bonfire was not forgotten and every freshman was introduced; before the night was over every available hand was thrice shaken.

At the next business meeting of the club it was decided to hold a dance with the theme, "Paul Bunyan Brawl." The dance was a success and many a brawny one of us was dangled dizzily at the end of a fair curl before that evening was over. Credit for the success must be extended to the general arrangements committee who really did put the dance over.

The January 26 meeting was enlivened by the presence of Mr. Kaupanger of the Isaac Walton League and Dr. Dawson of the Zoology department of the University. Mr. Kaupanger gave an interesting discussion on the role of forestry in game conservation. Dr. Dawson, our bird and insect specialist from Itasca Park, came once again to the front with an excellent collection of forest and wild life photographs.

February 19th saw the boys and their gals struggling on the dance floor at the Agriculture Gym. The Timber Tussle was most certainly a keen dance. Due to the intense cold, Paul Bunyan and his blue ox "Babe" could not be present. However, log cabins, miniature forests, and a real lumberjack style of lunch counter supplied all the atmosphere needed. During the intermission a beauty contest was held for the male pulchritude. Sad to say, the prize, a charming compact, was won by an outsider. Perhaps the milk faced complexion influenced the judges.

The years activities were climaxed by a very successful and enjoyable banquet. One of the largest crowds that the organization has ever witnessed turned out for the affair. Mr. E. Reiff of the Minnesota Conservation Commission was the principal speaker on the program. His talk on the organization and duties of the commission proved very interesting and entertaining.



XI SIGMA PI

National Forestry Honorary

FACULTY MEMBERS

J. H. ALLISON	M. E. DETERS
R. M. BROWN	T. S. HANSON
W. W. CHASE	L. W. ORR
E. G. CHEYNEY	L. W. REES
FRANK KAUFERT	HENRY SCHMITZ
RALPH KING	RALPH DAWSON
C. O. ROSSENDAHL	CLYDE CHRISTENSEN

ASSOCIATE MEMBERS

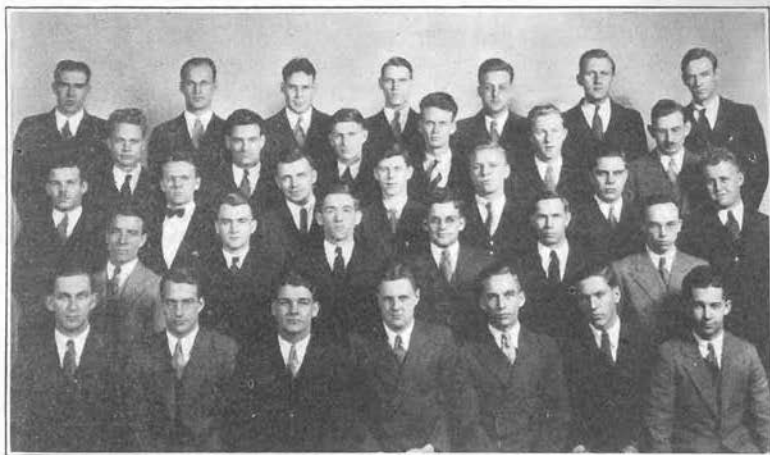
G. GEVORKIANTZ	R. ZON
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GRADUATE STUDENTS

S. J. BUCKMAN	T. E. MAKI
A. F. VERRALL	

ACTIVE MEMBERS

FLOYD COLBURN	MARIUS MORSE
JACK DENSMORE	THOMAS MORTENSON
THOMAS EVANS	NORMAN NELSON
GEORGE HERION	SIDNEY ROMMEL
TED HOLT	RAGNER ROMNES
RUSSELL JOHNSON	LEO WILJAMAA
OSWALD KROGFOSS	KARL ZIEGLER



