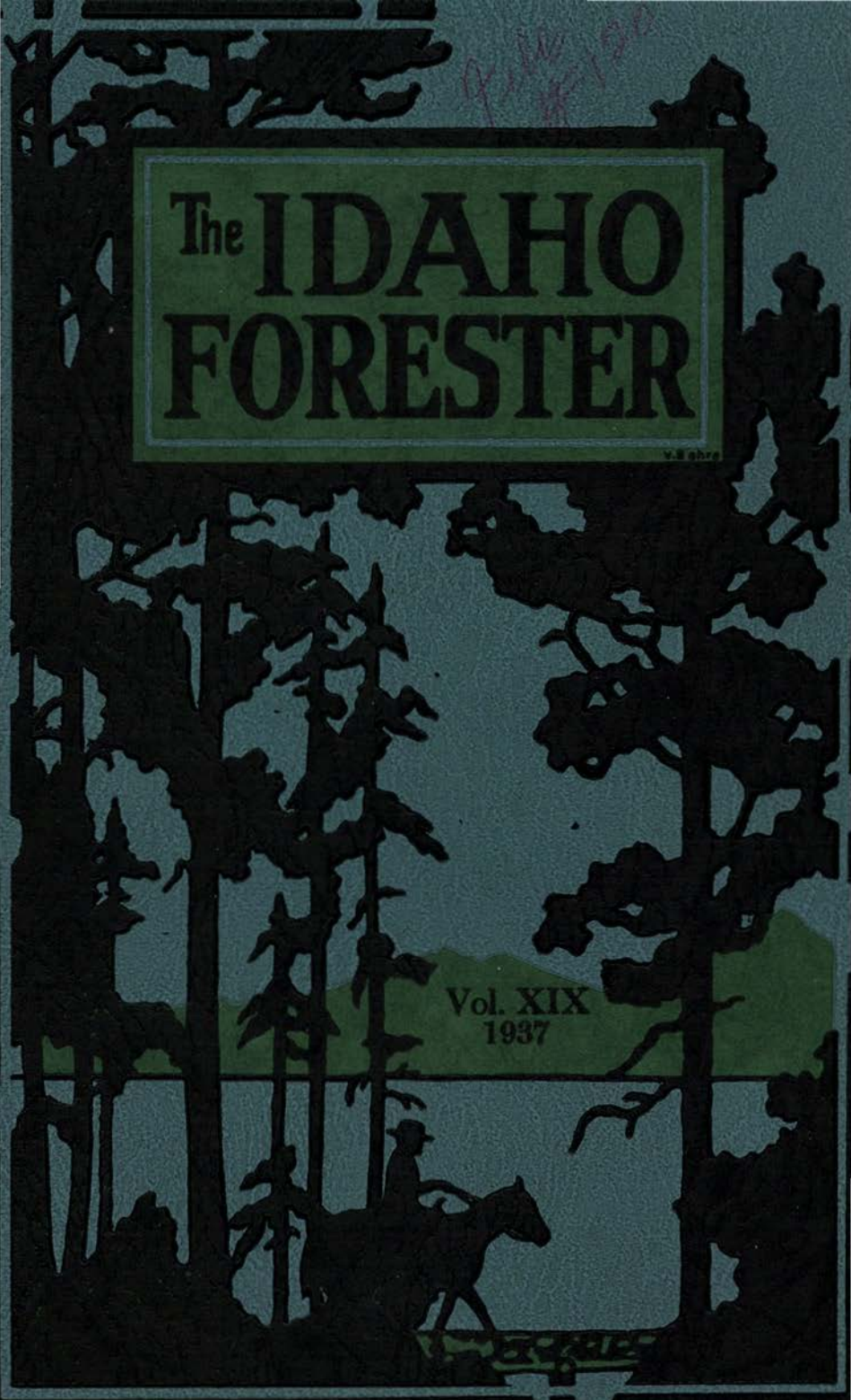
The IDAHO FORESTER



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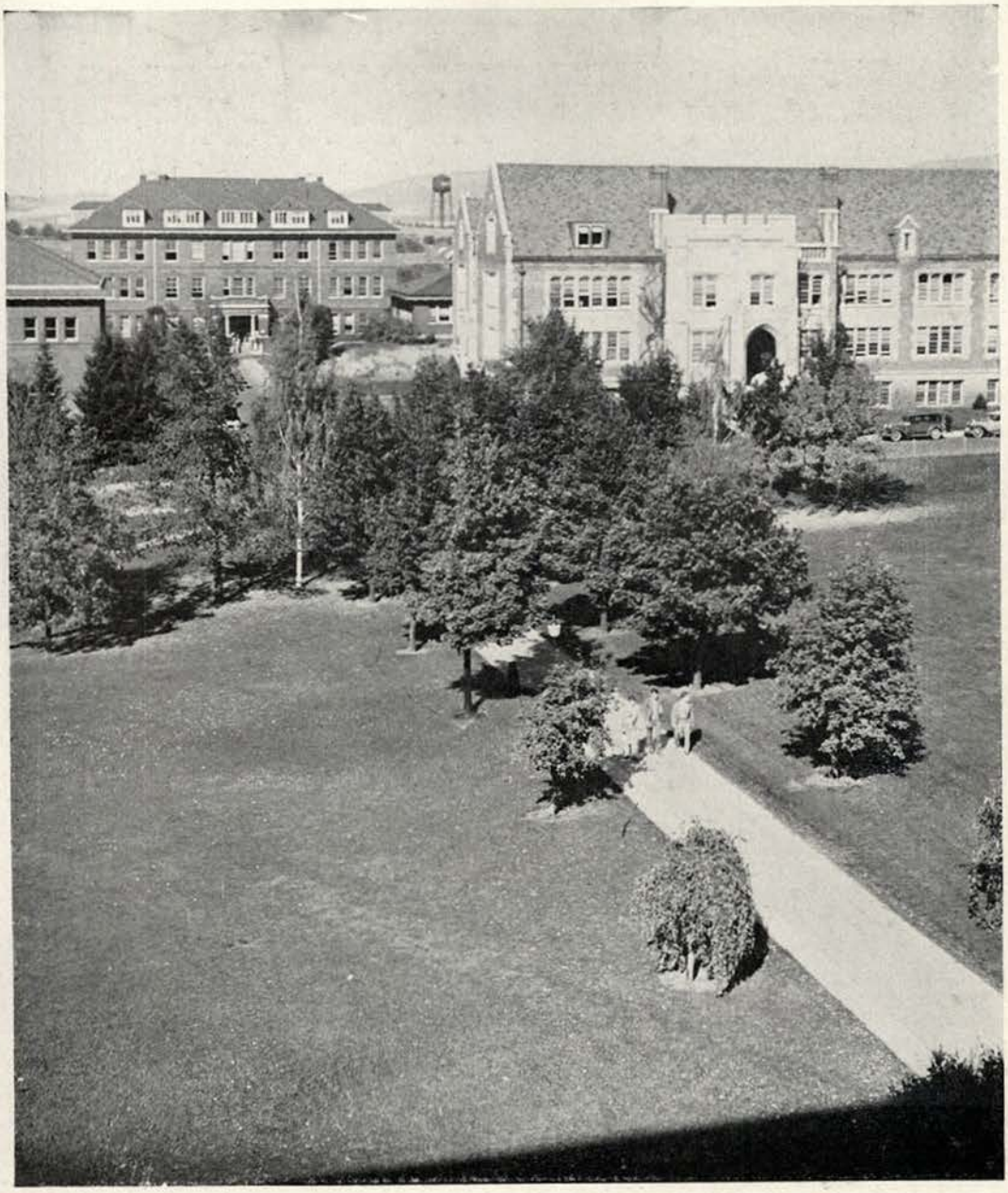

"And Here We Have Idaho"

And here we have Idaho
Winning her way to fame,
Silver and gold in the sunlight blaze,
And romance lies in her name.
Singing, we're singing of you,
Ah, proudly too;
All our lives through
We'll go singing of you,
Alma mater, our Idaho.

Giant Engelman Spruce: Located near the forks of Bloomington Canyon, Bear Lake county, Idaho (Sec. 28, T. 14 S. 42 E., Boise Mer.) Diameter 78 inches, Height 120 feet. The largest tree of this species on record. (Photo by R. J. Becraft)

THE IDAHO FORESTER

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In Grateful Recognition

of Their Loyalty to

The Associated Foresters

and of

Their Service to That Organization,

The 1937 Edition of

The Idaho Forester

Is Sincerely Dedicated

to the

Graduates

of

The School of Forestry

University of Idaho

The Requirements for the Training of an Industrial Forester in the Lumber Industry

By Ernest E. Hubert
Research Laboratory, Western Pine Association

To prescribe requirements essential to the training of prospective foresters planning to enter the lumber manufacturing field is an uncertain task at best and particularly so in view of the plastic state of this young profession. This unstable condition is no doubt affected by such factors as the rapidly changing economic picture and the gradual but very evident broadening of the field of forestry. These two factors at least in our recent economic upheaval seem to have developed in some degree simultaneously. The search for new fields in which men could be gainfully employed brought out the possibilities latent in forestry activities on the one hand; and, on the other, the serious need for controlling erosion and preventing floods focused attention upon the part the forester would be called upon to play in carrying out these huge federal and state projects.

That the field of forestry is no longer confined to growing and protecting forests but must include the production and utilization of the products derived from them has already been accepted. The rapidly forming picture of the forestry field as it is now envisioned by many, is a profession of great breadth, which not only considers trees in all their aspects, but also includes the rain drop from its origin in the cloud through stream, river and ocean back to cloud again. Vegetation other than trees must henceforth be given a prominent place; and fauna, soils, climate, geology and innumerable elements and factors must be considered in the new conception of this ever-broadening field.

Although moving slower and with less spectacular? speed than other phases of forestry, the industrial side of the forestry profession has of recent years shown signs of definite progress and expansion. One outstanding example of this progress is to be noted in the development of regional forest practice regulations which have been put into effect by the lumber industry and cooperating agencies of the Northwest with such encouraging results.

There is one particular branch of the broader forestry profession which has been more or less loosely recognized as covering the field of lumber-manufacture. It has been somewhat of an orphan to the forestry profession more by non-recognition than by lack of parents and, though the fields of activity range from engineering to pathology, the work is confined mostly to research on wood and wood products. This side of the forestry profession has felt the need for constructive development and only recently have economic conditions coupled with the recognition of benefits to be derived from fundamental studies on wood and its products given it a new impetus. Some of this backwardness may be due to the fact that the Forest Products Laboratory, designed to solve problems in wood products and the Regional Offices of Forest Products, have been the only agencies other than private consulting chemical and engineering laboratories to which the lumbermen could turn for technical information.

Having readily available the agencies from which answers to his questions could be obtained, the lumberman made slow progress in past years toward the development in his own organization of research work on wood or in the employment of technically trained foresters in the lumber manufacturing industry. However, the picture has changed and the need for solutions of a number of urgent problems peculiar to a regional association of lumber manufacturers or to individual mills, and the fact that federal agencies were already crowded with projects had much to do with the turning of lumbermen to the active solution of their own problems. The experiences of all large industries point to a parallel course of development by the lumber industry resulting in the establishment of industrial research units and technical laboratory control of the products.

The trend may be seen in the development of distinct research units at certain western lumber mills in which from one to three wood chemists are engaged in the study of new wood products and in the improvement of the old. Another mill has taken up the development of a new wood preservative for the treatment of railway ties and similar products, and still another plant has set aside personnel and funds for the development of a new moisture meter for lumber. A line of new wood products such as insulating boards and sheets, fuel briquettes from pine mills waste and other items, has for the past few years been produced through the research agencies of a well

known group of progressive lumber manufacturers. The pulp and paper industry has long followed the practice of establishing technical control laboratories and of supporting research units. The association of pulp and paper mills supports an excellent research center at Neenah, Wisconsin, which has returned many times the funds invested in it. The Western Pine Association, a pioneer association in research activity for the lumber manufacturing industry, has maintained a steadily growing Research Laboratory since 1925. These examples indicate that the technical forester is rapidly taking his place in the lumber industry and that a new field is opening for young men with the proper ability and training who desire to select this branch of forestry as their life work.

The Skill Demanded

Young men planning to enter the field of industrial forestry and wishing to specialize in some phase of lumber manufacture must necessarily be equipped with the skill which such activities demand. This skill may be roughly divided under two heads: manual skill and mental skill.

Of manual skill, an amount sufficient to meet the field, mill, and laboratory activities of the profession will be required of the young man seeking his life work in the field of industrial forestry. The ability to use dexterously the hand, limb and eye in carrying out the diversified activities of such a profession is a prime requirement. Even the laboratory worker if engaged on a research project must possess a versatility in manual skill which is above the average. He may be called upon to exert manual effort in a great many ways when working on special manufacturing problems such as occur in the seasoning processes or in the development of new products or the protection and improvement of the old.

While a certain high average of manual skill is required of an industrial forester the more essential skill requirement is that of mental equipment. The student preparing himself for such a field must not only master certain fundamental courses included as essential in all forestry curricula but he must in addition acquire, through education and experience, a background which gives him an understanding of the particular industrial field he plans to enter. If he elects to enter the field of wood chemistry, for example, in addition to a thorough training in the required chemistry subjects he must be equipped with knowledge of forest production and forest utilization and must have a fair, practical understanding of the manufacturing processes which are concerned with the product or products he expects to work with. His mental skill therefore will need to be of the highest type and the attainment of this skill can only be secured by a specialized program of educational training and some form of industrial training which will give the student a working knowledge of the processes of the industry and an understanding of the industrial viewpoint.

Educational Training

The educational training of a young man seeking to prepare himself for professional work in the industrial forestry field must of necessity rest upon a number of well-grounded fundamental subjects. Whether he plans to become a research worker in the various wood producing and wood consuming industries or whether his aim is to become a technical worker, consultant, or executive in the manufacturing, distribution or sales activities; the underlying need for a thorough technical knowledge of tree growth and of wood structure, its properties and uses, cannot be denied. The fact that he is entering the industrial field lays stress upon the practical slant to his educational training but this should not be misinterpreted to mean that his college courses shall be overflowing with visits to operating mills and that he must be taught, manually, how to pile lumber or how to load a box car with wood products. Such necessary information he can acquire during his period of industrial training at the particular mills where his work leads him. His educational training, owing to the fact that he must cover a wide range of subjects, must be carefully planned so that a maximum of fundamental subjects can be given him in the all-too-brief period of academic training. When he has taken at least five years of intensive educational training he should emerge with enough knowledge of fundamental forestry subjects to give him a professional forestry background. He must be thoroughly grounded in the fundamental sciences such as mathematics, physics, chemistry and botany; and, receive sufficient training in English courses so that he will be able to express himself clearly and correctly by the spoken and written word. He should have a fundamental course in statistical methods so that he can efficiently and correctly correlate and explain the results of his research work. This is one piece of educational equipment which is greatly needed but is often omitted from forest school curricula, although the recent tendency in forest schools is to include it if possible.

There is no substitute for the training offered in these fundamental subjects. Once having acquired a thorough grasp of these fundamentals, the student can then seek to round out his pre-

paration in the general field of forestry with the required courses offered by the particular school. Following this will come such subjects as are essential to the particular specialization which the student has selected as his life work. The system of a prescribed minimum of required fundamental and forestry courses accompanied by lists of elective courses so arranged that they are in groups corresponding to definite specializations, lends itself readily to the development of specialized lines.

The type of specialization has a very definite effect upon the selection of certain preparatory or rudimentary courses. In the cases where the preparation is for work in the lumber industry, a good course in lumber manufacture including forest products is essential. For the man who chooses to specialize in kiln drying, there is the need of a well grounded course in the principles of lumber seasoning and so for every phase of specialization. For the wood chemist, the wood technologist and the wood pathologist there is even greater need for broader fundamental training. The wood chemist, for example, must not only be highly trained in his specialized line of organic chemistry but he must first have the fundamental sciences, the rudiments of forestry, the principles of economics, and sufficient theoretical and practical knowledge of the lumber and wood products industries to give him a background upon which to build his future research work. Much of the practical industrial background can be gained while he is undergoing his industrial training yet there are certain courses which he should take while in college which can not readily be substituted by work or observation at the lumber mill or by-products plant. And, there is no college course which can endow him with a practical viewpoint and good common sense. Nor can a course be organized which will produce native abality of the kind which uses effectively all of the tools of education and training in a successful solution of a problem or in the economic management of an industrial unit. Some of these requirements are inherent in individuals and cannot be copied from books yet they are, nevertheless, very essential requirements, for the character of the individual is still a factor in any walk of life.

Perhaps we have discounted our psychologists too much or they have not had the time to spare on the study of foresters, at any rate, mental attitudes and reactions are as important in young men who plan to take their place in the lumber industry as in other industrial activity. The young man who cannot acquire the industrial viewpoint or who is impatient to skip the drudgery of the "breaking in" process will soon find himself unfitted for work in a field which constantly calls for the practical application of knowledge and for financial consideration of every step in the development, improvement, manufacture and marketing of new and staple wood products. Patience with slow progress, faith in the progress of the industry and loyalty to those with whom he is associated are just as essential to his success as are his grasp of educational and industrial principles.

Industrial Training

The industrial training, as I envision it, is something which, although tied in with certain college courses, is still a thing apart. It is more in the nature of an industrial apprenticeship in which the student in periods when he is not attending school or at the end of his educational training, enters the chosen industry as one of its laboring units with the sole purpose of learning what it is all about. Most forestry students receive this type of training in one form or another, but few of them deliberately select the specialized activity, or have the tenacity to follow this training through to the end. I have known students who desired to specialize in some phase of the lumber industry but who early faded out of the picture and passed on to other fields because they could not visualize the need for working in the mill yard as a lumber piler or laboring in the logging camps as brush piler or as timekeeper. The lumber industry is a business, and for any man to successfully become a part of it he must submit himself to a period of training which will give him an understanding of the principles and practices of each step in the harvesting, manufacturing and marketing of the products. Unless this is done, at least for the steps which are involved in the particular work he will be asked to undertake, he will find himself handicapped and in some cases failure may result. The willingness on the part of the newly graduated student to accept this period of industrial apprenticeship as a necessary step toward establishing himself in his chosen professional work, is an essential requirement for the training of any industrial forester.

Summary

The broadening of the field of professional forestry emphasizes more and more the need for specialized training in each distinct branch and for careful selection of fundamental and required courses in the educational training. Forestry as such is already a highly complicated subject and

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Technical Requirements for a Forester in the Federal Service

By Elers Koch*

If I were inclined to be a stickler for exact definitions I should start in by attempting to define the term "forester," and this meeting might spend the rest of the day trying to determine who is and who is not a forester.

For the purpose of our discussion it is not necessary to split hairs on definitions. I am going to talk about what kind of a man is needed as to personality, background, education, training and experience, to fill the general requirements for administrative and technical personnel in the Forest Service and other Federal establishments having similar functions in the management of forest land.