TAU PHI DELTA

FACULTY MEMBERS

H. SCHMITZ
J. H. ALLISON
R. M. BROWN

M. E. DETERS
F. R. KAUFERT
CLYDE CHRISTENSON

GRADUATE MEMBERS

S. J. BUCKMAN

T. E. MAKI

ACTIVE MEMBERS

EARL ADAMS
DON CARSWELL
ROBERT CLARK
JACK DENSMORE
ROY DINGLE
JACK DUNDAS
KARL EKSTROM
ARTHUR FERBER
DON GREGG
ARTHUR HAWKINSON
GEORGE HERION
TED HOLT
ONNI KOSKI
OSWALD KROGFOSS
DAN LAPPALA
JOSEPH LORENZ

DON LYNCH
CHESTER MCNELLY
JOHN MILES
HARRY MOSEBROOK
RALPH W. NELSON
LANSING PARKER
RAGNER ROMNES
EVAN SANDERS
PETER SCHUFT
PAUL SEASTROM
SULO SIHVONEN
ARTHUR STURTEVANT
KERMIT SJOQUIST
FRANK WALZ
RUSSELL WHEELER
LEO WILJAMAA
JAMES WILKUS

PLEDGES

HERMAN ARLE
VINCENT BOUSQUET
HERBERT ERICKSON
JOHN GELBMAN
JAMES KIMBALL

B. FRANCIS KUKACHKA
ROBERT LINDEBERG
WILLIAM MAJOR
RAYMOND MATSON
LYMAN WILLIAMSON

ALUMNI NOTES

1899

H. H. Chapman, author of several of our forestry text-books and first graduate in forestry from the U. of Minn., is a professor at Yale Forestry College.

1905

Harold Cuzner is in the Forestry Department of the College of Agriculture at Los Banos, Phillipine Islands.

1906

W. T. Cox, because he can't degrade the profession by mixing it with politics, is at his home in St. Paul waiting for something to break.

1909

Walter M. Moore of the U. S. Air Service is keeping mighty busy these days investigating the cost of air-mail transportation as a check on the recently disclosed country-wide air-mail frauds.

1910

A. O. Benson is doing research work at the Forest Products Laboratory in Madison, Wisconsin.

C. J. Lewis Jr. is in the cranberry business at Beaver Brook, Wisconsin. He lives at 125 Oxford Street, St. Paul, in the winter.

Donald R. Brewster, under the title of Utilization Engineer for the National Lumber Manufacturers Association, keeps busy on wood utilization research at Memphis, Tenn.

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

N. G. Jacobson is chief of the research department of the Western Forest and Conservation Association.

1911

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

A. F. Oppel is the Fire Chief for the Minnesota State Forest Service.

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

1912

Grover N. Conzet is State Forester for Minnesota. He has a big job now what with C. C. C.'s all over the state and the problems of acquiring tax delinquent land.

G. Grant Harris and Sigvald Norman are with the Page and Hill Company of Minneapolis.

Harry Blodgett is with the Harvey Blodgett Printing Co. of St. Paul.

1913

G. H. Wiggin is Forester of the U. of Kentucky's 15,000 acre forest. He now has a dual job, being Camp Supervisor of ECW camp S-51 on that forest and being also Forester of the area.

Charles Simpson is Supervisor of the Lolo National Forest and lives in Missoula, Montana.

1914

S. A. Graham is teaching forest entomology at the University of Michigan. His text-book on forest entomology is used by Minnesota Foresters.

George "Buck" Freeman has been a sailor ever since his graduation according to his friend, "Dusty" Rhoads, who says the old sail-boat up at Itasca had that effect on him.

1915

Thorvald S. Hansen, director of Cloquet Experiment Station, has only one major trouble every year. It seems to come every spring during the time the Juniors are up there.

1916

Ralph E. "Dusty" Rhoads has started a career of writing. His latest work is a pamphlet entitled "A Career With Scott Paper Company," copies of which he says he'll gladly send to anyone interested.