The fundamental sciences back of wild land management do not vary greatly, whether the land be managed chiefly for recreational purposes, for timber growing, for forage production, or for water flow regulation. These major functions are in most cases so inextricably mingled that any system of management of wild land must generally consider them all, with due regard to specialization in the major ones on a particular tract .

It should be recognized from the start that all employees of the Forest Service are not foresters, and do not need to be foresters. Aside from the office force of clerks, accountants, draftsmen, etc., the Forest Service requires a goodly number of specialists in nonforestry lines—road engineers, bridge engineers, construction engineers, architects, landscape engineers, entomologists, pathologists, lawyers, editors, and the like.

In addition to these there is a large subprofessional force of the foreman type—construction foremen and superintendents, fire foremen, foremen of crews engaged in planting or timber cultural work, scalers, and the like. Most of these men have in the past been temporary employees, but there is now a movement to carry on the permanent rolls a larger percentage of this type of men, recognizing that they are not technical foresters or land managers, but a useful and necessary adjunct to forestry and land management.

Many of the arguments and differences of viewpoint relative to the requirements and training of foresters are due to failure to recognize this obvious fact, that the practice of forestry and the management of forest lands require a supplemental force of nonforestry technicians and subprofessional supervisory personnel to carry out the engineering and other works which are a means to the practice of forestry. Such supplemental professions and trades should be supplied by drawing on men trained in those lines, rather than to expect forestry training to be broad enough to cover them all, from plumbing to bridge building.

The Forest Service has had so much engineering work to be done that I have even heard it proposed by a Forest Service man in an influential position that an engineering school training would be more valuable to the average Forest officer than a forest school training. That is an expediency viewpoint that should be squashed. As valuable and essential as engineers are in their field, the background for a forest land management job must include much other than pure engineering.

I cannot emphasize this point too strongly, that there are several different kinds of jobs in Government forest work, some of which call for professional training in forestry, some for training in engineering and other technical professions, and some which do not require professional training at all. As a rule the best type of man for a foreman, who is actually leading and directing a group of men in a job of work on the ground, is not the college-trained man, but rather the type of man who has been brought up from boyhood in close contact with outdoor work, who knows from intimate experience the reactions of working men and who is at home with woods tools and machines.

This distinction is recognized in most lines of work. Any construction job, for instance, requires a technical force of engineers, architects and the like, who plan and generally direct the work, but equally important are the foremen who have learned their particular angle of the job from years of actual experience. The two jobs are not interchangeable.

Just so in the Forest Service. We need, in addition to the professional force, what may be called a sub-professional group who can act as fire foremen, foremen of construction crews, and also do under skilled direction some of the more distinctly forestry work, such as scaling, direction of slash disposal, and even much of the timber marking, planting and stand improvement work, after the principles and specifications have been determined by forestry experts.

This type of man should be definitely provided

for in the permanent personnel, and classified under Civil Service procedure. Their jobs should have been learned through long experience and training on the job rather than by school training, and they would not ordinarily be eligible for appointment in the professional grades, although there are always among this class of men occasional outstanding individuals who, by special ability and self-education, may be able to pass into the upper grades. A rather rough comparison would be the noncommissioned and commissioned officers in the Army. The Forest Service in past years has been so ultra-democratic as to refuse to recognize this distinction in classification, but recognized it must be, with no disparagement of the fine men in the nonprofessional grade.

In times past the district ranger was often the type of man who belongs in the subprofessional grade, and his work was largely of that type. Generally speaking, this is no longer true. With the pioneer days about over, and conceptions of forest use expanding, the district ranger position has become an important one of land management. It is true that there are still many engineering jobs to do; roads, trails and bridges to construct and maintain, towers and buildings to construct, and telephone lines to put up. These things are only a means to an end, and the district ranger's job becomes primarily one of managing, developing and using the resources produced in his district, the reparation of plans for timber use, grazing use, recreational use, game and fish management, fire control, and the administration of all these uses and activities. He is able to call in engineering specialists for technical jobs beyond his range, and he has a force of practical, skilled men under him to carry out his plans on the ground. It is distinctly the job for a technically trained forester.

Now, having disposed of the proposition that all employees on a forest management unit do not need to be technically trained foresters, let us get back to our major subject of the background and training of the forester. While there are many lines of specialization within the field recognized as forestry, there are two distinct lines which may require something different in the way of basic training and qualifications. The first of these is the administrative or land management line, which would include most of the rangers, Assistant Supervisors, Supervisors, some staff specialists, and the administrative force up through the Regional and Washington offices. The other is the research line. There has been, and I hope will continue to be, some interchange and transfer between these two lines, but I believe the young man in training for forestry would do well to make his choice between them and vary his basic training to fit.

At the present time it is practically impossible for a young man to get a foothold which will lead to the upper grades in the permanent National Forest administration without passing a technical Civil Service examination, which almost necessitates at least a four-year forest school course. This is as it should be; granted that there are in the Forest Service some extremely competent and valuable men who came up through the ranks and never saw the inside of a forest school—some of them nothing beyond high school, or even less. The old ranger and Supervisor examinations yielded some good men, who had only to demonstrate that they could ride, pack, chop, shoot, and run a compass line, but they also brought in a great many men who have been left behind in the march of progress. With a surplus of young men now knocking at our door, with both technical training and some practical experience, it seems hardly worth while to argue for modifying the entrance requirements in the permanent forestry organization to include men lacking technical training. This, of course, does not preclude permanent employment of specialists in other lines, or men in subprofessional grades.

The forest school curriculum will be discussed by other speakers on this program. The field of forestry, including all wild land management, is so broad that there is practically no subject taught in the universities which would not add something to a forester's effectiveness and breadth of view. However, man's time on this earth is short, and the best we can expect for the mill run of our candidates is that they will come out of school with the general aspect and point of view of an educated man, knowing how to read and to reason, and to expand the elements of scientific and technical knowledge obtained at school by use and study. We can expect that they will have a fair introduction to the natural sciences—the more the better. They will have enough engineering to make and read maps and make simple surveys, but we do not expect them to be fully trained engineers. They will, of course, have technical courses in silviculture, forest mensuration, forest management, range management, etc., as much as they can cram into a four or five-year course, and there will be many things they would like to get that they will have to leave out. A training in these technical courses is required to qualify a man as a forester, under any reasonable definition. He may have all the supporting sciences—botany, ecol-

ogy, geology, zoology, entomology, chemistry, sociology and economics—but without a knowledge of silviculture, forest management and forest mensuration he is not a professional forester any more than a mathematician is an engineer.

The ideal collegiate training would be a six-year course in which technical forestry subjects, including engineering, appeared principally in the last two years, and four undergraduate years were devoted to a good general educational course with emphasis on natural sciences and mathematics, but with a good grounding in English, economics, history and similar subjects tending to broaden the student's viewpoint and give him the habit of thinking and reading in varied lines. This is of course the general scheme of such graduate forest schools as Yale. Men so educated should have a considerable advantage over the much narrower education possible in a four-year course. I believe the future trend will be in that direction.

After school, what? There are a lot of things the forest school graduate will eventually have to know that he will not learn in school. How is he going to learn how to put his theory in practice so that he can do or direct such jobs as cruising and appraising a block of timber, scaling logs, appraising and mapping the fire hazard types in a district, planning an adequate road system, making a timber or range management plan, or planning and organizing fire control on a protection unit, or even the more humble jobs of grinding an axe, hooking a log chain on a log, connecting a telephone set, or packing a mule. A forest school graduate is no more a competent practicing forester than a medical student is a physician before he has had his experience as a hospital interne.

Practical experience under proper direction is the only answer. And here we have the phase of the young forester's training which has been the most neglected. Most of the forest schools have a reasonably standardized curriculum, which can perhaps be improved somewhat, but generally meets the requirements. Nothing but chance and the opportunity to get a job of some sort has governed the young man's field experience for the most part.

The Forest Service has been expanding and taking on new jobs so rapidly that, perhaps of necessity, its personnel policy has been a haphazard grab bag. It is to be hoped that it is now getting sufficiently stabilized so that a more systematic policy of recruiting and training new men can be achieved. Any large unit of organization should know approximately the annual turnover of its personnel, and should plan to take on for training enough young men to fill the requirements. These men will naturally come from the junior forester and range examiner Civil Service lists. The procedure is liberal enough to allow a considerable degree of selection from these lists.

Aside from some specialist lines, the training of the majority of these men should be directed to lead to the district ranger position, the first permanent rung in the ladder of advancement in land management positions in the Forest Service, and through which practically all of our future foresters in management positions will go.

The young forest school graduate will in most cases have had at least two summers of field experience—usually whatever job he has been able to get. A wise personnel policy would lead to the sizing up of each man, determination of his past experience, and planned allocation to jobs which will round out his training. The experience to qualify for a district ranger's job would vary by Regions. In this Region, as an example, training should include timber survey or range survey work under expert supervision; timber sales work, including both marking and scaling; improvement work, which will teach the use and handling of tools and woods equipment; experience in fire control jobs, both as lookout and fireman; and, of course, as much fire fighting and other fire control work as can be gotten in. It will not always be possible for every man to get assignments to every line of work, but if possible such special lines as planting, blister rust control, insect control, game patrol, recreational plans, etc., should be included. The training should be rounded out by assignment to a ranger district for at least six months as an assistant to the district ranger in all lines as the work occurs. The minimum time to qualify an average forest school graduate as a district ranger would be one full year plus two previous field seasons.

After service as a district ranger, future lines of promotion and assignment may vary with the capacity and trend of ability of the individual. Some men may stay permanently in the ranger grade. The usual line of advancement would be through Assistant Supervisor, Supervisor, and the various grades in the Regional and Washington offices. Specialists in various forestry and land management lines may be developed by special assignments and further study.

Where do range management men come into this picture? The answer is, that for service in the National Forests or other similar land man-

agement agencies, there is no place for foresters who know nothing of range management, or for range managers who know nothing of forestry. The basic scientific training for any job of wild land management is the same. Naturally, the men who are going up for the junior range examiner examination will specialize in range management subjects their last year or two in school, while the junior forester candidates will specialize in the more advanced technical forestry subjects. Field training on a management unit where grazing is important will naturally vary somewhat from that on a unit which is chiefly concerned with timber growing.

The same thing is more or less true of game management specialists. At the present time there are few men in this country specifically trained in game management, but, recognizing the fact that men in this line of work will have to learn most of their stuff on the job, I should be inclined to pick a man of technical forestry training and experience rather than a zoologist or biologist. The job of game management is only another phase of land management, and the relation of the game to the growing crops on the land, forest and forage, is the most important phase of game management. Consequently, your game manager should first of all understand forestry and range management, with a supplemental knowledge of zoology. Certain specialists will be required for such branches as investigation in stomach parasites and other diseases of animals and similar technical lines, but these specialists do not have the best training for the broader phases of the job.

I have had in mind so far primarily the classes of men for employment in the Forest Service. The Indian Forest Department is, of course, a similar problem. But how about the National Park Service and the Soil Conservation Service—have they any use for technically trained foresters?

The Park Service is managing tracts of timbered land, many of them very similar to adjacent National Forests. Its object of management is different, and at present timber as a crop does not enter the picture, nor does grazing of domestic stock. Otherwise the problems are quite similar. The Park Service undoubtedly requires several different kinds of professional specialists, just as the Forest Service does, but it could use foresters to advantage, although a special course could be devised for National Park Service, which might include less forestry and more of some other sciences.

The Soil Conservation Service requires some foresters for true forestry work, since its field includes farm woodlot forestry. This service has employed some foresters on jobs not distinctively forestry; largely, I suppose, because most foresters have some knowledge of soil conservation work and of the related sciences, and the job is a new one lacking a specially trained force. Fundamentally, most of the Soil Conservation work is not forestry.

The discussion so far has pertained primarily to the class of men engaged in land management. There is also a very large class of foresters in Government service engaged in research, on many varied and specialized lines, some of which are pure forestry, others allied to forestry. Some of these fields are silviculture, forest products with its many ramifications, forest mensuration, forest protection, forest influences, forest entomology, forest pathology, forest economics, erosion, range management, wild life management, recreational use. All of these subjects are further subdivided into many special lines. Most of them require a man grounded in the fundamentals of forestry, though some lines are so specialized as to call for primarily an engineer, a chemist or a biologist. As I said before, I am not going to quarrel over just what is forestry or a forester. It is obvious that research in all these varied lines pertaining to forest management cannot be covered by a single line of education and training.

In times past a large percentage of the research personnel has been recruited from the junior forester list. It seems probable that this stage is passing and that in the future research personnel will have to have more advanced education in specialized lines up to a master's degree, or perhaps a Ph.D.

I have left to the last what is the most important phase of requirements for a forester, and that is the quality of the men themselves. At the risk of being classed as an oldtimer, who looks into the past and thinks nothing modern is as good as it used to be, I am going to venture the statement that the personal quality of the men who graduated from the forest schools in the first five or six years of the rise of forestry in the United States averaged considerably above the mill run of the present-day graduates. These men were drawn into the new profession by the magnetic influence of Pinchot, Graves, Fernow, Roth and Schenck, and, in some way they tapped a higher stratum of American youth than the present-day forest schools are drawing from. This statement refers to averages, not to individuals. There are doubtless many

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Education for Forest Research

By Stephen N. Wyckoff
Director, Northern Rocky Mountain Forest and Range Experiment Station

"To develop the highest scientific quality of forest research and to adapt it to the pressing and changing problems of American forestry required at once a rigorous intellectual training and a shrewd practical grasp of the American forest problem in all its complex interrelations."

This quotation from "Forest Education" by Graves and Guise might well be taken as an ideal objective both for the institution training men for forest research and the individual who desires to enter that field. Nothing short of the high standards there expressed can be recognized for that most exacting work—forest research. The purpose of this article is briefly to examine the learning and the mental equipment needed in the effort to approach that ideal.

Before we can enter upon a discussion of this question we shall have to make our shrewdest guess as to just what forest research will consist of in the future. In a field so broad, demanding the use of so many basic sciences as tools, many avenues of approach to the central objective are possible. I imagine that every reader of these words will have his own opinions concerning the things that forest research should do and how they should be done. I also believe that a central theme would be found to run through all of these opinions, a modicum of thought upon which we could all agree. Can we all accept the following statements?

Forestry consists of the application of the basic plant and physical sciences to forest problems. In this application it uses other tools such as mathematics, engineering, economics and sociology. Forest research must avail itself directly of the tremendous amount of information now built up in these fields. The essential problem is to secure men in forest research who, by virtue of their training, can best utilize this vast fund of knowledge in specialized fields in the solution of the many problems now facing forestry.

The solution by organized research of any broad series of problems generally follows a rather uniform pattern. There is first the recognition of need for information, factual material giving rise to principles upon which to base practice. When this need is sufficiently sharp research work is instituted. It is frequently the case that very valuable results are rapidly obtained at the outset. The field is new and organized attack upon the problems involved at once discloses facts of practical value, these facts being secured with relatively little effort. This phase is, however, but temporary. The rich "pay dirt" at the surface is soon mined out. There are admittedly high values at the deeper levels, but long, patient effort will be necessary before they can be realized. At this point the research program becomes more highly specialized. The immediate objective of each investigation is farther removed from the field of application, and more intermediate steps are necessary. The field is now occupied by a number of highly specialized investigators, each working on his own small part of the whole problem.

Forest research in the United States has reached this stage of high specialization, at least in the fields which involve the application of the physical and biological sciences. The problems which we shall face in the future cannot be solved by field studies involving merely temporary or permanent plots and empirical analyses of results. Research in silvics, range management, forest and range influences, fire control, wood utilization, and wild life management must call upon and employ competent specialists in plant physiology, ecology, biology, zoology, physics, chemistry, soil science and pathology. Each of these groups, patiently working in its own field, will develop facts and principles which must finally be welded together into that correlation of these sciences which we call forestry.

What, then, is the role of the forester in forest research? If many of the investigations must be carried on by specialists, each more advanced in his special field than the forester can hope to be if he is to be a forester, what part is left for the men trained in forestry itself? I think that the answer to this question will indicate not only the part which the research forester will play in the solution of the problems of direct interest to his profession, but will open to him a field of grave responsibility, one that will demand of him all that he may have of scientific background and keen perception. It is his duty to correlate the results of specialized research, from such correlations to evolve sound and the simplest possible methods of application, to check those methods by patient experimentation, and finally to turn over to the practicing forester a set of practical methods which to the highest possible

degree represent an integration of the sciences upon which they are based.

In general terms, what is the duty of research in any broad field? I think of that duty as two-fold. It is first to work by inductive methods to the formulation and statement of general principles, and second by the deductive application of these principles to evolve practical methods of application which represent new practices or improve current ones. Induction involves, of course, the mental process of working from the particular to the general. Much of the scientific work of the world consists of the patient observation and recording of facts in such a manner as to finally draw from them a general rule or laws, applicable to all cases of similar nature rather than to merely the cases observed. The deductive general rules, finding in their application a host of practical processes and procedures.

Forest research obviously must partake of both of these processes. It must use the laws governing plant growth which have been recognized by workers in the specialized fields of the plants sciences. Where necessary, it must see to it that additional laws governing its particular part of this general field are discovered and formulated. It must synthesize these laws into their forms or statements applicable to forestry, thus setting up general rules upon which forest practice must be based. These rules must be tested for their validity. Their application to the myriad of conditions found in the woods must then be worked out. The final result is a set of practical procedures of direct value to the furtherance of the objectives of forestry.

After this long but seemingly necessary preamble, we are now ready to consider the education of those foresters who desire to enter the field of research. Let us not forget, however, that we are thinking only of the research forester himself, and not the worker in those several sciences upon which much of forestry is based. We must also limit our discussion to those portions of his education which will contribute directly to success in his chosen work. An education in the broad and true sense of the word, must admittedly do more than merely fit an individual to succeed in a profession. A system of schooling which does not prepare one for the exercise of that sense of fine discrimination which will enable him to truly enjoy the opportunities about him for a fuller and better rounded life has failed in one of its most important purposes. But that part of education is beyond the scope of our present discussion. We must pass it over, with the hope for the sake of the individual, that it is successful.

Most important of all, the research forester must be a forester. He must be thoroughly conversant with all phases of technical forestry as they are now practiced in this country. The background of forestry, the history of its development in Europe as well as here, should be a part of his working equipment. The statement that he is to be a forester is to be accepted in the present meaning of that term. Forestry is no longer merely the business of growing trees. It involves in the broadest sense the management of uncultivated lands, and the correlation of their various uses. Forestry, therefore, demands of its workers basic knowledge of the laws of economics, and of the social trends of the day.