1917

Parker O. Anderson is Extension Forester at University Farm, St. Paul where he persistently preaches the virtues of forestry for all manner of things.

1918

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

1919

R. L. Backus applies intensive forest management and landscape practice to his own little front yard in Hollywood, California.

1920

R. H. Grabow is a member of the Los Angeles County Forest Service, California.

Leo Isaac ponders over pernicious problems at the Pacific Northwest Forest Experiment Station, Portland, Ore.

1921

H. L. Person is Associate Silviculturist at California Forest Experiment Station. He is now doing silvicultural work in the redwood region of California.

A. E. Wackerman is at the Southern Forest Experiment Station, New Orleans, Louisiana.

1922

Ralph M. Nelson works in the Forest Pathology Department at Asheville, North Carolina.

1923

G. J. Fenger, former supervisor of Huron National Forest, has recently been transferred to the regional office at Milwaukee.

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

Alfred L. Nelson is supervisor of the Nebraska National Forest at Halsey, Nebraska.

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

1924

M. Y. Pillow does research work at the Forest Products Laboratory, Madison, Wisconsin.

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

Harold Ostergaard is Assistant Forester, Minnesota State Forest Service, St. Paul, Minn.

1925

L. G. Baumhofer, formerly of the Bureau of Entomology at Washington, D. C., is now located on the Forest Insect Station at Coeur d'Alene, Idaho.

Victor Jensen is doing work for the Northeast Forest Experiment Station at Bartlett, New Hampshire.

William Maughan is a member of the staff at Duke Forest School, Durham, North Carolina.

1926

Ralph M. Lindgren is with the Division of Forest Pathology, Bureau of Plant Industry, Washington, D. C.

Eugene Erickson of Millbrook, New York, is showing great interest in Dutchess County Forestry. He has recently been elected to the forestry committee of that county whose job it will be to reforest idle agricultural land, give wood lot improvement demonstrations, and improve markets for wood products in the county.

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

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

1927

E. P. Duclos is in the employ of the Office of National Parks in the capacity of Manager of the Headquarters office in Milwaukee, Wisconsin. He has four C. C. C. camps operating out of his office doing erosion control work and landscaping.

Carl G. Krueger is out somewhere in Wyoming working for good old Uncle.

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

Warren W. Chase got his Ph. D. this fall and is sticking around helping Reese until he can land a better job.

Leslie W. Orr is teaching Forest Entomology to embryo foresters at Minnesota and doing entomology research work in the summer at and around Itasca.

1928

Gustav Linstrom is a ranger on the Huron National Forest and is located at Mack Lake Ranger Station, Mio, Mich.

J. L. Deen is in the Forestry Department at Pennsylvania State College. He doesn't say, but we take it for granted that he must have gotten that Ph. D. he was working for at Yale.

Benjamin M. Whitehill is Ranger in charge of the Warm Springs Sale on the Washakie National Forest at Du Noir, Wyoming.

J. N. Van Alstine is a District Ranger on the Twin Mountain District of the White Mountain National Forest at Twin Mountain, New Hampshire. The country out there must be a lot like Minnesota because he says he likes it better the more he sees of it.

Merrill "Ma" Deters is still working around the place correcting quizzes and taking us guys on Dendrology trips. "Ma" seems just like one of the fellows around here, and we all hope to see him around here for years to come, teaching the fellows their trees and grading their quizzes tough.

1929

William Hallin is working on silviculture in the Redwood region out of the California Forest Experiment Station at Berkeley, California. He has been married for two years now and has a two-and-a-half month old forester who keeps him busy at home.

R. Danford Thomas, Prexy of the Freshman Corporation of '27 has been kept on the move with all the changes that have been taking place in the past year. He is now camp Superintendent at Perkinstown Camp F-16, Perkinstown, Wisc.

Dale Chapman is with the Bureau of Plant Industry at the Southern Forest Experiment Station doing pathological work.

Clyde Christianson is back from Germany and teaching the old Forest Pathology again. He tells some pretty swell tales about the German fraus and frauleins.

Frank Kaufert has had an extension put on his pension and is still teaching Forest Pathology here at U. Farm.

Lawrence Ritter is chief of Blister Rust Control in the Minnesota State Forest Service. On the side he invents things like the Ritter Stick and the Ritter Tape.

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

1930

Eynar Benson is a proud papa. He is one man in a thousand, having the unique conviction that he doesn't know whether the son looks more like him or his wife; but he's sure his son will be a forester.

Bill Royer is at 751 East Fourteenth Avenue, Eugene, Ore.

W. H. Brener sends best wishes and all that stuff from Wisconsin State Central Nursery at Wisconsin Rapids, Wisc.

Rolland Lorenz came back from Liberia this fall and landed himself a job with Uncle. He is at the Division of Plant Pathology, Bureau of Plant Industry, Washington, D. C.

Ralph Lorenz is up in the northern part of the state roaming the woods for Uncle. He comes down now and then to tell us about it.

T. Ewald "Tenno" Maki is working in the soils division for his Ph. D. He manages to get along quite well up there in spite of ("Get the Flit; here come some Foresters") Alway and Rost.

1931

Milford T. Rigg is down near Tonto Basin, Arizona. He likes the country, but it sometimes gets pretty warm.

Alf Z. Nelson got his Master's at Yale last year and is now working on a water conservation problem in the Au San Gabriel Mountain near Los Angeles. He is working out of the California Forest Experiment Station.

Charles Beardsley is a technical foreman in an N. R. A. camp on the Huron National Forest. There he is doing a lot of thinning work. He is directly under Gustav Linstrom, a grad of the class of '28.

Arthur E. Schneider has his offices at 236 Federal Building, Duluth, Minnesota.

Lyall Peterson is down in Tennessee on the Tennessee Valley Authority.

"Hoot" Huhtala is up at Cass Lake, Minnesota, working on the Chippewa National Forest.

1932

Edward S. "Skipper" Iverson is an inspector of E. C. W. operations on the Manistee National Forest out of Manistee, Michigan. He got married this fall because he thought it was going to be a hard winter to pull through without a partner.

Roan C. Anderson is on Spider Lake N. R. A. Camp at Clam Lake, Wisconsin.

Dorothea Cahill has gone and done it. She is now Mrs. Harold Engstrom of Cheyenne, Wyoming.

Harold Engstrom got an appointment this fall to the Experiment Station in Cheyenne, Wyoming.

Clarence "Charlie" Evenson is a technical foreman in Sailor Lake Camp out of Fifield, Wisconsin.

Arthur "Art" Horn is a technical foreman on one of the camps in the Superior National Forest.

John C. "Jack" Kopitke is a technical foreman on the Chippewa National Forest. His post-office address is, Bena, Minnesota.

Roy Wagner is doing graduate work at Washington State University on a scholarship he won last year for high scholastic standing.

1933

Donald E. Price is a technical foreman at Inger Camp F-27, Deer River, Minnesota. Don is still all for the army in spite of his contact with it in his camp.

John A. Rundgren is a technical foreman at E. C. W. camp S-51, Noble, Kentucky. Johnny wrote up this Alum-news section last year; so he does not envy this guy his job.

Frederick "Fred" Wangaard is studying at Syracuse for his Master's. He goes there on a fellowship he got upon graduation last year.

Howard "Howie" Smith is on the Coronado National Forest near Flagstaff, Arizona. There he has lacked nothing in variety, having worked in both real luxuriant forest and real dry desert, and having done everything from thinning to erosion control work.

Victor O. "Vic" Sandberg is down in Prescott, Arizona, where he claims

they have some real forest up in the mountains in spite of the popular opinion that there is all desert. He says he is having a good time trying to fix up a good old get-together over beer mugs for all the boys he can round up down in that country. Good luck, Vic; we'd like to be with you on that party.