Next, the research forester must possess a broad knowledge of the principles of the various biological and physical sciences. Here I want to emphasize the importance of a broad knowledge of principles rather than a deep knowledge of factual material in one or two of these sciences. We sometimes hear it said that the days of the old-time naturalist or general scientist are gone, because the sum of human knowledge in the physical and biological sciences is now too great to be encompassed by a single human mind. In one sense, but one only, this is undoubtedly true. Research in each basic science is now being conducted by a host of specialists within that field. To follow through to the detailed investigations in each of a number of sciences would break the powers of a superman. But the world is now well supplied with libraries where works of reference can be found and the specialists in the various narrowed fields can be consulted for detailed information. What is needed is not a great mass of factual information jumbled together in the mind but an understanding of the principles upon which each science is based. It is by the exercise of this kind of understanding that the significance of the message of the specialist can be understood.

The research forester needs to be well versed in that manner of thought which is known as scientific methods. Two things are really involved, separate in a sense yet so nearly akin as to make them easier to consider together. One is familiarity with those actual methods of organization of investigative work which makes sure that the results will, by proper statistical analysis, answer the questions concerned. For this purpose, a mathematical approach is necessary, and it is through the medium of mathematics, joined with knowledge of the actual working methods of

Winter—High in the Rockies . . . .

science that sure progress is made. Of no less importance is that rigorous mental discipline and power of thought necessary in the interpretation of results when obtained. Human beings are prone to loose, illogical thinking unless their minds are trained and I can imagine no reason why foresters should be free of that limitation without the special training. I should like to see every research forester put through a rigorous process of mental discipline by means of stiff training in deductive and inductive logic, and in the whole field which the philosopher knows as the science of knowledge. In this respect, formal philosophy will offer material and modes of thought of definite value. To obtain the needed mental discipline I should like to have research foresters familiar with the work of at least some of the great masters of speculative thought, particularly those of our present time who base their reasoning upon mathematics and advanced scientific knowledge.

At the risk of wandering somewhat from the subject, may we consider for a moment the type of person best fitted for forest research? What combination of mental characteristics give to their possess or the greatest chance for success in this particular endeavor? First, his enthusiasm for forestry must be so keen as to make him certain that no other life work will interest him. Second, he must possess or that primary characteristic of a researcher, the possession of an ineradicable desire to know the why of the things and processes about him. He will have that passion for orderly knowledge which refuses to stop at the surface of things but will demand to dig deep to extract the last, last vestige of truth. Third, this desire for knowledge will be so strong in him as to outweigh the natural desire of every normal human being to be out in the front of the battle where the work of the world is being done. He must eschew the satisfaction of active achievement in the sense of building bridges or managing forest properties. But to him will come the greater joy of solving problems in order that such work will be made possible. And last, he must possess that characteristic, frequently discussed but so little understood, scientific imagination. I conceive of this as the courage to dream. Many of the things which we now use daily were dubbed impossible when someone first dared to think of them. Technical progress has been made by new combinations first conceived in the mind of some worker whose thoughts did not follow the beaten track and who had the courage to test out his ideas in the fact of possible opposition.

And now that we have built up our research forester on paper, let us stand him up for inspection to see the result of our handiwork. We find that, first of all, he is a forester because that, above all else, is what he wants to be. In

(Continued on Page 42)

The Education of a Forester in the Sciences and Arts

By Geo. Finlay Simmons

Forester friends of mine have led me to present myself as a target in a very unequal combat. As one who is not a forester but who has spent his life in other fields of education, I have been asked to offer some criticisms and suggestions as to what the education of a forester should be in the field of arts and sciences. Fortunately there has been little disagreement in the past and there is little disagreement at the present time among the professional foresters as to the best procedures. The only question that remains is the practical one of whether or not members of the forestry profession will hold steadily to their beliefs under constant pressure from impatient undergraduates and their parents to turn out so-called foresters with a minimum of training in order that they may quicker enter into life's work. In other words, can a student who enters academic training in forestry be convinced that a long-time program for his future development on a high plane, with training as a genuine professional man comparable to the lawyer, doctor, engeneer, with a broad knowledge of the world and its problems, is far better than training on a sub-professional and semi-vocational level for minor jobs that will never rate much above a routine of labor supervision.

The deliberations of a Committee on Forest Education as far back as 1911 set forth certain matters for emphasis. The committee agreed that there was a "definite body of knowledge and educational experience that must be possessed by every qualified forester." In a discussion of what should be contained in a curriculum prescribed to meet this objective, special emphasis was placed on general educational subjects, especially history, economics, English, and foreign languages, as well as botany, geology, and similar scientific subjects. The committee concluded that to train specialists along different lines in a four-year curriculum was an impossibility, and that such specialization should be attained in advanced work. The committee members agreed that in undergraduate work a student should be given well-balanced instruction in forestry proper, "Perhaps with a little more emphasis on either sylvicultural work, or forest engineering, chiefly lumbering. Any tendency, however, to increase the training along any of these lines within the four-year course must necessarily be done at the expense of the other subjects, or else the number of years required for this training must be increased. The scope of the courses considered here has in view a well-balanced professional school which does not aim at great specialization in any one of these three lines of work, but attempts to give a general knowledge of the principles which underlie the entire field of the forester's activities, leaving the acquisition of special knowledge to be gained by the students in actual business life, or after graduation from the forest schools, or by special study."

Gifford Pinchot, who as Chief of the U. S. Forest Service served on the committee of 1911, in his treatise on *The Training of a Forester*, as early as 1914 pointed out that a number of forest schools do not prepare men for professional work in forestry. Of those which do give such training on a professional level, the larger part give a four-year undergraduate course while the few remaining give the most worth-while course of all on a graduate basis and demand possession of a college degree before a student is admitted for work in the professional school.

He applauded the practice of a couple of forest schools in beginning the training of their new students in July out in the forests instead of in a classroom in October, resulting in increased vividness and reality of all the courses that follow the work in the woods. All courses should include outdoor instruction, winter and summer, and "the last term of the senior year may well be spent wholly in the woods, where the students can be trained in the management of logging operations and milling, and can get their final practice work in surveying and mapping, in preparing forest working plans, estimating timber, laying out roads and trails, making plans for lumber operations, and other similar practical work."

Pinchot, commenting on the fact that regular courses in a graduate forest school cover a two-year period, says that "They should fit a student for nearly every phase of professional work in forestry, and should give him a sound preparation not merely for practical work in the woods, but also for the broader work of forest organization in the Government Service in the United States and in the Philippines, and in the service of the States; for handling large tracts of private forest lands; for expert work in the employ of lumbermen and other forest owners; for public speaking and writing; for teaching; and for scientific research."

During the last three decades the field of for-

estry has broadened so rapidly, and the field of employment of foresters has opened up so quickly that it has been difficult for schools of forestry to keep their curricula up to date. Furthermore, the accumulation of knowledge in the field of forestry, and the applications of such knowledge, has had the major part of its accretion during the last thirty years. Just as in other scientific fields, instructors have found it very difficult to cover the ground within a specialized section or course within the time alotted for such course in the curriculum, hence they have either expanded the time of a course or have added new courses. The result has been to weaken the fundamental work, to add more technical and semi-vocational courses to the curriculum, and to depart more and more from the prescribed course laid down in 1911.

In 1932 the Yale University Press published a very fine book on *Forest Education* by Dean Henry S. Graves of the Yale School of Forestry and Professor Cedric H. Guise of the Department of Forestry at Cornell. This book points out that with changing economic conditions, "The practice of forestry will become progressively more exacting and the need for an adequate professional preparation for the more responsible positions will become more emphasized." The authors repeatedly emphasized the point that the forest schools have not followed the original recommendations of the committees of 1911 and 1920. They say further that "a professional education in forestry, if it is to be anywhere near complete, must include four phases of educational experiences: first, general education; second, pretechnical studies; third, technical studies; and fourth, applied field work. If the forest school performs its functions effectively, the graduate of a four-year course will have a reasonably good groundwork in each of these categories. But he is not a trained forester in the professional sense."

Of course, neither the four-year graduate himself nor his employer will recognize the defects and limitations of a four-year course. Actually, as time goes along, both the recent graduate and the employer will conclude that the forest school has failed to provide a training for actual problems and conditions. Such an attitude results in pressure to make the course more practical, to include more semi-vocational courses of a specialized character, and to weaken the theoretical courses. If the immediate objective of forest school education is to prepare a man for the work he is going to do as he enters his field of service, then such training could best be handled as a form of vocational or manual forestry training or as a type of industrial apprenticeship; such individuals have no real need for attending a professional school of forestry. Any school of forestry which fits its curriculum merely to such needs is lowering the profession of forestry to a vocation or trade. In any profession, such as the fields of law, medicine, engineering, architecture, or teaching, we do not expect a high grade of performance for several years after completion of a college course. A young Doctor of Medicine must serve an interneship before he is even permitted to practice. A young lawyer is frequently employed as a law clerk by more competent lawyers and there serves an apprenticeship. How, then can employers of recent graduates of schools of forestry expect such young men to be anything more than immature and untried?

The most constant criticism which we hear of the training of such young foresters is the lack of thoroughness in fundamentals. With so much time spent on injecting a sort of apprenticeship into the period allowed for education, with the overloading of students with advanced work which they are unable to grasp because of their defective basic education, there is real reason why the student suffers mental indigestion and why his training degenerates into a type of hasty fact-cramming over too wide a range of subject matter with the thought in mind that he should have at least a conversational and general examination knowledge of the various fields of forestry. If at any time such students, or graduated foresters themselves in later years, feel that a large part of the basic and theoretical work in school is of little value, then that is probably because the courses were not well organized or not well taught. Another source of difficulty for the student has been the very spotty instruction given students in some high schools, necessitating the spending of a considerable amount of time in college, especially during the freshman year, in repeating much instruction in elementary college courses which should have been given the student in high school.

The conclusion of these leaders in the field is, then, that five years are certainly desirable and even necessary for a full *professional* training in forestry. I should say that five years is the absolute minimum.

As a result of a questionnaire sent out to the graduates of forest schools, and studied by Professors Graves and Guise, nearly all of such graduates urged more fundamental work in economics, the humanities, natural sciences, and a general increase in the amount of education. The younger

men felt a need of more practical knowledge for their immediate work, while in the main the older and more successful men urged greater attention to developing the intellectual powers of students, stimulating their broad interest in human affairs and in the arts and sciences of civilization, with a better command of the English language in speaking and writing. These more successful men believe that a truly professional forester must have intellectual interests and sympathies that will permit him to associate on an equal footing with educated men in the world of affairs.

From a practical standpoint, two years of arts and science work is about all that a forest school could demand at the present time. The curriculum of such two years of general education should correspond roughly to that of the modern junior college, yet with a somewhat greater amount of laboratory science than general science. Graves and Guise say that "the deficiencies in general education at the forest schools may be corrected in part by the inclusion of certain courses in the humanities and social sciences." These authors follow with a rather careful analysis of the preparatory studies, covering approximately the first two years, and including basic work in science, mathematics, economics, and humanistic subjects. Such general courses would naturally include a survey of the social sciences and a survey of the humanities, required composition, mathematics, and basic laboratory courses in botany, chemistry, physics, zoology, and geology.

The pretechnical group of studies, distributed through the second two-year period, would include special work in science, mathematics, and elementary education immediately introductory to technical studies. Here we should have to include the special courses in plant physiology, plant ecology, forest mathematics, silvics, dendrology, and similar courses. The third group of courses would be those strictly technical and professional in character and scope. These would be worked into the last three years of the five-year curriculum.

The general result of this arrangement, which is that being adopted more and more by the leading schools of forestry, is to require two years of pre-forestry, two years of general forestry, followed by a year of specialization, and a ten-weeks practical course in a camp and on inspection trips where part of the apprentice training is actually given to the men before they are awarded a degree.

During this fifth year of training a student may elect minor emphasis on any one of a series of subjects minor to his general forestry training. Such a series of specializations frequently include the following:

1. Silviculture, where the emphasis is laid on the planting and growing of trees and tree crops. Students interested in such work might take as a sub-minor work in genetics with an introduction to population problems and statistical methods.
2. Wood utilization, with an emphasis on logging or manufacture; this general subject of harvesting tree crops is classified by some schools as timber management.
3. Wood utilization from the standpoint of wood technology, which naturally requires chemistry as a sub-minor.
4. Range management or grazing, for which botanical taxonomy and further work in plant and animal ecology are almost essential.
5. Plant pathology, which would require more botany than is necessary in a general training for forestry.
6. Wild life management, which naturally calls for zoology as a sub-minor, with some work in genetics and population problems.

Even with emphasis on these minor fields of endeavor, no student of such a five-year curriculum can possibly think of himself as a specialist. All fields of knowledge have grown so rapidly that today, unless a man has at least a Master's degree based on research and thesis or has earned a Doctor of Philosophy degree, he has not had sufficiently wide training in the arts and sciences in general and sufficient specialization in his own field to know how to attack and carry through a highly complex problem dealing perhaps with several allied fields.

Again, from the standpoint of maintaining a high level of professional training, with good sound preparation for intellectual work in a difficult field, I wish to emphasize the necessity for at least two years of general academic training, two years of general training in forestry with as little of the vocational and apprentice aspects of the work as possible, and a year of minor specialization which should not lead an individual to believe that he is qualified in this day of rapidly advancing technical fields to compete with real specialists in biological, physical, or social sciences. In forestry such true specialization can only be had by postgraduate work in a school equipped, financed, and staffed to do advanced work on a high plane.

The Educational Requirements of a Forester in the Forest Industries

By C. L. Billings

At various times, in private conversations, I have aired my views on this subject. Last year, in an unguarded moment, I agreed to state my ideas publicly and did so in a paper sent to the annual meeting of a scientific society. Now, having done these things, I find myself in a position from which no avenue of retreat seems open. Apparently I have maneuvered myself into an obligation to go on and make a statement of the case in permanent form.

I do not approach the job with very much enthusiasm. It is easier to tear down than to build up, easier to make a few more or less haphazard suggestions than to formulate an entire course and I realize that I do not share with the college faculty men who construct Forest School curricula a responsibility for results. But I am willing to make the effort, not only, however, because I have said too much already, but also because, as a prospective employer of Forest School men, I am deeply interested in their mental equipment.

For years our company has employed a large number of college men, most of whom have come to us with the ink still fresh on their diplomas, which means that these men have started with us at the foot of the ladder. We have had many men from the various colleges of the University of Idaho and from Montana, Gonzaga, Washington, Washington State, Oregon State, Minnesota, Iowa State, Wisconsin, Notre Dame, Chicago, Yale, Williams, Penn State, and others. Forest School men have probably been in the majority among the college men starting in with us. But they have not been in the majority among those who have held on, dug in and made a permanent niche for themselves in our organization. This is the background for what I have to say. And, for the present, what I have to say is pointed at four-year courses leading to Bachelor degrees. The specialized training to be had in graduate schools is a subject for another, quite different story.

A half dozen main items have been the frame work of the case I have tried to build and I offer them here with comment:

1. "I still believe that a forester in 'the timber growing and logging industry' must be a person primarily concerned with the successful growing and harvesting of tree crops."

The purpose of this definition is to exclude game management, recreation, range management, public relations and all the other incidentals which have fastened themselves on forestry in recent years.

2. "Such a person need not be a scientist as we know the term. It is questionable whether he need be a college trained man. It is still more questionable whether he need be a forest school man."

These highly controversial assertions have been quickly accepted as a challenge by many faculty men. I suppose they will be as quickly challenged by undergraduates and by anxious parents who are struggling to pay the costs of college training. But I do not believe the statements are too severe. "Questionable" is not a very strong word; in fact it softens assertions that without it would be hard to defend.

3. "But he must be a man who knows how to think, knows how to figure and keep costs, knows how to display his ideas convincingly by both the written and the spoken word. More than all of these, he must have courage and vision. Vision to see the social and business opportunities in forest management and courage to plug for the realization of these opportunities."

These attributes are not monopolized by college trained men. College training is of the greatest possible aid to orderly thinking, particularly for men in groups. But it is not an irreplaceable necessity for individual men. Orderly minds may be developed in many places. Arithmetic has been successfully taught by institutions below the rank of universities. Convincing display of ideas is still being made by men not of college training. Courage and vision are qualities impressed upon a man in his formative years most heavily, probably, by his father and mother; and by other people of strong character with whom he is thrown into contact and among whom college faculty men may or not be numbered.

4. "Forestry is not an exact science. In my opinion it is not within a hundred years of needing to be exact. I am intolerant of the extremely weak attempts of the forest schools to treat forestry scientifically at the expense of their young graduates who need, instead of a smattering of this and that science, a good academic background and, very definitely, a good ground

work in English, public speaking, cost accounting and bookkeeping, forest economics, political economy and sociology."

Most young men entering the forest industries fancy themselves to be starting in a business—the business of managing forest property—not as starting in a profession. They look forward to successful careers as foremen, superintendents, managers, in handling cutting, logging, manufacturing, selling. They do not look forward to a career in a specialized technical field—if they did they would head for a graduate school where they could gather additional equipment to fit them for that sort of endeavor.

I believe this attitude squares with the facts. For there is little that is scientific in the useful portion of the mental equipment which a young forest school graduate carries with him into our business.

And I thoroughly believe that most Forest School men who have dug their niche in the forest industries could wish, in looking back upon their college days, for a longer contact with cultural subjects; for additional equipment in the use of English so that they might have had more confidence and ability in the presentation of their ideas both on paper and "on their feet"; for a real grasp of the principles of accounting so that they might have been able, much earlier, to understand a cost statement and a balance sheet. Surely a young man from a State University Forest School ought to know enough of the science of government, and its financing, to understand how his education was paid for and to understand a tax statement rendered against his own or, later, his employer's property. And just as surely, in this day when our social consciousness is so heavily played upon, he should know, sympathetically, the problems, hopes and aspirations of working people, a part, of whose labors he will expect some day, to direct.

It would be hard, indeed, to over-emphasize the need for better training in English for Forest School men and this does not seem, in contacts I have had with faculty men, to be a controversial point. In one discussion a faculty man said with great emphasis in referring to inadequate training, "By Gad! Some of the boys are nearly illiterate"! But while there is some agreement in the matter, I do not know of any actual changes in curricula having been made to meet this need.

5. "From these things successful foresters, in my opinion, can be made. If any individual shall also have had forest school training in Mensuration and Surveying, the elements of Management including methods of cutting, Utilization including required summer work in the woods, enough Dendrology and Silvics to enable him to identify species and know their habits and characteristics, his development may be hastened and his period of usefulness may have an earlier beginning. But these things are not essential."

No, these things are not essential, but they are all things which, if not known, must be be learned one way or another by all college men who seek a career in the woods. They are all fine subjects as part of a Forest School curriculum. Alone they do not make up an adequate equipment with which to compete with other college and non-college men who have the essential attributes [3].

6. "A youngster heading into our woods to start his career in 'the timber growing and logging industry' has one or all of these blazed trails open to him: Cruising, Scaling, Timber Marking for Selective cutting, Engineering (helping to lay out roads, flumes, railroads, etc., and mapping), Camp Clerking and actual Logging (where he uses his hands and works as a laborer.) When he has travelled all or most of these trails he will be well equipped to comprehend and enjoy the wonderfully exciting and interesting field of forest management."

How well, in addition, the youngster will enjoy life, his contacts with his employees, his competitors and with the public, will still depend in very great degree upon what he brings with him when he comes to us.

Graduate School

In the Graduate School of Forestry we find a number of men seeking their master's degree. The following men are at present enrolled: Seldon Tinsley, Donald McKeever, Albert Slipp, Sidney Coppick, George Nordblom, Arthur Seedoff and Samuel Woodruff. These students are studying under the direction of Dr. E. R. Martell, Dr. E. C. Jahn and Dr. John Ehrlich. . .

Remember when P. Rich and Bert Styffe got lost in Tacoma?

Say does anyone know what did happen to Hagedorn?

(To tune, tramp, tramp, tramp)
Scratch, scratch, scratch,
The Seniors are marching,
To the in-firm-ary.

Some Ideals in Forestry Education

By Dean D. S. Jeffers

I.

It was thirty years ago that an author wrote "The profession of forestry is distinguished for this, that it brings one into touch with more branches of knowledge and more fields of work than any other, excepting only the profession of law."[1] A broad field of education is envisaged in that statement. In full keeping with all generalizations the pronouncement may be criticised from many angles. But for the present purpose it is sufficient to state that modern curricula in Schools of Forestry are related quite directly to such a wide range of subjects as to give much of fact to the quotation.

Another equally broad statement is that "modern forestry is concerned with an infinity of technique to a large extent developed empirically." In this second quotation the breadth of the view of the field of forestry may be open to question. Professional foresters and forestry students, however, need not be concerned with the proof of the breadth or range of forestry curricula. Of very vital concern is a clear conception of the relative importance of the varied units of knowledge that have a defensible place in a forestry curriculum; the manner by which they have been brought into the prominence now occupied; the extent our curricula depend upon empiricism; the dependence placed upon fundamental or basic sciences; and in summation, reasonable assurance that changes of permanent value are made on the student perspective of life as it must be lived.

Much has been written about education. Laymen and professional leaders, with equal enthusiasm and, in many instances, with equal insight in the perplexities inherent in regimented training, have offered and continue to offer suggestions, rules, standards, and goals for education in general and for our consideration in forestry education in particular. There is no effort in this short discussion to make additions—rather the hope is to emphasize by a re-appraisal, some values or ideals.

II.

What is important? "Merely this is important, that each subject shall lead beyond the acquisition of facts for facts' sake, and shall somehow touch the curiosities or the emotions of the student." [2]

Viewed from the student's angle far too much of the modern technical curricula in schools and colleges is dull, drab, dreary, monotonous exercises in routine learning. The practical curiosity of the student is how the instructor can prolong the suspense as he often does. The student's emotion is one of resentment at being subjected to such discipline and at having it designated as education.

Facts have a proper place in all subjects included in a curriculum. When facts become an end in themselves, their importance in a course is minimized.

But to "touch the curiosities" of even a few students in a group, to fan the fire of the imagination into a flame or enthusiasm; to open the door, ever so little, to a fascinating field of knowledge; to set the student mind a'sail upon an odyssey of new adventure—that is education, be it forestry or fine arts. The phenomena of plant life are not fully explained in a detailed and completely scientific exposition of photosynthesis, osmosis, regeneration or any other of the many processes in the life cycle. Not until all the phenomena of the complex forest life, individually and interrelatedly, are interpreted in a philosophy of use adequate for today and potential for the future, has the student reached the heart of forestry education. Practical economic considerations are a part of an educational system, limitations of every sort must be weighed carefully, margins of safety in the form of careful reservations in plans demand recognition in actual practice and should be presented in education. Without an aroused and intelligently directed curiosity forestry education becomes a series of such acceptable techniques, productive of dextrous manipulators, but not of educated men.

The first idea then, is to arouse the intelligent curiosity of the student.

III.

Before the forestry student of today can consider himself versed in the field of silviculture he must have an understanding of the physiological processes of plant life. The environment in which the tree thrives or dies, the interplay of light and air and moisture and the response to these factors by the individual species and the association in the type are important considerations. The chemical and physical properties of the soil where the tree reaches its optimum and minimum

[1] Brunecken, Ernest—North American Forests and Forestry. G. P. Putnam's Sons, New York, 1908.
[2] Andrew, F. Emerson—"Extra Ribs in Pigs." Atlantic Monthly, June, 1936.

growth, the peculiarities of slope, exposure, longitude and altitude in determining range, and the animal life in the soil are fundamental scientific facts.

Such data collected into a related whole and reduced to a system for application within a region or in a specific instance may be designated as silviculture.

Or again, after the production and harvesting of the tree, there arises the practical question of its utilization. Classical economics deals with theories of supply, demand, price, indices. Costs, profits, and losses measure business judgment. Exports, imports, tariffs, trade balances, credits, subsidies, and transportation may determine marketing territories. The general manager in industry must show dividends. These approaches and many others may largely determine techniques and practices in handling timber land.

Yet an appreciation, only of silvicultural systems and land use policies is not sufficient in forestry education. The forestry student must see in these approaches the avenues along which he may relate himself to the myriad problems of proper land management and in some way peculiar to himself render a real service to his day and generation. Also he must be alert to the contribution he makes to future generations.

His emotion has been stirred.

IV.

There are indicators, in sufficient number, in our educational system of the United States to suggest a growing sense of individual responsibility on the part of the student. This is a fundamental in sound education. The vocational approach need not be minimized in the least; rather the emphasis must be placed upon the social responsibility of the student. He is in training for the task of carrying, to the world around him, the philosophy that "man does not live by bread alone." It is the application of the fundamental conflict between nationalism and internationalism to the limited environment of the individual.

This approach is important for the forestry student in his prepartion for a professional life that will bring him into touch with so many branches of knowledge and fields of work as to distinguish him. In addition to his ability to produce, manufacture and market a product of the soil, the forester is a land manager. As a director of land-use he envisages the effect of his management upon watersheds, grazing of domestic stock, game, wild life, and recreation. The broad agricltural practices involving the relationship of livestock and field crops on the farm and the border climatic changes following the breakdown of natural balances in ground cover are quite directly part of the forester's consideration in the master plan for forested areas. The economic pattern of not only one entire state but of many states may depend upon the appreciation of the responsibility resting upon the forester who plans for and directs the use of large units of forested land. The future of many counties as continuing political units in the near future will be determined largely, by the use now made of the forested areas in the county.

The student is preparing himself for a large responsibility. As a prospective professional forester he must be led to visualize himself as one of the servants of mankind. His responsibility in timber production and utilization makes of him a land manager to the end that individuals he can not and need not number are privileged to answer their individual and group needs, and enrich their life thereby. The student should receive more than a preparation for ability to perform certain tasks satisfactorily. There is more to his job than food, shelter, and clothing. His work grows beyond the confines of a professional career. The student sees himself as an important part of the great scheme of things in the world, more than a professional forester.

The sense of a peculiar individual responsibility is another ideal of a forester's education.

Appreciation

The editorial staff The Idaho Forester is grateful to the contributors for their part in the publication of this issue. We are indebted to the University of Idaho Publication Department for several cuts that appear in the issue, as well as to The Clearwater Timber Co., for certain material. To the men who contributed their time and effort to the editorial section of the annual we extend our deepest gratitude and appreciation. To the readers we hope that the annual meets with your approval. And for next year's officers, we sincerely trust that they, in the build-up of the annual, profit to the utmost by the experience of this year's officers.

Who was that long haired boy whose lines ran thus:

"Naow gen'lmen, I all represents the BACK-SCRATCHING CORPORATION OF AMERICA . . ." What is Marv. doing now?

Flash! Shelton. Marlin Gal. wouldn't remember a little incident here . . . would he?

GRADUATING SENIORS

WALTER M. WARD

Forest Production. Bismark, N. D. North Dakota State college. Sigma Nu 3, 4; Associated Foresters 3, 4; Idaho Forester staff 3, 4; Intramural Sports 3 and 4.

FREDRICK EUGENE HAMPF

Forest Production. Lincoln H. S., Garfield, N. J. Associated Foresters 1, 2, 3, and 4; Swimming (varsity) 2; Hell Divers 1, 2, 3, and 4; Minor I Club 2, 3, Pres. 4. Lindley Hall, Sweet Hall, 2, 3, 4. University of Idaho 1, 2, 3, and 4; Idaho Foresters' staff 4.

JOHN CHOHLIS

Range Management. Lincoln High School, Cleveland, Ohio; Miami University, Oxford, Ohio; Associated Foresters 2, 3, and 4; Idaho Forester 2, 3, and 4; Annual Ball 4; Annual Banquet 4.

HOBART H. STYFFE

Forest Production. Port Arthur Technical High School; New York State Ranger School; Associated Foresters 2, 3, and 4; President, Delta Tau Delta; Chairman Election Board A. S. U. I.

LOREN HUGH WRIGHT

Forest Production. Troy High School.

NORMAN TALMAGE NELSON

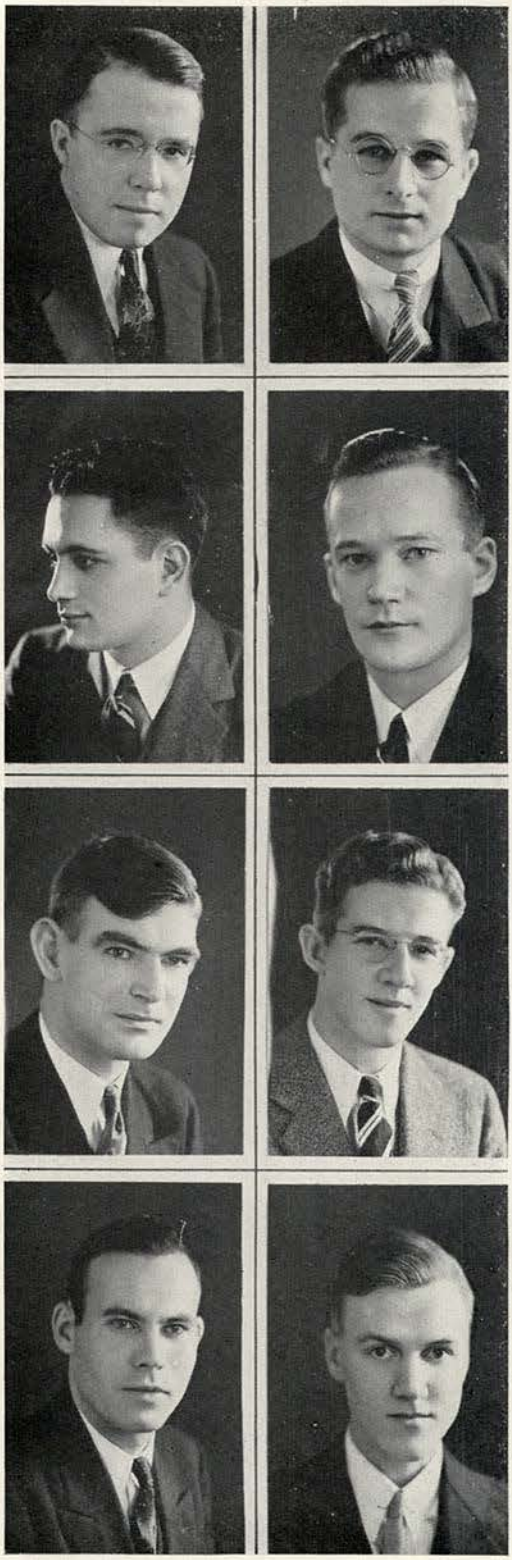
Range Management. McCammon H. S. U. of I. S. B. Weber College, Ogden, Utah. B. Y. U., Provo, Utah.

COURTENAY STEVENS

Range Management. Boise H. S. Boise; Track, A. S. U. I. Plays Associated Foresters.

DAVID MAUL

Forest Production. Huron High School, Huron, S. D.



GRADUATING SENIORS

WILLIAM ANDERSON

Range Management. Graduated from Nampa High School, Nampa, Idaho.

VIRGIL GOULD

Range Management. Buhl High School, Buhl, Idaho. Associated foresters 1, 2, 3, and 4; XI Sigma Pi 3 and 4, Forester 4; Ass't. Bus. Mgr. Idaho Forester 3; Business Manager Idaho Foresters 4; High Honors 1, Highest Honors 3.

VERNE GRECO

Forest Production. Burley High School. Football 1 and 2. Associated Foresters 1, 2, 3, and 4. President U. M. C. 3. Banquet chairman 3.

THOMAS I. WILSON

Range Management. Pennington Central H. S.; Ranger XI Sigma Pi; Associated Foresters; Foresters Executive Council 3; Idaho Forester Staff 4.

CYRIL HIGGINSON

Range Management. Pocatello H. S.; U. of I. S. B.; Sigma Alpha Epsilon; Associated Foresters.

ALESSIO P. CAPORASO

Forest Production. Crosby H. S. Waterbury, Conn. Swimming (varsity) 3; Minor I Club 3; Idaho Forester 4; Associated Foresters 1, 2, 3, and 4.

JAMES P. BROWN

Forest Production. Hot Springs High School. Louisiana State University. University of Askansas.

ARTHUR ANNEL

Forest Production. Graduated from Moscow High School. Moscow, Idaho

GRADUATING SENIORS

HOMER WILLIAM PARKS
Forest Production. McCall High School

RICHARD DIERKEN
Forest Production. Washington H. S., Milwaukee, Wis.

BILL EARL McKEE
Forest Production. North Central High School Spokane, Washington. Secretary-Treasurer Associated Foresters, 4.

CHESTER LEE HAGEDORN
Forest Production. Buhl High School. University of Idaho Southern Branch 1, and 2. U of I. 3 and 4. Wrestling 1. Associated Foresters 1, 2, and 4.

JACK P. OLIVER
Forest Production. Anaconda, Montana High School. Montana School of Mines. University of Montana.

BRUCE VERNON GROVES
Forest Production. Winchester High School, Winchester, Idaho. School of Business. Associated Foresters Secretary-Treasurer '35-'36. Idaho Forester '34-'35. Banquet '35.

K. F. RICHARDSON
Range Management. Burke H. S. Associated Foresters 2, 3, and 4.

MAURICE WINIFERD MARCH
Range Management. Caldwell, H. S., Caldwell, Idaho. Baseball Manager 4; President Associated Foresters 4; President Managers Club 4; Vice President Lindley Hall 4.

GRADUATING SENIORS

FRED W. MATTHEWS

Forest Production. St. Anthony H. S., Idaho; U. of I. S. B. 1 and 2; Editor S. B. Forester's Editorial; Assistant Editor, Idaho Forester 3; Editor Idaho Forester 4. Boxing 2. Ass. Foresters 1, 2, 3, and 4.

GEORGE FERDINAND WEYERMAN

Forest Production. St. Maries High School. University of Idaho 1, 2, 3, 4. Associated Foresters 1, 2, 3, and 4; Xi Sigma Pi 3, 4; Xi Sigma Pi Associate Forester 4; Idaho Forester staff 3; Foresters' Ball 3; High Honors 2; Lindley Hall 1, 2, and 3; Willis Sweet Hall 4.

MAURICE RICHARD MARCH

Forest Production. Northampton High School, Northampton, Massachusetts. Delta Tau Delta.

ROBERT HOLM JOHNSON

Forest Production. Malden High School, Malden, Massachusetts; Swimming team 1, 2, 3.

LOEN R. NADEAU

Range Management. Garden Valley H. S. G. V. Idaho, 1, 2, and 3; Caldwell H. S., Idaho 4; College of Idaho, Caldwell, Idaho 1; U. of I. 2, 3, 4, and 5; Vice Pres. Ass. Foresters 3; Idaho Forester staff 2 and 3; Editor Idaho Forester 4; Pres. Lindley Hall 4; Advisory Board Ass. For. 3 and 4. Foresters' Ball 2, 3, and 4; For. Banquet 2, 3, and 4.

MARVIN MALCOLM MARSHAL

Forest Production. Bonne Terre, Missouri, High School.

MAURICE C. YEARSLEY

Forest Production. Midway High School, Midway, Idaho; Southern Branch 1, 2, and 3; Xi Sigma Pi.

MARLIN C. GALBRAITH

Forest Production. Madison High School, Rexburg, Idaho. Xi Sigma Pi 3, and 4; Assistant Editor Idaho Forester 3. Xi Sigma Pi Secretary-Fiscal Agent 4.








GRADUATING SENIORS

JOSEPH W. LADLE

Forest Production. Sugar City H. S. Sugar City, Idaho; Ricks College. Associated Foresters 1, 2, 3, and 4.

PAUL NEWTON RICHELSON

Forest Production. Montpelier H. S. Montpelier, Idaho. Delta Tau Delta. Associated Foresters.

Paul Bunyan

By JOHN BUNYAN, his brother

Paul Bunyan is the epic figure of the logging camp, the greatest logger that ever lived. He had a broad ax that was sixteen feet wide and in the good old days, when he used to get our squared timber for the British trade, he would square the log with four cuts. He used to go through the woods that way, squaring them off, and then when he got them all standing clean and white, he'd take his other axe, the one with the wove-rope handle, and swing it around his head and cut them down all around him in a radius of a third of a mile. He logged off all North Dakota in one winter—the winter of the Blue Snow.

Paul Bunyan is the man who dug the Snake and the Mississippi Rivers, he built the Rocky Mountains, did the Grand Canyon in two weeks, excavated Puget Sound, and on weekends, while the crew loafed, Paul, himself fixed up Yellowstone, just to be doing something different.

I can recall many instances of Paul and his blue ox, Babe, whom he gained possession of while logging South America. Babe was seven axe handles between the eyes, according to some authorities; others equally dependable say forty-two axe handles and a plug of Climax. Like other historical contradictions, this difference comes from using different standards. One of Paul's axehandles was equal to about seventeen of the ordinary kind.

They could never keep Babe more than one night at a camp for he would eat in one day all the feed that thirty four teams of horses could haul in twenty-three days. For a snack between meals he would eat fifty bales of hay, wire and all, he kept six men with picaroons busy picking the wire from his teeth. Babe was a great pet and very docile as a general thing, but seemed to have a sense of humor and frequently got into mischief. He would sneak up behind a drive and drink all of the water out of the river, leaving the logs high and dry.

When Paul took up efficiency engineering he went at the job in his customary thoroughness. He did not fool around clocking the crews with stop watch, counting motions and deducting the ones used for borrowing chews, going for drinks, dodging the strawboss, Sam, and preparing for quitting time. He decided to cut out labor entirely.