John R. "Jack" Fry is a technical foreman in E. C. W. camp S-85 up near Effie, Minnesota.

Alice Stuart is around the old place every once in a while. Right now she's busy looking for a job.

Gordon H. Carr is a technical foreman on a C. C. C. camp near Warroad, Minnesota.

Thure C. Duvall is a technical foreman on Sawbill Camp, Superior National Forest, Grand Marais, Minn.

Ross W. Haven is on the newly acquired Cheumegon National Forest, Park Falls, Wisconsin.

William W. "Bill" Jolly is on the Tennessee Valley Authority work somewhere down there in Tennessee.

Harry C. Miley is a technical foreman on a C. C. C. camp out of Mack, Minnesota.

Theodore "Ted" Niehaus is raising brush on the Angeles National Forest in Southern, California.

George W. "Willie" Plant is a technical foreman down in Missouri somewhere.

Walter "Walt" Ridlington is a technical foreman on Red Lake Indian Reservation in northern Minnesota.

Walter "Zilch" Zillgitt is a technical foreman out in Michigan. Russ Wheeler saw him out there, but he doesn't remember where.

Francis "Bub" Moore is working in the northern part of the state for Ritter doing blister rust control work for the state.

Wiley T. Fuller is working for the state Forest Service at Pine Island, Minnesota.

Dave "Gib" Gibney is a technical foreman up on the Chippewa National Forest.

Roland Scharr is a technical foreman at J. C. Camp near Tofte, Minnesota.

ALUMNI DIRECTORY, DIVISION OF FORESTRY
UNIVERSITY OF MINNESOTA
SPRING, 1934

- 1899
Chapman, H. H., Yale School of Forestry, New Haven, Conn.
- 1904
Erickson, M. L., Flandreau, South Dakota.
- 1905
Cuzner, Harold, College of Agriculture, Laguna Province, Forestry Dept., Los Banos, Phillipine Islands
- 1906
Cox, W. T., 1609 Portland Avenue, St. Paul, Minnesota.
Detwiler, S. B., Bureau of Plant Industry, Washington, D. C.
Rockwell, F. I., Marion, So. Dak.
Tierney, D. P., Castle Rock, Minn.
- 1907
Canavarrro, de S., 2736 Huuanu Ave., Honolulu, Hawaii.
- 1909
Moore, Walter M., U. S. Army Air Service, Box 234m, Osborne, Ohio.
Orr, George R., Deceased.
- 1910
Baker, Norman M., Deceased.
Benson, Arnold O., Forest Products Laboratory, Madison, Wisconsin.
Berry, J. Bert, Winter Haven, Florida.
Brewster, D. R., 1315 Bank of Commerce Bldg., Memphis, Tenn.
Deering, Robert, U. S. Forest Service, Ferry Bldg., San Francisco, Calif.
Jacobson, N. G., 630 Lumbermen's Bldg., Portland, Oregon.
Krauch, Herman G., Ft. Valley Experiment Station, Flagstaff, Ariz.
Lewis, Chas. L. Jr., 125 South Oxford St., St. Paul, Minn.
Underwood, Clarence L., 305 North Fourth Ave., Yakima, Washington.
- 1911
Arivee, David A., Targee National Forest, St. Anthony, Idaho.
Beard, Frank W.
Bowen, Clarence W., Fullerton, Calif.
Brownlie, Jas. R., Thompson Yards, Livingston, Montana.
Campbell, Hugh B., Prairie, Wash.
Eisenach, Walter, 1410 East 10th St., Duluth, Minnesota.
Gilles, J. R., Box 248, Zamboaanga, Phillipine Islands.
Hamilton, C. L., 808 Merchants Nat. Bank Bldg., St. Paul, Minnesota.
Hauge, Adolph G., U. S. Forest Service, McNary, Arizona.
Hofmann, J. V., Head Dept. of Forestry, No. Carolina Agr. College, Raleigh, N. C.
Kenety, Wm. H., Cloquet, Minnesota.
Martin, Dean W., 1843 South N. W. St., Washington, D. C.
Oppel, A. F., 1523 Branston St. St. Paul (State Office Bldg., St. Paul).
Underwood, Wm., Deceased.
Weber, Henry, Minn. Forest Service, Dept. of Conservation, State Office Bldg., St. Paul.
Williams, Donald, Washington Wood Preserving Co., Spokane, Wash.
Young, Paul.
- 1912
Beyer, Walter F., Marine Insurance Co., 59 Maiden Lane, New York City.
Blodgett, Harvey P., 1376 Portland Ave., St. Paul, Minnesota.
Clymer, Wm. R., 1626 Laurel Ave., St. Paul, Minn.
Conzet, G. M., Division of Forestry, Dept. of Conservation, State Office Building, St. Paul, Minn.
Harris, S. G. Jr., Page and Hill Co., Minneapolis, Minn.

- Hodgman, Arthur W., Westport, Ore.
Norman, Sigvald, 2253 Scudder Ave.,
St. Paul, Minn.
- Orr, John Elliott, Chicago, Illinois.
Pearce, Wm. R., Botsford Lumber Co.,
Faribault, Minn.
- Pettibone, Herman N., 500 Webster
Place, Milwaukee, Wisconsin.
Spellerberg, Fredrick E., Deceased.
- Stevenson, J. A., Div. Mycology and
Disease Survey, Bureau of Plant
Industry, Washington, D. C.
- Wilson, Robert, Mission Block, Wood-
ley Road, San Fernando, Calif.
- 1913
- Buhler, Ernest O., Merchants Trust
Co., St. Paul, Minn.
- Ertstad, Andrew, Weyerhaeuser Pro-
ducts, Klamath Falls, Oregon.
- Griffin, Thos. A., 3529 Humboldt
Ave. S., Minneapolis, Minn.
- Hall, Edwin Howard, 2000 Fairmount
Ave., Eugene, Oregon.
- Haworth, Robert, Red River Lumber
Co., 702 Slauson, Los Angeles, Cal.
- Henchel, Norman, Bushong, Kansas.
Moir, John, 1501 Pioneer Building,
St. Paul, Minnesota.
- Nuffer, Harry, D.
Renshaw, David, Deceased.
Rogers, Ernest, Deceased.
- Savre, Oliver H., Northwood, Iowa.
Simpson, Chas., Coeur d'Alene, Idaho
—Coeur d'Alene National Forest.
- Tobin, Paul, Lewiston, Idaho.
Wiggin, W. H., Robinson Experiment
Station, Quicksand, Kentucky.
- 1914
- Aldworth, Donald, 456 Fourth Ave.,
New York City.
- Allen, P. T.
Braden, Kenneth, Detroit, Mich.
Cummings, Thos. S. C., Fort Benton,
Montana.
- Freeman, George, 131 Hooper Ave.,
Toms River, New Jersey.
- Graham, S. A., School of Forestry,
University of Michigan,
Ann Arbor, Mich.
- Lindeberg, George C., Box 375,
Spencer, Iowa.
- Mueller, A. T., Princeton, Wisconsin.
Ringold, Stanley L., 2124 St. Clair St.,
St. Paul, Minnesota.
- Rose, Logan, Mankato, Minn.
St. Marie, Adrian A., 440 Pullman
St., Los Angeles, California.
- Spink, Harold W., H. R. Smith
Lumber Co., Kansas City, Mo.
Torgrim, J. R., Deceased.
- 1915
- Chance, Jenner D., 719 7th Street,
Minneapolis, Minn.
- Dennis, Henry M., Tacoma Lumber
Co., Tacoma, Wash.
- Dunn, Frank M., 3110 Fourth St.
S. E., Minneapolis, Minn.
- Hansen, Thorvald S., Forest Experi-
ment Station, Cloquet, Minn.
- Hawkinson, Carl J., Virginia, Minn.
Sischo, Paul C., The Cliff House,
Newberry, California.
- Wyman, H. E., Dundas, Minnesota.
- 1916
- Bartelt, Harry, 2091 Buford Ave.,
St. Paul, Minn.
- Bell, Ernest, Deceased.
- Blake, Phillip, Glendora, California.
Broderick, Martin, 439 East Fort St.,
305 Hammond Bldg., Detroit, Mich.
- Crane, Leo, Port Recruiting office,
Fort Sam, Houston, Texas.
- Gjerlow, Atle B., Nicaragua Mahog-
any Co., Bluefield, Nicaragua.
- Hyde, Luther, Deceased.
Johnson, Oscar, Philadelphia, Pa.
Rhoads, Ralph, Scott Paper Company,
Chester, Pa.
- Schwartz, E. R., Ansul Chemical Co.,
of California, Modesto, Calif.
- 1917
- Anderson, P. O., Extension Division,
University Farm, St. Paul, Minn.
- Burnes, J. D., 5008 Vincent Ave. So.,
Minneapolis, Minn.
- Forsberg, Carl, 3444 32nd Ave. So.,
Minneapolis, Minn.
- Tuttle, L. S., Odell-Tuttle Lumber Co.,
1645 Hennepin Ave., Minneapolis,
Minn.
- 1918
- Danson, Robert, Kenyon-Rey Nursery
Co., Oklahoma City, Okla.
- De Flon, Rev. L. L., Holmen, Wis.
Hauser, George, Line Coach, Football
Team, University of Minnesota,
Minneapolis, Minn.
- Pendergast, Earl, 802 Chicago Ave.,
Rockford, Illinois.
- Swanson, Herbert, Kimberly-Clark Co.,
Appleton, Wisconsin.
- 1919
- Backus, Romayne, 1953 Cheremoya
Ave., Hollywood, California.