"What's the use," said Paul, "of all this sawing, swamping, skidding, decking, icing roads, loading, hauling and landing? The object of the game is to get the trees to the landing, ain't it? Well why not do it and get it off your mind?"

So he hitched Babe to a section of timber and snaked the whole 640 acres off with one drag. At the landing the trees were cut off and the denuded section was dragged back to its original place. This procedure made the work much more simple. Six trips a day, six days a week, just cleaned up a township. It was on this job that Johnny Inkslinger, the office boy, used up 3,576 gallons of ink trying to keep account of the millions of board feet which went down the river in the spring drive.

The honor of felling the biggest tree known must go to Paul. It was a redwood down in California when he was getting out gate posts for the Golden Gates.

This tree measured 237 feet in diameter and was 4,653 feet in height. Paul put his best set of sawyers on this tree and it took them six weeks to make the undercut. When they had finished the undercut they went around the tree to

(Continued on Page 29)

Second Annual Range Management Field Trip

By Tom Wilson

Participants: Professor Ray Becraft, Don Johnson, Ken Richardson, Bill Taylor, John Chohlis, Virg Gould, Cy Higginson, and Tom Wilson.

On May 31, 1933, the range management majors, under the leadership of Professor Ray Becraft, embarked on the second annual range management field trip. This trip, which is taken in the spring of the Junior year, is now a required part of the range management curriculum.

We were instructed that the truck would leave promptly at eight o'clock from the new forestry laboratory. Most of us had a pretty good idea what that meant. It would be nine or ten o'clock before we got away at least. Sure enough, when seven sleepy-eyed foresters appeared at eight o'clock that Sunday morning no truck was there to greet our eyes. Came eight-thirty and still no truck; came nine o'clock and still no truck. By that time most of the boys had their sleeping bags unrolled and were catching up on some of the old "shut-eye" they had missed during the past examination week, and also the night previous, the most of which they spent bidding their one and only goodby.

Finally, at nine forty a loud honk startled the boys out of their morning siesta. Something had gone wrong with the battery and official driver, Gould, had been unable to coax the V-8 truck to action until he obtained a new battery. Without further delay, equipment was packed and we rolled out of Moscow.

A few stops were made on the first day to collect plants and to note some unusual features of the progressing plant cover. A steady rain began late in the afternoon, but we were all protected by the canvas top, and wonder of wonders, it didn't leak. That night we stayed in tourist cabins at Baker, Oregon.

Monday, June 1st.

We left Baker after breakfast. Enroute to Boise we made a few stops to collect some plants and examine the range. Rain throughout the day did its best to dampen our good spirits, but with our exams over and no responsibility for a few days, it needed more than a little rain to do that. At this time Gould became our official weather prognosticator. Being a native South Idahoan he predicted no further rain during the rest of the trip. Before the trip was over we decided that Gould either didn't know his Idaho, or else it was an unusual year, because it rained part of every day. Rather than pitch a wet camp we again stayed in a tourist cabin for the night.

Tuesday, June 2nd.

In Boise we procured our provisions and stopped at the Forest Service headquarters. With the kind cooperation of the Boise National Forest personnel, an excellent retinue was planned for the remainder of the trip. C. Kenneth Pearce was persuaded to accompany us part way and act as a guide.

After leaving Boise we traveled east along the new road passing Arrowrock dam and then followed the road skirting the reservoir. Chohlis didn't enjoy this part of the trip. He worried about what would happen should we miss one of the curves. Pearce agreed that if we missed one curve, we would be sure to miss the rest. That night we camped on Rattlesnake Creek, where Doctor Beason and Mont Lewis, who also were conducting a nutrition study of the various range plants throughout Idaho, joined us.

Wednesday, June 3rd.

We spent the next day inspecting range and experimental enclosures under the supervision of C. Kenneth Pearce. Professor Becraft instructed us in reconaissance work. During the afternoon district ranger Fest gave a very interesting and instructive talk on management plans for the cattle and sheep on his district. Ken Richardson proved himself the best fisherman, pulling in a mess of trout.

Thursday, June 4th.

After breaking camp we drove up the river and visited Belle Mare enclosure which had been protected from grazing since 1927. From there we crossed Camas Prairie, stopping several times for range inspections. That night we camped at Ice Springs on Fall Creek. No trout nibbled the hooks of the expectant anglers that night.

Friday, June 5th.

During the day we inspected the range and wrote up types. From Ice Springs we traveled to Mountain Home and then to Boise. Several of the boys decided they needed a swim, so the next stop was Boise swimming pool. Late in the afternoon we left Boise for Wood Tick Creek, where we camped for the night. Here we met Sam Wooley and "Scoop" March, two former Idaho students, who were doing experimental work for the Intermountain Forest and Range Experiment Station.

Saturday, June 6th.

"Scoop", who was in charge of the rain-making machine for conducting erosion studies, had promised us a demonstration, so we were up bright and early. We spent a highly interesting morning examining their experimental apparatus. Sam Wooley demonstrated the quadrat and gridiron methods for intensive reconaissance, and also a special method for soil absorption studies.

From Wood Tick we returned to Boise and from there to Idaho City. Here we were given the use of an abandoned CCC camp for the night. The building leaked and most of the boys were busy moving their bed from one spot to another to find some place where the water didn't happen to hit.

Sunday, June 7th.

After breakfast, accompanied by "Scoop" March, we visited the various methods for conducting erosion and run-off studies on Bannock Creek near Idaho City. "Scoop" explained the experiments being conducted, the results, and expected results.

From Idaho City we traveled north into the Payette Forest and camped on the North Fork of the Payette River.

Monday, June 8th.

We spent the remainder of the trip traveling. Following the north and south highway, we arrived in Moscow about six o'clock.

The Foresters' Ball

By M. C. Yearsley,

On November twentieth the associated foresters turned their thoughts from study and danced with their dates under a canopy of evergreens to the music of Bill Wood's orchestra. The women's gym was turned into a veritable forest with evergreens at intervals around the hall providing shady nooks while the lights coming through the boughs overhead made the moonlight effect a beautiful and realistic one.

The programs were of sliced veneer in the shape of a scaler's stick with an abreviated log scale on the outside. The inside was a tally sheet with short "scaling instructions". At a bar made of pine slabs, punch was served throughout the evening. The faculty was there in silhouette and in person.

Patrons and patronesses were Dean and Mrs. D. S. Jeffers, Dr. and Mrs. F. W. Gail, Dean and Mrs. J. A. Kostalek, Dr. and Mrs. E. C. Jahn, Prof. and Mrs. A. M. Sowder, Dr. and Mrs. E. R. Martell, Dr. and Mrs. John Ehrlich, Prof. and Mrs. R. J. Becraft and Dr. and Mrs. A. B. Hatch.

Potlatch Forests' Logging Methods

Thomas E. Kinney
Assistant General Manager, Potlatch Forests, Inc.

When we think of white pine logging in the Lake States, and even in Idaho up to 1915, we have a picture in our minds of long, low, dimly lighted log camps. The bunk houses were closely packed with tiers of double bunks; the cook houses posted "no talking" signs; fed largely on "sow belly" and beans, olemargarine and dried fruits. The rising bell rang out long before daylight and men and horses, breath steaming, came and went to work in the dark. Horses and sleighs and a few small locomotives were the only aid to the work done practically all by hand. Even loading depended on the old cross haul team and skilled hook men, regardless of the amount of logs put in daily.

The logging of the handiest timber, the greatest ravages of fire, and mostly the advent of the tractor, truck and various loading devices, in fact machinery has today changed the picture of logging completely.

In the operations of Potlatch Forests, there are two distinct methods of getting logs to the point of transportation, mainly by tractors and horses. There are four district methods of transporting logs, railroading, fluming, driving, and truck hauling.

Owing to the steepness of the ground, horses will always play an important part in our logging. The creeks draining into the North Fork of the Clearwater are covered with a heavy stand of second growth timber on ground too steep for a tractor to negotiate. These stands will always be logged by horses, and the logging will be done in the summer months only, for the moment it starts raining or snowing in the fall even horses cannot work on this ground. Therefore, practically all the logs that are put up for the yearly drive on the Clearwater have to be logged in four or five months in summer. The number of teams worked by the company runs around 150 and will weight from 1600 lbs. up to a ton per horse.

A large part of the timber land, both at Clearwater and Potlatch, is level enough to permit the use of tractors and a number of them are used in both operations. In the old growth stands in particular, when the timber is scattered and too large for the teams, tractors are used to good advantage. One large camp in the Clearwater uses all tractors and so does one of our contractors. The tractors run from 2-ton machines of 20-horsepower to 75-horsepower machines, d-

pending on the kind of work to be done. We have over 50 tractors working in the various camps.

The advent of a bulldozer on a tractor to grade roads has changed road construction completely. Each camp has from one to two bulldozers for road building, and, although we operate two diesel shovels for railroad construction, by far the greater part of our road building is now done with modern bulldozer equipment.

After the logs are taken cut of the woods to the landing they are transported in a number of different ways.

The greatest portion is still hauled with locomotives. At Potlatch five geared engines are used in a 32-mile train operation to the W. I. & M. Ry. Co. near Bovill, from which point they are hauled by that road to Potlatch.

At Clearwater, five more locomotives are used on hauls varying from 5 to 20 miles over company tracks to Headquarters, at which point they are picked up by Camas Prairie engines and hauled 81 miles to Lewiston. All these locomotives are oil burning geared engines of from 70 to 90 tons weight. The logs are loaded on the cars by either gas or oil burning hoisting machines, which have a loading capacity of about 120,000 feet a day per machine.

Next to the railroad traansportation comes the truck haul. Owing to cheap road construction with bulldozers and the great improvement in cheap light trucks, this method of hauling logs has displaced railroading in many places, especially when the stands of timber are either too light or on too rough ground to warrant railroad construction. Grades as steep as 30% can be operated on and adverse grades of 10% are used successfully. Large movements of logs are made by truck to central loading points on the railroad, and, at Potlatch, as high as 20 million feet of logs are hauled direct to the Potlatch pond from distances up to 25 miles. During the summer trucking season, up to 200 contract trucks are employed hauling logs for the three Potlatch Forests sawmill units.

Besides the railroading and trucking, logs are moved at the Clearwater unit by means of flumes and river driving. In the neighborhood of 40,000,000 feet of logs come to the Clearwater plant by river driving each year. These logs come out of the North Fork from rough, steep country where neither railroads nor trucks are feasible transportation owing to steep grades.

V-shaped flumes are built in these steep watersheds with portable gas sawmills and the logs in most cases are decked to the flumes to wait the spring runoff of the snow. The rollways are then broken and the logs flumed into the river, often at grades up to 40%.

Once the logs are in the river, two long wanigans are constructed at the head of the drive, one for the cook house and the other for sleeping quarters, and as soon as the water is high enough, the work of rearing the banks and picking jams commences. With favorable water, the drive comes to Lewiston, a distance of 115 miles, in about six weeks with a driving crew of 30 men.

Differing vastly from the early log camp, we now find most of the railroad camps built on portable cars with 14 men to a bunk car, lighted with electricity, and heated by Pres-to-logs. Meals are served at tables for six or eight from large dining cars and every variety of food is furnished in the cleanest manner possible. Camps built on the flumes and truck hauls differ from the rail camps only in that they are not portable.

The logging camp and the logging methods of today truly make a vastly different picture from that of the "gay 90's."

Paul Bunyan

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start sawing. Here they found two other sawyers who had been working on an undercut on that side for nearly eight weeks. They spent eight days, including Sunday, arguing which way to fall it until finally Paul got tired of this and yelled, "Give me that saw."

He started sawing, using 250 foot saws, he sawed so fast that the teeth burned out of the saw. It kept seventeen men busy handing him new saws. Paul didn't need a spring board; he stood on the pile of burnt-out saws. He sweat so much that by the time he was half through the seventeen helpers he had were all treading water. When the tree started to fall Paul grabbed a bucking saw and ran up the tree when it was half way down. By the time this gigantic tree hit the ground Paul had it bucked into 100-foot lengths.

Thus ends another episode in the life of the greatest of all loggers, Paul Bunyan.

"Ugh. . .pardon me ladies, but could you tell me the closest bus line?"

"No you don't . . . No you don't . . . I know that kind, I know that kind!"

She ran like a scared filly. Is this right Rub. You know I'd hate to publish anything like this about you.

The Associated Foresters

By Bruce V. Groves, '37

A well-rounded program of worth-while activities characterized the functions of the Associated Foresters for the 1936-37 school year. The organization, largest of its kind on the Idaho campus, is composed of students and faculty of the School of Forestry, and proposes, according to its constitution, "to promote fellowship and good feeling", and "to foster the best interests of the forestry profession". The officers for the past year were: Howard Watson, president; Howard Johnson, vice-president; William McKee, secretary-treasurer; and Kenneth Hungerford, ranger. Class representatives on the Executive Council included; Joe Ladle, Maurice Yearsley, Harold Heady, William Berkenbosch, Otto Baltuth, Vincent Wilson, and Forest Ober.

"Fellowship and good feeling" were promoted in a manner that should linger in memories even after best learned principles and theories are forgotten. The ice was thawed immediately by the opening bonfire at Price Green. This event included many interesting talks which were punctuated by smokes, jokes, and above all, eats that upheld the best Associated Foresters' tradition of quality and quantity.

This fellowship did not go undivided, however, for many coed lady-friends rated the Foresters' Ball. Here they were treated to a sylvan setting of aromatic cedar which so softened the music as to make this one of the outstanding social events on the campus calendar.

ASSOCIATED FORESTERS

Meetings or smokers at regular intervals featured interesting talks by prominent speakers, movies, regular business, and singing. Songs? Yes, indeed! In fact, "They Cut Down The Old Pine Tree" so many times that Dr. Martell is expected to recommend immediate reforestation.

The climax of the social program was attained at the twenty-first annual banquet. Guests, including members of the Forest Service, C.C.C., Blister Rust Control, Soil Erosion, and the Lumber Industry, were provided with entertainment

in partial repayment for their presence, which was greatly appreciated by the Associated Foresters.

The foresters' barbecue is becoming synonymous with thoughts of spring. Feats of strength and skill serve to determine individual and class prowess in such extra-curricular activities as "cud hoisting" against the wind, chopping, sawing, tree climbing, tug-o-war, egg tossing, racing, and baseball. The nucleus of the menu included an unlimited supply of barbecued beef garnished with baked beans. 'Nuf sed!

Service activities of the Associated Foresters tending "to foster the best interests of the forestry profession" have not been fully appreciated by the students. A review of some of these should stimulate suggestions for additional activities, and greater effort in making them successful.

More than one-hundred dollars have been set aside in the Associated Foresters student loan fund, which is available to worthy members upon application to the Executive Council and approval of the Dean. Such loans are to be repaid to the Associated Foresters within one year after graduation.

The Dean Francis Garner Miller Memorial fund sponsored by the Associated Foresters, now contains about one-hundred dollars. Plans for erection of the memorial are being completed. Alumni who have not as yet contributed to the fund, and who wish to do so, are requested to address their contribution in care of Harold Heady, committee chairman.

The Idaho Forester is the official publication of the Associated Foresters. It is edited entirely by student members of the school. Fred Mathews was the Editor for the past year. Several other magazines are subscribed to, from the funds of the organization, and they are to be found in the open shelves of the forestry library.

The foresters' chorus, managed by Bill Taylor, was really making sweet music this year. All agree that its only fault was its limited appearances. The chorus went to town like a flock of canaries when it served-up some especially prepared numbers at the annual banquet.

Associated Foresters' hopes for a "cabin in the pines" or some similar secluded exclusive shrine dedicated to the memory of the Sacred Pink Bull of Oxtossism, or at least as a laboratory for further research into the activities of Paul Bunyan's blue ox, have diminished, but have not died. A common gathering place for the foresters is a needed and worthy objective that should motivate a more concentrated effort from next year's organization. The completion of such an undertaking would provide club rooms for leisure time, and a more fraternal meeting place for entertainment and business, both badly needed by Idaho foresters, especially in the wintertime.

Newly elected officers for next year are: Art Nelson, president; Howard Johnson, vice-president; Ernest Ahler, secretary-treasurer; and Clifton Windle, ranger.

Technical Requirements for a Forester

(Continued from Page 11)

men of the very highest type now in the forest schools.

Studies by Professors Graves and Guise in 1932 indicated that the intelligence tests of forestry students in most universities fall below the all-university median, and that in all cases the forestry median was lower in the scale than engineering, pre-medicine, pre-law, science, liberal arts, commerce and chemistry. This is a situation that the forest schools could and should correct, by upholding entrance standards and jealously maintaining the dignity and character of the forestry profession.

I have sat in on many conferences for selection of a man for promotion to a vacancy in the Forest Service, and almost invariably the selection of the man hinged upon the personal qualifications and experience of the candidate rather than the quality of his technical training. The two essentials are intelligence and character. By intelligence I mean the quality of the brain, the ability to learn, to reason and to use judgment. Character is a broad term, but the essential qualities are confidence, courage and leadership. Since much of the work of a forester is in the field, it is essential that the forester possess a certain ruggedness of spirit and body which will enable him to meet with equanimity and to enjoy the discomforts and occasional hardships of woods life, and to demand the respect of the rough men of the woods he must command and associate with. This does not mean that he should be a "roughneck;" a man who "can chew tobacco and spit against the wind." We might remember that, of intrepid men who attained the greatest height on the two most terrible mountains of the Himalayas, one was a poet and one a musician. A forester who attains the higher positions in the profession must combine the ruggedness of the woodsman with the finer qualities and education perceptions of a man who is at ease in the councils of the learned as well as in the logging camp.

Thirteenth Annual Barbecue

By Harold Heady

On the 23rd of May, 1936, about 135 foresters gathered at Randall Flats to show their appreciation of a perfect spring day by participating in the usual forester's contests. The frosh must have imported their pitcher; anyway, they won the baseball game with ease. As "come and get it" was yelled out, the boys made a rush to a good meal of beans, beef, coffee and ice cream (little known to the oldtime lumberjack).

After lunch, Austin Helmers (frosh) set a new log rolling record with Earl Ritzheimer a close second; time was 1:38. Leonard and Lathem (sophs) then came thru to win with the two man saw. The seniors by this time were getting fed up with standing around so Crawford bucked his way thru an 18" log to a victory followed by the "Mighty" Brado who came in second to Ritz in the chopping.

The egg tossing was a bit of a comedy as Wilson (junior) again came thru for his third win in the event. Wilson tossed the fruit to the tree tops, and falls flat trying to catch the thing. As the egg bounces on the ground, Wilson regains his feet, finds it, and throws it higher. This time he can't run fast enough so it again bounces on the ground. Howls of disapproval were sent up and Wilson has to break the egg in his hands to prove his win. The sophomores and seniors then won in the tree-climbing, sackrace, three legged race, and the sprints. Some real competition was to be had among the tobacco pushers. Bob Clements seemed to be best, even to form, by winning with a distance of 19.5 feet. Two other fellows were within 4 inches of his mark.