1920

- Brayton, S. C., C. C. C. Chippewa National Forest, Cass Lake, Minn.
 Frudden, Clyde M., Greene, Iowa.
 Grabow, Rudolph H., 202 N. Broadway, Pasadena, California.
 Isaac, Leò A., Pacific Northwest Forest Exp. Station, 514 Lewis Bldg., Portland, Oregon.
 Palmer, Rev. Paul, Lake City, Minn.
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1921

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1923

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1924

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1925

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- Carr, Gordon, Squaw Lake Camp, Squaw Lake, Minn.
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Vincent Bousquet	Maddock, N. D.
James Bussey	St. Paul
Hugh Doerr	Minneapolis
Robert Dosen	St. Paul
Ralph Eisele	Minneapolis
Karl Ekstrom	Manchester, N. H.
Donald Gregg	St. Paul
Herbert Hasleton	Alexandria
Guy Hawkins	Brainerd
Douglas Johnson	Minneapolis
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Milton Kral	Cudahy, Wisc.
B. Francis Kukachka	Montgomery
George Lansing	St. Paul
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Hilton Lemke	Norwood
Edward McDewitt	
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John Miles	Minneapolis
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Bernie Peterson	Rugby, N. D.
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Sulo Sihnoven	International Falls
Russell Wheeler	St. Paul
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Jack Dundas	Beaudette
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The road back.

APPRECIATION

Rhetorical speech and high sounding phrases often appear more flowery, colorful and pleasing but, a simple Thank You will aptly express our feelings to our friends that have made this PEAVEY a reality. May we always be worthy of your support.

CONCLUSION

We have finished. The manner in which you receive the results of our efforts will indicate our success. It is humanly an impossibility to satisfy everyone, but it is not an impossibility to try. Whether we have succeeded or failed is another story. We have done our best; we can only hope you like it.