The fun really began with the tug-o-war when the seniors pulled the frosh across the creek. Ritzheimer then put H. Nelson in the creek for a good ducking with all the seniors following at the hands of the frosh. With the advantage of the low side of the creek, the sophs turned in two wins to tie the score with the seniors at 41 points. The juniors were lucky enough to get 33 to 31 for the frosh. I guess the seniors got their name on the cup as Ralph Jensen was seen carrying the trophy toward the city.

Was that Shelton where "Doc." Watson and followers went to church?

Who was it stopped the speeder on the Simpson logging operation by a nice healthy yawn. . . is Matthews around?

Associated Foresters' Bonfire

By Barton Wetzel

As per usual the Associated Foresters held their annual bonfire on Price Green the latter part of September of the first semester.

Following the opening of the meeting, the faculty members were called upon to come forth and shine for the benefit of the new forestry students. Dr. Hatch, a new faculty member to all of us, was asked for a short talk on his experiences away from Idaho, for he is a graduate of the Forestry School. Seven graduate students enrolled in the School of Forestry were next introduced and the meeting was then under way in great shape.

Xi Sigma Pi took the floor for a few minutes and in a few moments the function of the National Honorary was explained to the group, four of the highest ranking members of the forestry curricula were informed of the fact that their names would go down on the bronze plaque located in the Administration building, and the men who had earned their pledge pins were so donned with them in a fitting ceremony before the group.

The main event of the evening was now at hand and the foresters of Idaho gathered about the fire to hear Major Kelly of Region I give one of the most inspiring lectures ever heard on this campus. The Major's talk on Leadership and Character left no openings for the non-student of forestry to worm out of thinking about some very sincere questions that are of utmost importance to the budding or the experienced forester. First, Major Kelly asked each person there to mull these questions over in his mind, "Am I or am I not a leader? Am I original at it? Do I move when instructions are given me? Do men look to me for suggestions or do I look to companions for suggestions?" Qualitites of the good forester were stressed next. "The forester must be able to lead under any circumstance; he must be willing to do his part and more at any time; he must never ask a man to do a job that he himself would not be willing to do; he must never send a crew where he would not go himself; and above all, he must be able to use good sound judgment at any opportunity. Through having these qualitites the forester will always have the respect of his crew and will be a respected citizen of any community he may be in." With this survey of the true forester the Major concluded his talk, and as the quiet of the evening was broken by the resonance of dishpan versus spoon the group as a whole rushed the party lunch.

President Neale Leaves Idaho

Prof. E. C. Jahn

When President M. G. Neale announced that he had resigned his position as administrator of the University, effective April first, the faculty, students, and friends of the University were genuinely shocked. Dr. Neale had been with the University six and a half years and was liked and admired by everyone. He was a tireless and energetic worker and was keenly interested in the University.

President Neale was an able and efficient administrator and under his direction the University has had its greatest period of growth, both in number of students and in the expansion of facilities. When Dr. Neale came to Moscow in 1930, the University had 1990 students, which number has increased to 2889 this year.

One of Pres. Neale's greatest concerns was that the students should have proper living, working, and recreational facilities in order to do good work and obtain the fullest benefits of the University. Due to the rapid increase in enrollment this was a difficult problem, for the University was already taxed nearly to capacity. With characteristic direct action Dr. Neale met the emergency by building low cost, yet comfortable and well-built frame buildings, such as the University Classroom Building, the Engineering Drawing Building, the Entomology Building, the Forestry Laboratory, and the Idaho Club. The first of the separate unit buildings was the Wood Conversion Laboratory, built in 1931. The Idaho Club, housing 118 men, was organized as a cooperative dormitory. President Neale realized that adequate housing and living conditions for a large number of students of limited means and for the many who could not find satisfactory quarters due to the lack of room in the dormitories, was one of the greatest problems facing the University. As a step toward solving this problem, he encouraged the development of cooperative dormitories.

At the same time that these buildings were being erected to care for an emergency, a far-sighted permanent building program was being mapped out. This has resulted in the new Infirmary, Willis Sweet Hall, and the Library wing of the Administration building, now being built. New recreational facilities developed through the effort of President Neale are the fine new golf course and the new stadium, seating 25,000. This stadium has recently been appropriately named Neale Stadium.

Dr. Neale is a great lover of the out-of-doors and he made many trips into the forested regions of the state, including two visits to the primitive area and Sawtooth Mountains. He was always most enthusiastic in his descriptions of the beauties of the forested and mountainous areas of Idaho. Nearer home, the recreational and game possibilities of Moscow Mountain impressed President Neale. It has been said that one was almost sure to meet him in the remotest parts of the Moscow Mountain area at any time. Dr. Neale has done much to encourage the development and use of this area for recreation.

Naturally President Neale soon became keenly interested in and aware of the forestry, recreational, and game resources and problems of the state. He was appreciative of the value and importance of forestry to the State of Idaho and of the necessity of maintaining the School of Forestry at a high educational level. President Neale

actively cooperated with Dean F. G. Miller in bringing a University Forest on Moscow Mountain into reality. Dr. Neale became thoroughly intimate with the forestry and land problems connected with the acquisition of a University Forest on Moscow Mountain. In 1934 a step toward the establishment of a permanent and adequate experimental University Forest was completed by the signing of a bill by President Roosevelt, enabling the Forest Service to acquire lands on Moscow Mountain which will eventually establish a National Forest of about 63,000 acres. This act brings the federal government into line on an arrangement whereby, by donations from private owners and exchanges of land, the Idaho School of Forestry will be able to block up a suitable well-balanced School Forest with logical administrative boundaries. At present Idaho has a University Forest on this area of 7000 acres. President Neale had given encouragement at all times to the building up of this Forest as a training and experimental area for Idaho forestry students.

Dr. Neale leaves Idaho to go back to the work he left at the University of Minnesota some years ago, that of teaching and planning in the field of administrative education. It is the work he is keenly interested in. The School of Forestry and the University are sorry to see him go but wish him well at Minnesota.

A. M. SOWDER

By John Chohlis

Nine weeks of the first semester had gone by when a rumor spread through the forestry school like fire through white pine. All to the effect that Art was leaving the school for a job with the government. The rumor was a reality for by the end of the nine weeks Art had boarded the N.P. whizzer headed for points east. Not, however, without a little souvenier from the Seniors, a brief case in which to cart around the copious notes for which Art is famous. Art is a member of the forest survey force in the requirements phase of the work. The work is right in line with what Sowder has been teaching and studying. The specific activities of the requirements phase of the forest survey are the determination of what lumber and other timber products are used for in various fields of construction and an analysis of the factors affecting that consumption, in order that the government may estimate the future requirements on the basis of past experience.

Everyone wishes A.M. Sowder '25 the best of luck in his new work. We were sorry to see him go,

Sowder's resignation came at an inopportune time and the Dean anxiously looked around for a man to fill the vacancy. The selection was Paul Anderson '36. Paul did not teach all the courses Art had but he lightened the burden on the rest of the faculty by distributing his talents to take up the excess stress.

DR. EHRLICH

Dr. John Ehrlich, the last remaining bachelor of the forestry faculty, lost his standing in that group last summer. Dr. and Mrs. Ehrlich made the long trek back to Idaho after their marriage.

Mrs. Ehrlich is an accomplished pianist and has spent much time playing for various groups. However, her musical ear must have received quite a shock the night the Seniors got together for a seranade to the newly married couple, a la chivaree. The feeling but not the quality was there. But both of them enjoyed it immensely.

The Forest Pathology course has become somewhat stiffer this year according to the students taking it. Due in all probability to Dr. Ehrlich's fervor which has characterized all of his work since his marriage.

DR. HATCH

The School of Forestry has growing pains and it takes quite a bit of food to keep it going. The Forestry Faculty is the staple diet of the students and the last school year it was insufficient for the needs of the students. A new morsel has been added to the faculty in the person of Dr. A. B. Hatch, B. S. Forestry, University of Idaho 1928.

Dr. Hatch came to the University last fall. He received an M.S. from the Yale School of Forestry in 1929. He was Assistant Silviculturist in the Research Branch of the Forest Service in 1931 and 1932, having gained that position through the Junior Range Examiner examination. For 18 months he studied at the Forest Academy in Stockholm, Sweden and at Upsala University. In 1935 he received his Ph. D. from Harvard University.

After emerging from Harvard Dr. Hatch taught at the Botany Department of Oregon State college until his return to a teaching position at his old Alma Mater. He has courses in Silvics and Game Management and is in charge of the nursery.

Dr. Hatch has journeyed many miles since '28 and has had many experiences and plenty of spe-

cialized study in the field of silvics. Idaho is glad to see him back.

MR. WILLISON

Following Mr. A. M. Sowder's resignation last fall the School of Forestry was without a bona-fide instructor to fill Art's shoes.

At the beginning of the second semester in February Mr. Charles Herbert Willison became the newest addition to the Forestry Faculty. "Willy" didn't take much time in getting acquainted with the boys. In two weeks he knew everyone in the school.

Mr. Willison received his B.S. in Forestry in 1933 from Oregon State College; an M.S. in Forestry at Yale University in 1934. Mr. Willison's talents have been widely distributed throughout the country. Timber cruising in the White Mountains, Assistant Forester in the Duke Forest and prior to his coming to Idaho, Jr. Forester at the Pacific Northwest Experiment Station in Portland, Oregon.

The Annual Foresters' Banquet

FORESTER ROBERTSON '39

On March 20th the Annual Forester's Banquet became of age and 275 foresters gathered at the Blue Bucket to celebrate the occasion. If anyone who had attended the first of these annual get-togethers could have participated this year, he undoubtedly would have noted a change. In twenty-one years it has grown from a small bull-fest to a roaring, exciting evening of eating, laughing, joking; of speeches, songs, and plays. Not only do the students look forward to the banquet, but also do many members of the Forest Service in the Pacific Northwest.

This year, much to the contrary of last year's experience, everyone was served at once. No one was left behind or entirely out. Very efficient "hashing" speeded the evening up considerably, and the usual monotony of "waiting your turn" was missing. In a comparably short time the dishes were cleared away and the smokes were passed around, and everyone started enjoying himself to the utmost.

Resounding a spoon and a glass together, Associated President Watson obtained the attentions of the group and after extending a short welcome to the group introduced Bert Styffe, Toastmaster of the evening. Bert feeling that a song at this point would fit in with the feelings of the group called for "Home On the Range" and from the volume expounded must have been right.

The seniors next took their fate into their hands and gave a skit on a faculty meeting. Dean Jeffers (his son Nelson) presided as usual, however he had some difficulty in getting the boys organized since Dr. Martell's (Don McKeever's) and Dr. Ehrlich's (Shorty M'Neeley's) pipes seemed to interfere in some manner. Problems of requesting a clearcut system for Professor Willison and partitioning from Forest management by Joe Wheeler seemed most pressing. Dr. Jahn suggested that a better system of flunking be adopted, or a policy of continuously changing the curriculum, to keep the student at a loss be submitted. His point originated in the fact that too many students were enrolling in forestry. Professor Becraft heartily agreed, but also favored the introduction of a few more courses in range management so that he could fully cover the Ephraim Canyon of Utah. Mycorrhiza in Sweden seemed to be Dr. Hatch's best sellers. Dr. Martell wound up the meeting by saying he wanted stricter discipline in the classrooms, and in a riot of laughter the "faculty" meeting dissolved.

At this point in the meetng all of the Forest Service men, Soil Conservation and the Wood Industries men were introduced by leaders of their respective groups.

With the last of the introductions finished, Virgil Gould took over the program in the interests of the Xi Sigma Pi, and briefly explaining the organization called for the new members of the group to come forward for their pledge pins.

Deciding that one skit wasn't enough for the meeting, the boys assembled themselves for the shooting of "Dan M'Grew." We must admit they did the thing up in great shape with Watson really striking a new high. Vic Selders figure as terrible Dan's sweetie we would drive miles to see again, however, that is past. . .

Following Dan's tragedy Don McKeever led the whole group in the old lumberjack tune "Alloutte." The song having died in the distance, Bert remarked that it was his pleasure to call upon one of Idaho's grand old men of forestry. With this he introduced Ben Bush, Idaho's first State Forester. And to be sure, it was a real honor to have him with us.

Ed Albany, frosh forester, the Mimicking Mimic of Milwaukee, next took his turn in the spotlight. After showing a few "here it is, here it ain't" tricks, Ed seriously began showing his wares. Mimicking is the art of reading the other fellow's lips and saying whatever he says right with him. At least that is what Ed says, and he seemed to get along. Before he finished,

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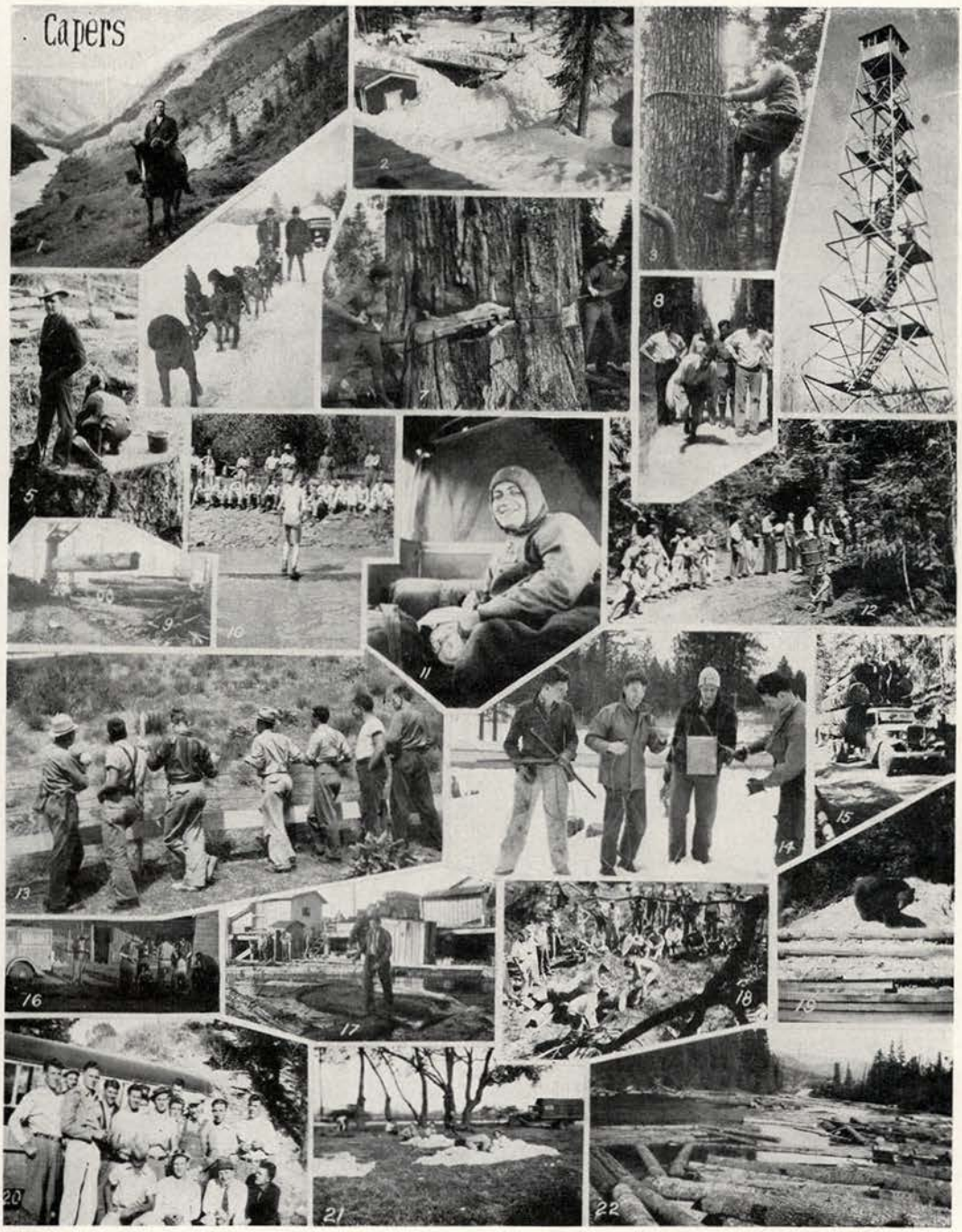
1. God's country . . . invaded. 2. Sunset on the Pacific. 3. Ohio Match iron horse. 4. Resting between trees. 5. Embryonic foresters . . . Becraft's dendrology expedition. 6. Just another jammer. 7. Trying to beat Clements. 8. A bath at last! 9. A moose near starvation on the Targhee. 10. Somewhere in Idaho. . . . 11. Lookout Berkenbosch. 12. John Howard missed this fill by one fresno load and a couple of horses! 13. Come and get it. 14. Whar's Willie . . .? Oh, there he is under that hunting cap! 15. Brado making chips. 16. Wharf at Tacoma. 17. Camp 5 . . . . eh, Johnson? 18. Moscow Mountain camp. 19. Victorious Sophomores . . . Seniors got ducked. 20. Senior foresters on a boat, can you beat it? 21. Our Profs' excursion boat up the Snake. 22. Come on, fill'er up! 23. Pacific Coast. 24. Foresters' chorus.



1. Ehrlich on a horse on the Snake. 2. Snowbound. 3. Lookout for skinned shins and . . . Parks! 4. On the Pack demonstration Forest . . . what is it? 5. Woods boss? 6. CCC team, winner of American Dog Derby at Ashton. 7. Will we ever get thru this thing? 8. Must be a fence close . . . anyhow a good takeoff! 9. Now we're loggin'. 10. Helmers showing how the loggers do it. 11. Our Eskimo baby. 12. Bread line for those delicious "bean hole beans" . . . of Art's. 13. Range majors . . . always goldbricking. 14. Mensuration difficulties . . . damn that other class! 15. Where's the Blue Ox? 16. More goldbrickers. 17. McKee and Watson. . . . 18. Trade them both for a one lunger. 19. Timid? 20. Southern Branchers. 21. Ho-hum, morning already. 22. Somewhere on the Clearwater.

SENIOR SIGHTSEEING SAFARI

By A. Caporaso and H. C. Watson

September 3.

Two truckloads of potential foresters leave Moscow for a 2800 mile trip of the Northwest. Prof. A. M. Sowder, pilot, delegates two conductors to keep the boys in order—a more or less optimistic move. First stop, Coeur d'Alene and the National Forest headquarters there. (Notes quite copious). Lunch and on to Deception Creek Experiment Station—minus Chester, who preferred to ride out in a pickup. Chuck Wellner, an Idaho grad, welcomes us and shows us what is being done at the station. He has already baked us some cream pies and with them under out belts, we bunk at the station that night. Our slumbers are disturbed by Davy Maul's unexpected cookie-dropping activities.

September 4.

We leave our good wishes with Chuck and are off to the Ohio Match Co., operations. (Still no very noticeable decrease in the copiousness of the notes.) We learn about sale area betterment, white pine logging and we are delighted with the state of efficiency of the cook shack. This afternoon we head West and are started in earnest. A hasty supper in Spokane, a mad dash to Coulee Dam, a brief glimpse of the construction, and we have our first taste of night riding. After all the schedule must be preserved. The ride to Ellensburg is plenty cold and Deacon Watson is hard put to keep down the general discontent with his revival meetings. We bed down in an Ellensburg field at 3 a. m.

September 5

We leave our field at 6 a. m. and find Ellensburg in a wild state of excitement over the rodeo. The gyppos of the Cascade Lumber Co., are taking the town in their stride and we have no alternative but to head for Seattle without much further ado. Art assumes personal supervision of a melon snitch from a moving truck on Snoqualmie Pass. At Seattle Dr. Meyers conducts us through the U. of W. Forestry School and we are envious of their clubroom. Sowder's "the town is yours until 1 a. m." proves to be a washout, as the U. S. fleet has beaten us to it. We try to soothe our feeling with a so-called burlesque show, but the girls are all dressed up like Eskimos and we are gypped again.

September 6

We cross Puget Sound in a ferry boat and spend most of the day in Bremerton at the Navy Yard. Our visit includes an inspection tour of the battleship Colorado and of the airplane carrier Saratoga. We have a late supper in Shelton, Wash., and finding a local revival meeting in full swing, it becomes necessary for Sowder to send a special detail to remove Bro. Wats and a few devout members of the flock therefrom. We bed down and Bro. Galbraith has a rather interesting experience when he finds it necessary to use facilities allotted to lady patrons of the tourist camp.

September 7

Labor Day but no holiday. Up at 6, 30 minutes for breakfast, and we visit the Simpson Logging Co. A speeder takes us about the operations and quite a few notes are taken although they are becoming rapidly less copious. We manage to tap the camp cookie supply before leaving for town. We go through the Rainier Pulp and Paper Co. plant, a brief glimpse of the capitol at Olympia and we bunk in Tacoma. Some take in the local cinema, while the more energetic tear around the roller skating rink with the belles of the place, who are all apparently of high school age.

September 8

A banner day in the number of operations visited and marking also the beginning of the collapse of the note-taking activity. The Ganges Lumber Co., and their Swedish gang saws first occupy our attention and Rubisch makes the headlines with a bath in the pond. A short drive to the Leybold-Smith Shingle Co., and we search in vain for an employee with all 10 fingers. In Tacoma we spend 4 hours making the rounds of a "mattress works", the F. S. Harmon Furniture Co. Strike sentiment was apparent both in the factory and in our ranks. We journey to the outskirts of town and take in the Peterson Manufacturing Co. (Conductor Styffe and Bro. Richelson missed the truck—Chester elevated to conductorship.) A tour of the Cascade Pole Co., we are off for a little more night riding and a night view of the Manning Seed Co., at Roy, Wash., where the cone threshing operation had to remain a secret. Then on to the U. of W. Pack Demonstration Forest where we made an overnight stand.

September 9

Inspection of the Pack Forest occupies the morning session, and in the afternoon we move on to the Pacific National Lumber Co., and our first

view of a marine-drag saw. Next stop is Mt. Rainier National Park, and our stay there is much too brief. We roll into Morton, Wash., where we put up for the night, breaking out our sleeping bags in a parking lot. On this leg, hostilities between the opposing factions of No. 2 truck come to a head; members of the "up with the sides" group tangle with the "down with the sides" exponents, and out of the melee emerges Old Ozark Abe Marshall with a beautiful shiner, Deacon Wats out on his feet, Bro. Caporaso displaying a broken pair of glasses, and Bro. J. P. Brown with a broken $10 pipe (for which we all give thanks!) No official decision was rendered in the contest.

September 10

Up at dawn, and we get our first glimpse of high powered logging (on the Peterman Co., operation). We also experience some high powered political skull-duggery when we vote 19-7 to see a tree-topped, but Sowder casts the deciding vote and we leave, anyway. The Ostranger Railway and Lumber Co. is our next stop, and we see a 132 foot beam being cut. The blackberry patch here proves a real attraction, too. We're off, then, to Longview and a trip through the Weyerhauser sawmill and their pulp and paper mill.

September 11

Camas, Wash., is favored with our presence today, and we have the Crown Willamette Paper Co. as hosts. Art is at some pains to explain how we may best behave toward the female employes, but we have our own ideas on the subject. We proceed to the Wind River Experiment Station and the Hemlock Ranger Station, on the Columbia National "Burn". Here we are furnished an opportunity to acquaint ourselves with the Diamond hitch and a Forest Service mule. After an enjoyable evening at the experiment station headquarters, during the course of which we gather about the fireplace for songs and a bullfest with Director Issac and other Forest Service officials, we hit the hay.

September 12

The Wind River Experimental Forest occupies our attention all morning, but rain after lunch curtails our visit and we cross over into Oregon and head towards Portland, stopping enroute to see the Eagle Creek recreational area on the Mt. Hood National Forest and nearby Bonneville Dam. We take rooms at the Portland Y. M. C. A. upon our arrival, and set out to give the town a break. Three members of our party manage to stroll unconcernedly into the Y. W. C. A. at 1 a. m. but they are just as unceremoniously hustled out.

September 13

We sleep late for once and only a few hardy souls are up at the appointed hour (9 o'clock) to make the visit to the headquarters of the Pacific Northwest Experiment Station. After a *Hasty* lunch, we renew our acquaintance with Dr. Hubert, our former professor, who shows us some of the research he is doing for the Western Pine Association. We get underway again, this time bound for the Crown Willamette Paper Company's logging operations near Seaside, Ore. This outfit boasts the finest camp in the Northwest, and we heartily endorse it. The flunkies look plenty tired before we manage to pull ourselves away from the tables tonight. Deacon Wats and some of the flock indulge in a bit of midnight manipulation of the pasteboards before retiring.

September 14

The boys need no urging to get them up this morning, for they are anxious to make another trip to the cook house. After a staggering breakfast, we ride out to the cutting areas on the logging train. Today we walk quite a bit, and are treated to an opportunity to see some more high powered logging, this time in spruce and hemlock. Some of the boys try their hands at setting chockers. We sample a cut over area for the presence of reproduction, and, though most of us search in vain for young seedlings, Bros. Hagedorn and Hampf are eminently successful. However, we refuse to be gullible and we say some unkind things about this pair. Tonight Mr. Jackson presides at a bullfest in one of the bunkhouses and then we turn in for the night.

September 15

We give the Jacksons a musical farewell and, after a short stay on the Seaside beach, we start down the Oregon coast. At the Grand Rapids (Ore.) Timber Co. operation we get some insight into caterpillar logging as opposed to high powered methods. Once more on the road, and we get a glimpse of the Tillamook burn. Our final stop of the day is at the Mt. Hebo Douglas Fir plantation on the Siuslau National Forest.

September 16

The morning finds us at the beach, and some of the hardiest swim in the much too warm Pacific. Farther down the coast we obtain our money's worth of sea lion smell and a stereotyped recitation from the guide at the Sea Lion Caves. Next, we delight the citizenry of Marshfield, Ore., with our graceful presence and go through their Port Orford Cedar Co. mill. The lady workers on the Venetian blind machines here are especially pleasing to the eye. Arthur dispels any idea we

entertain of staying in Marshfield overnight and we change our minds about taking in the local cinema, although it is necessary to page Hagedorn, who already has gone to the show. A bit of night riding brings us to China Flats about 10 p. m. via Powers, Ore. Despite assurances previously tendered to the contrary, we find animal life in the C.C.C. bunkhouse, and Pros. J. P. Brown and Ladle spend the night seeking the elusive bedbug in their sleeping bags. Rubisch, who is sleeping on the floor, finds it necessary to hang on to the leg of the stove to keep from being carried off.

September 17

The rising sun finds a group of determined-looking foresters engaged in the entrancing task of hunting down, herding, and driving bedbugs out of their bedding, and China Flats scores again when we meet our cookie, who so takes our eye that Bros. Hampf, Maul, and Caporaso feel constrained to help him wash the C.C.C. breakfast dishes. After a hearty breakfast, we view the newly erected headquarters of the Port Orford Experiment Station, and then we make the trek down to the Agnes Ranger Station. It was when Art fell on the trail here, that he is first heard to say "Damn!" This is one for Bro. Ripley. At Agness, we take to river boats for a thrilling ride down the Rogue River to Gold Beach. We are in cordial agreement that this ride is the high-spot of the whole expedition and heartily thank Asst. Supervisor Olson (an Idaho grad.) for the enjoyment he has given us. With supper under our belts, we cross the state line and put for the night at Crescent City, Cal.

September 18

We leave our beds reluctantly and proceed southward a short distance from town, where we see Redwood logging on the Hobbs-Wall Lumber Co. operation. We see some big fellows felled, and follow some of the logs to the mill to watch them being converted into lumber. Once more we hit the trail, and tonight we bunk down, after a long, grumbling session of night riding, at a place called Whiskey Creek, on the Siskiyou Forest.

September 19

We are awakened by what seems to be a pack of coyotes, but it turns out to be only Arthur giving a "rise and shine" call. We shake about one half an inch of frost off our sleeping bags this morning, and Bro. Dierkin has some very interesting observations to make anent his hitch-hiking ability. We move with all possible speed to Crater Lake National Park. After a very brief view of the lake we push on, and just outside the park the two truck crews engage each other in a snowball battle. Truck 1, with seven less men, manages to subdue the occupants of Truck 2 quite effectively. The losers are heard to gripe somewhat about alleged unfair methods. Bros. Caporaso and Groves, alone of the losers, fight with distinction. Only casualty is Bro. Galbraith, who stops one with his eye. Back to riding again, we come onto the Deschutes National Forest, where we visit the Pringle Falls Experiment station. We heartily dislike the heat and dust here, and even the trucks are affected. They take turns in refusing to run, and we are covered with dust and griping lustily when finally we limp into Bend, Ore., for repairs. The Ford agency cannot accommodate us and Arthur, who is now quite hardened, promptly offers another devastating "damn". Finally, however, the trucks are fixed again, and we settle down to some more night riding.

September 20

We are up bright and early and make an almost non-stop run to Moscow via Walla Walla, Colfax, and Pullman. We pull in about 3 p .m. so tired and dirty we ache, and it is only during the ensuing weeks that we begin to appreciate the trip fully. And the trip, too, though officially ended, is to have its repercussions when the China Flats experience brings on a Scabies scare, but we now know that the knowledge we gained was sufficient to overbalance our inconveniences and, on the whole, it was one grand trip!

Foresters' Banquet

(Continued from Page 35)

he had mimicked four foreign languages and all of the botany terms that Dr. Gail could throw at him.

With Ed cut of the way Toastmaster Styffe introduced the principal speaker of the evening, Mr. L. F. Livingston, Vice President of the American Forestry Association, and Director of the E. I. DuPont de Nemours Co. Mr. Livingston proved himself to be a very interesting speaker, displaying vigor, optimism, and straight forwardness from the word "Go." His topic dealt with the importance of Industrial Chemistry in American life and its relation to forestry.

Dean Jeffers concluded the formal part of the evening with his invitation to the students to stick around for a few moments and get acquainted with your guests. "They are all good human individuals, everyone of them. They are ordinary like you and I, and are anxious to meet us."

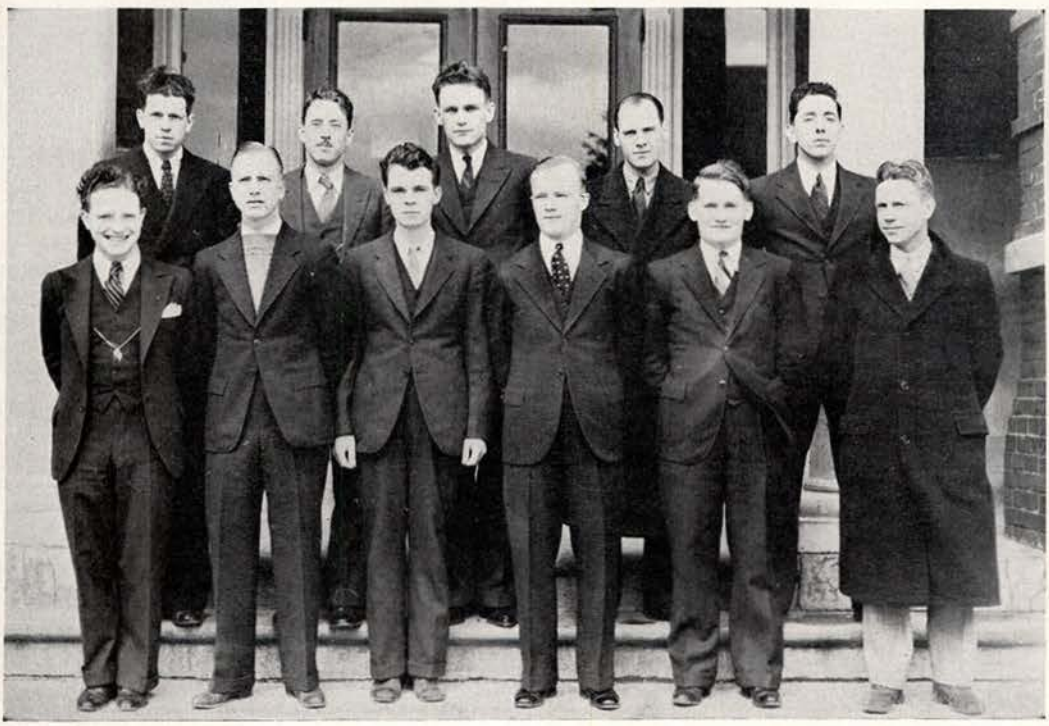
XI SIGMA PI

VIRGIL A. GOULD
FORESTER, EPSILON CHAPTER

Epsilon chapter of XI Sigma Pi, national honorary forestry fraternity, was installed at the University of Idaho School of Forestry in 1920. The fraternity was founded at the University of Washington in 1908. It now has chapters at 10 of the leading forestry schools in the United States.

The objects of Xi Sigma Pi are: to secure and maintain high standards of scholarship in forest education, to work for the upbuilding of the profession of forestry, and to promote fraternal relations among earnest workers engaged in forest activities.

To reward scholarship among Idaho forestry students, Epsilon chapter has maintained in the Administration Building, since 1922, a bronze plaque on which is engraved each year the name of the student in each class attaining the highest scholastic average. The names for the year 1936 occupy the last available spaces on the plaque. This year the local chapter has purchased a duplicate plaque which will be placed beside the old one, and the same procedure will be continued. Those receiving this honor last year were: Senior, Richard F. Bickford; Junior, Virgil A. Gould; Sophomore, Jonathan W. Wright; and Freshman, J. Clifton Windl.



Back Row, left to right: Maurice Yearsley, Prof. Willison, George Weyerman, Paul Anderson, Thomas Wilson.
Front Row, left to right: Donald McKeever, Marlin Galbraith, Jonathan Wright, Virgil Gould, Harold Heady, Dr. E. R. Martell.

In 1933 the local chapter instituted an award for seniors. Any graduating senior in forestry having an average grade of not less than 4.5 for his first two years and 5.0 for his junior and first semester of the senior year is eligible. The candidates are given a weighted grade on the basis of: scholarship, 50 per cent; professional interest, 15 per cent; personality, 15 per cent; practical experience and recommendations regarding the same, 10 per cent; and leadership, 10 per cent. The award consists of membership in the Society of American Foresters and a year's sub-

scription to the Journal of Forestry. Membership in the Society of American Foresters is attainable only through nomination and election by a section of the Society; hence, our chapter shall recommend the award winner to the Northern Rocky Mountain Section. The winner this year was Virgil A. Gould.

An award sponsored jointly by Xi Sigma Pi and the Associated Foresters is a silver loving cup which is held each year by the class winning the track and field meet at the annual barbecue. It was won last year by the senior class.

Epsilon chapter has held monthly banquets or luncheons at which have been presented interesting talks. Speakers have been Dr. Roxford F. Daubenmire, Assistant Professor of Botany, Mr. Leo L. Anderson, District Conservator, Soil Conservation Service, Dr. Chas. F. Virtue, Instructor in Philosophy, and members of the group.

The sixth annual formal dance was held on May 14 at the Sigma Nu house. Members of the senior class in forestry and officers of Alpha Zeta, Agricultural honorary, were guests of the chapter. A most enjoyable evening was had by those present. Patrons and patronesses were: Dr. Rexford F. Daubenmire, Mr. and Mrs. Allan Janssen, and Mr. and Mrs. H. E. Lattig.

New members initiated this year include: Dr. A. B. Hatch, A. W. Slipp, Robert S. Opie, Maurice C. Yearsley, Jonathan W. Wright, Harold F. Heady, Dwight R. Cable, Andrew J. Singley, Frank J. Kapel, and Noel L. Hallett.

The officers for the present school year are: Forester, Virgil A. Gould; Associate Forester, George F. Weyermann; Secretary-Fiscal Agent, Marlin C. Galbraith; and Ranger, Thomas I. Wilson.

Requirements for Training of an Industrial Forester in the Lumber Industry

(Continued from Page 7)

when the knowledge and experience of an industry must be coupled with it to produce an industrial forester.

Two types of skill, manual and mental, are required of this type of forester, perhaps in greater abundance than for other types.

The mental skill required is, of course, versatile and at once intensified in order to fit the professional man for a wide range of activities within such an industry. The student must first possess the traits of character and the viewpoints which adapt themselves to the particular kind of activity chosen. He must combine practical knowledge of a complicated industry with an intensive knowledge of such sciences and arts as are essential to his professional work.

The educational training should stress a mastery of the fundamental sciences, of the required forestry courses, of a practicing knowledge of such subjects, seasoning of wood, wood technology and others; and should favor a type of curriculum which furnishes these essential courses and also makes possible the selection of elective courses grouped under heads which give the student an opportunity to specialize in his fourth and fifth year of college. Five years of educational training is little enough to prepare for professional service in the industrial field and a longer period of training for certain specialized subjects is essential. If possible the elective list should be flexible enough to permit a number of cultural courses related or unrelated to the general curriculum. The prospective professional forester should, lastly, either during or after gaining his educational training, endeavor to acquire by working contact with the various steps, a practical knowledge of the harvesting, manufacturing and marketing of the wood products produced by the branch of the industry he plans to enter.

Education for Forest Research

(Continued from Page 14)

addition he is possessed of a burning curiosity concerning all things about him. As a boy he probably took the family alarm clock to pieces to find out what made it run, and drove his parents to the verge of desperation with a tremendous barrage of unanswerable questions on every conceivable subject. His education has included, in addition to his work in forestry, a broad training in the fundamentals of the physical and biological sciences, so that he is ready to select and appreciate the significance of those technical facts and principles which he must use. If he is as successful as we hope, he will be called upon to supervise the work of a corps of specialists, each one of whom will know a great deal more about the particular subject concerned than he. But his training in scientific principles will have given him such understanding of and sympathy for this specialized work that he will not only inspire his corps of scientists with his enthusiasm, but will subject their results to a fine discrimination by virtue of his training in scientific method. He will be always an uncompromising seeker for truth, bringing a rigorously disciplined mind to the problem of ferreting out weak or fallacious thinking.

ALUMS

Ahlskog, Ralph, '33 U. S. F. S. District Forest Ranger at Rapid River, Michigan. Ralph is now married to Catherine Herbert of Manistique, Mich. Ceremonies took place on Sept. 12, 1936. "Work is as interesting and more diversified than ever before. Have moved into new headquarters, recently constructed, which gives us office facilities better than we usually have been accustomed."

Ahrenholz, F. W. '—, Day Lake Camp F-34. Marcell, Minnesota.

Albee, Leslie R., '35. Leslie left the Experiment Station at Ogden in October, 1936, to accept an appointment with a division of the Soil Conservation Service called TC-BIA in capacity of J. R. E. on range survey. "The Southwest is extremely interesting but I am hankerin' to see some trees other than 'sahuaros'," Leslie allows that he is still single. His address is P. O. box 731, Albuquerque, N. M.

Anderson, Bernard A., M.S.(For.), '28. Still connected with the Forest Service. Since last year he has been transferred to the Nezperce Forest as Assistant Supervisor. All your notes should be addressed to Grangeville, Idaho.

Anderson, Paul L., '36, Moscow, Idaho, has been an Assistant Instructor at the U. of I. School of Forestry since November 5, 1936, helping the faculty "out".

Andrews, Milton D., '32, Eveleth, Minnesota, is now U. S. Forest Service Nurseryman in charge of the Eveleth Nursery on the Superior National Forest. Having become married in 1932 we wonder if he is in charge of only the one nursery.

Arthurs, Aubrey J., '34, P. O. Building, Redfield, South Dakota. Has been in Redfield working on 40 miles of Shelterbelt strips in that vicinity since September, 1935. "I still prefer Idaho to South Dakota," he says, "climate, customs, friendships, square meals, and 'females'."

Aust, Paul W., '32, Junior Forester, Upper Michigan National Forest, Manistique, Mich. "They are really up and at 'em back here," he says. "Quite intense in all lines." Martial status—knot tied quite awhile ago, result of a college romance. "I miss the mountains of R-1, and pick up all news eagerly that drifts here from the campus."

Balch, A. P., '29. "Bones" is happily married, has no children and is now a ranger on the Gros Ventre district of the Teton National. Having just got back from a month's vacation, "Bones" was very much surprised to find that Art Buckingham had taken over the reins as a Deputy Supervisor on the Teton, "Ha . . . now for a good bull-fest."

Bauman, Herman, '24, Caterpillar Tractor Company, San Bernardino, Calif.

Beals, Wilfred F., '27. Last reports from Wilfred was from Conconully, Wash.

Bennett, Carey H., '29, Box 1770, Plaza Station, St. Lois, Missouri, has been with the Biological Survey since his graduation. His latest appointment was to the position of Associate Refuge Manager for the states of Tennessee, Illinois, Iowa, Missouri, and Kansas. Flash! "Shorty" became the proud father of a bouncing baby girl on March 4th of this year.

Bickford, Richard F., '35, 422 East Huron, Ann Arbor, Michigan.

Bidwell, Jesse L., '20. M.S. Oregon State college, '24; Ph.D., Yale '32, 630 Post Office Building, Portland, Oregon. Pathologist, in charge, Division of Forest Pathology, U. S. Forest Service, Portland, Ore.

Benson, Rudolph J., '34. Assistant Ranger, Phelps Ranger District, Eagle River, Wisconsin, since June, 1935. "Rudy" has been married since November 3, 1935.

Biker, John B., '28. His last address was Trail, B. C.

Bolles, Warren H., '26, M.F., Yale '29, 424 U. S. Court House, Portland, Oregon, is still working on the forest survey in the Pacific Northwest.

Brown, Charles G., '36, 314 West 24th, Vancouver, Washington. After spending the entire summer of '36 in touring the United States, "Charley" has finally settled down to serious business with the U. S. Forest Service, having a J. F. appointment on the Columbia National Forest. Lately he has been working at the Forest Headquarters on the annual fire report, and on administrative studies.

Brown, Dr. Frank A., '22, 127 South Los Robles, Pasadena, Calif.

Brown, Harold G., '33, 3509—14th N.W., Washington, D. C. Harold has been in Washington, engaged in Emergency Conservation work by the Indian Service. Last report has it that he is still single.

Brown, Richard I., '31. His last address was U. S. Forest Service, Arcadia, Missouri.

Brown, Stewart E., '35, is working in the silviculture department of the Northern Rocky Mountain Experiment Station, Missoula, Montana. We saw "Stew" at the Banquet this year.

Buckingham, Arthur, '30, Assistant Supervisor on the Teton Forest, with headquarters in that frontier town, Jackson's Hole, Wyoming. "Buck" is the proud father of a boy since last summer. We haven't collected the cigars—yet.

Burroughs, I. C., '27, M.F., Yale '28, is still on the T.V.A. project, Knoxville, Tennessee.

Burton, C. Leslie, '30, 123 W. Eighth St., Leadville, Colorado, is still District Ranger in the Cochetopa National Forest.

Callender, William C., '27, is reported by C. A. Bickford, M.S., '31, to be on the Kisatchie National Forest at Alexandria, La.

Carlson, Chas., '36, Lewistown, Montana, c/o Jack Hinman, U. S. F. S., working on Range Conservation for the Forest Service. "Chuck" is boosting for bigger and better ranges while he is still single.

Clarke, Stanley C., '32, 421 North Amherst street, Albuquerque, New Mexico; "In the land of sunshine and busy cooperating with the State of Utah on research studies, to be started during the next fiscal year." (A cooperative arrangement between S.C.S. and Utah Agriculture Experiment Station.)

Cochran, A. R., '34, U. S. F. S., Warren, Pa. Assistant Supervisor, Allegheny National Forest, only National Forest in Penn's woods. Famous for its deer population (33,000 bagged in 1935 season)—have bear, and beaver ($5,000 worth of furs trapped last season). Three million people within a day's drive of the forest. Practically all land capable of supporting site one hardwood and hemlock-hardwood stands. Productivity of a large area for timber depends on planting because of repeated fires after logging. Close utilization of products for lumber, distillation and hardwood and hemlock pulpwood. Thinnings yield 5 cords per acre in hardwood stands 35 years of age by regular timber sale procedure.

Connaughton, Charles A., '28, M.F., Yale, '34. Still with the Rockey Mountain Forest and Ranger Experiment Station at Collins, Colo. At present he is working on watershed management investigations under the direction of R. E. McArdle.

Coonrod, Melvin, '32. Mel is now Ranger on the Porcupine District of the Targhee, stationed at Ashton, Idaho. He can boast of two children, both girls, and darn cute too. Mel says they never cry.

Cossit, Floyd Morgan, '32. So far as we know he is still working on the Shelterbelt Project. His headquarters was at Lincoln, Neb., the last word we had from him.

Crawford, Kenneth, '36, Darlington, Idaho; Junior Range Examiner for Nez Perce County, expecting a J. F. appointment in Region 4, effective March 1.

Cranston, William V., '33. Assistant Ranger on Womble Ranger District since October 20. "Had the pleasure of seeing both Larry Newcombe and Bill Callendar in October. Callendar is on the Kisatchie and Newmombe on the De Sota. I believe both are Management Assistants on the Supervisor's staff of the two forests."

Cruz, Eugenio De La, '26. The last we heard from him he was working with the Bureau of Forestry at Manila, P. I.

Cummings, Lewis A., '25, his last address was U. S. Forest, Del Norte, Colorado.

Cunningham, R. N., '17, 1465 N. Cleveland ave., St. Paul, Minn. "Russ" is now in charge of Forest Survey at the Lake States Forest Experiment Station at St. Paul.

Daniels, A. S., '23, 2633 Pemberton Drive, Houston, Texas. There is little news about myself. I am still Superintendent of the Southern Pacific's wood preserving plant. We are installing considerable additions, manufacturing pre-framing bridges, manufacturing road way signs, etc., in addition to wood preservation. If you give me a paragraph in the Idaho Forester, wish you would include a notice for Idahoans to get in touch with me when they come to Houston. They will generally get at least a meal out of it and I get the latest news. I am listed in the telephone book."

Daniels, K. M., '33, is now located on the Cascade National Forest as a District Ranger, on the Long Valley District. "Kenny" says, "The Payette Forest personnel is beginning to resemble an Idaho Alumni Association with three Idaho rangers and a clerk from the business school."

Davis, Brennan Briggs, '35. Our last word from Brennan found him as Junior Forester, Camp Jackson, Jackson, Ohio.

Decker, Arlie D., '13; M.S.(For.) '17. We believe he is still with Potlatch Forests, Inc., Lewiston, Idaho.

Dittman, Clarence P., '31. So far as we know he is located with the Lake States Forest Experiment Station, University Farm, St. Paul, Minn. He had been doing experimental planting in western Kansas in connection with the Plains Shelterbelt Project.

Drissen, John P., '21, is Forest Supervisor, Fort Hall Indian Reservation, Fort Hall, Idaho.

Eastman, Virgil H., '31. The last we heard he was a J. F. in the Clearwater Forest at Orofino.

Edwards, Milton Bromely, '35. Last year Milton was a Junior Forester at Camp Sawyer, U. S. Forest Service, Winter, Wisconsin. We don't know whether he is still there or not.

Edwards, Milton B., '35. Milt is still in Wisconsin holding the position of camp superintendent at Camp Ghost Creek. "I am still single and have no children to speak of." Hayward is the town.

Ellis, F. Gordon, '28. We haven't heard from "Fran" for two years so don't know where he is or what he is doing.

Ensign, Warren W., '33. Warren is employed as District Ranger at Libby, Montana. His station is located at Warland, Montana and where he has developed a hobby at writing reports. Warren says there are no children. . . . He must be married boys, although we have no record of it here.

Favre, C. E., '14, M.S.(For.) '15, will now be found in Ogden, Utah, connected with the Forest Service. Favre says he likes his new work immensely and meets lots of Idaho graduates.

Farmer, Lowell J., '30, M.S.(For.) '31. Two boys since last year. He says, "No further family increases; am doing insect control work in Ponderosa Pine (Black Hills Beetle) on the Powell National Forest. Hobby—taking poor pictures and reading about insects; title—Junior Entomogist; employer—U. S. F. S."

Farrell, J. W., '22, U. S. F. S., Ogden, Utah. I am as yet assigned to the Regional Office of the Intermountain Region (Region 4) in charge of timber management. We also handle all work connected with the State and Private Forestry divisions of the Region.

Ficke, Hermon O., '31. No news of Herman this year. The last we had was that he transferred under an appointment from N. R. M. For. and Range Expt. Sta., to Helena National Forest as Forest Range Examiner in charge of Elliston Ranger District, Elliston, Montana.

Field, Walter D., '26, is still with the Potlatch Forests, Inc., Lewiston, Idaho.

Fifield, Charles E., '32. The last we heard from him he was working on the Plains Shelterbelt Project, with headquarters in the Sharp Bldg., Lincoln, Nebraska.

Fisher, George M., '33. George is now District Ranger, Anaconda District, Deerlodge National Forest, with headquarters at Anaconda, Mont.

Fore, Orlando, '36, is back in Moscow working for a Master's degree. He's single again and as healthy as ever.

Fox, Charles E., '28. On November 15 I became District Ranger on the Leadville District, Cochetopa Forest, Leadville, Colorado.

Frayer, Hume C., is now Junior Forester on the Allegheny National Forest, with headquarters at Warren, Pennsylvania. He writes, "The ramifications of forestry seem to be increasing by leaps and bounds, as do the requirements placed upon forest school graduates. For instance, Region 7 forests of the Forest Service have in the past year created the Staff Assistant position of Education and Information. It requires the issuing of news releases, news letters, preparation of exhibits, photographic work, feature articles, educational motion picture work, lectures, supervision of cooperative enrollee education, execution of 'show me' trips, and so forth." Hume now has this job. His address is 10 Conenango Place, Warren, Penn.

Fredric, Jack L., '34. We haven't heard from Jack for over two years. His home address is 305 Garden Avenue, Coeur d'Alene, Idaho.

Freese, Herbert J., '35. No news from him this year. Last year he was Junior Forester on the Boise National Forest, working on a timber survey.

Fritchman, Holt, '31. Holt is District Ranger on the Payette. He writes, "Married but no family." Drop him a line at Cascade, Idaho.

Gaffney, Wm., '34, Kalispell, Montana. He has given us nothing new about himself, and so far as we know he is still Senior Forest Ranger on the Upper Swan River District of the Flathead National Forest.

Garin, George I., '29, M.S.(For.) '30, Dixon, Montana. George is still E. C. W. Project Manager, U. S. I. F. S. Flathead Indian Reservation.

Genaux, Charles M., M.S.(For.) '29. Address Dept. of Forestry, Iowa State College, Ames, Iowa. The boys of Iowa State are now the ones who are continually worried about the next Forest Mensuration quiz. (Charlie is the prof) but we are willing to bet that his students really understand Forest Mensuration. He spent the summer with the Foresters' Summer Camp on the Coconino National Forest at Flagstaff, Arizona.

Gerrard, Paul H., '23. Paul was transferred to Region 8 as Clarke-McNary Inspector. In March, 1937, he was transferred to the Nantahala National Forest as supervisor at Franklin, N. C. "Timber sales are very active in salvaging blight killed chestnut. It is also planned to utilize large tracts as game management areas. This with a large acquisition program ahead, fire protection, publicity, E. C. W., recreational development, etc., all make it a very interesting job."

Gill, Tyler S., '31, is Ranger on the Chequamagon National Forest, Park Falls, Wisconsin.

Gillham, Norman F., '26, Reno, Nevada. He is with the U. S. Biological Survey and is acting Junior District Agent in Reno.

Godden, Floyd W., '27. It seems that Floyd is doing very well in the Service. He is now Forest Supervisor of the Salmon National Forest with headquarters at Salmon, Idaho. He has three children.

Goenne, Fred W., '36, is working for Potlatch Forests, Inc., at Headquarters, Idaho. After last summer's woods strike, Fred probably now well understands the woes of lumberjacks, the worker's right to strike, and the high (?) principles of the I. W. W.

Greene, Edwin G., '27, Moscow, Idaho. "Long" is doing his utmost to keep the college boys all cleaned up with his "Valet" services.

Gregory, C. A., '28, U. S. F. S., Virginia, Minn. No news from "Spike" this year. Last reports leave him with the Mesaba District, Superior N. F. as District Ranger.

Groom, Jack I., '35, is now District Ranger on Burnt River District of Whitman National Forest at Unity, Oregon. Jack has become interested in photography but has little time to indulge in his new hobby. At last Jack is married! We were expecting it last year but he must have been waiting for June.

Guernsey, William G., '29, has been with the Coeur d'Alene National Forest since July 1, 1935.

Gustafson, Carl A., '27; M.S.(For.) '29, Associate Forester Division of Fire Control, R. O. Region 5, San Francisco, Calif.

Hamm, Harley, '36, Range Examiner for Nez Perce County. Work terminating soon, no further information.

Harlan, Paul M., '25, 1329 Clay Street, San Francisco, Calif.

Harris, Thomas H., M.S.(For.) '30, 610 Syndicate Bldg., Oakland, Calif. Tim is still with the Office of Blister Rust Control, Bureau of Entomology and Plant Quarantine where he has been since 1928. "My work consists of the supervision of the checking of all areas freed of Ribes in the Sugar Pine Region, which comprises California and Oregon. In addition I handle a considerable part of the administrative work of the main office in Oakland."

Hayes, G. Lloyd, '34. Lloyd is still at the Northern Rocky Mountain Forest and Range Experiment Station at Missoula, Montana. He is working as a Technician assigned to fire research. We wonder if he is still single. He didn't say anything about it in his letter.

Hepher, William S., '31; M.S.(For.) '32. No further word from "Bill". His last address was Boswell, B. C.

Herman, Charles H., '13, is still located at 631 West Jackson, Medford, Oregon.

Hill, Edward B., '31, Painter, Wyoming. He is Senior Ranger on the Sunlight District, Shoshone National Forest in Wyoming.

Hockaday, James M., '31. Jim can now be found at May, Idaho, as District Ranger. Still married. Jim says Rover is feeling fine.

Hoffman, Henry C., '26; M.S.(For.) '28, Paris, Idaho. "Hank is still with "Uncle's" Forest Service there in Paris.

Hopkins, Jesse K., '33. No news on "Pete" except that his address is now 36 Bengel Terr., Rochester, New York.

Hultman, Anders G., '36. Some Place, Some Where. Haven't any word as to "Teabone's" whereabouts. He'll probably come out of hiding when the high snows go off this spring.

Hume, John F. Jr., '31. John was married Sept. 6, 1936. He is still with the National Park Service, State Park Division, Chatcolet, Idaho. He writes that Rex Wendle, a classmate, is still Project Supervisor there.

James, Corland L., '33, is now employed as a Junior Forester in the U. S. Forest Service, Kaniksu National Forest, Sandpoint, Idaho. His duties consist of timber sales and stand improvement work.

Jay, James Wilbur, '34, is still assistant superintendent of the U. S. Forest Nursery in Manistique, Michigan. No word from him this spring.

Jemison, George M., '31, is Assistant Forester in the Northern Rocky Mountain Forest and Range Experiment Station in Missoula, Montana. He is still engaged in fire research and spends his summers at the Priest River Experiment station in Northern Idaho. "Since the last report a daughter has arrived. Now 9 months old (born June, 1935) and would wear down three good smokechasers keeping track of her. Idaho School of Forestry is well represented here at the Experiment Station. To enumerate, there is Lloyd Hayes, John Hayes, Chuck Wellner, Stuart Brown, and yours truly. . . . " George spent last winter at Yale, receiving his M.F. in June, 1936.

Jensen, Ralph, Present address, Intermountain Forest and Range Experiment Station, Ogden, Utah. "News about myself is short and small at present. May I postpone this part until sometime after January 15. There may be some changes in my whereabouts and work."

Jeppesen, Marvin S., '21, was transferred from the Reese River District during December, 1936, to Austin, Nevada.

Johnson, Robert B., '32, formerly District Ranger on the Sawtooth National Forest with headquarters at Hailey, Idaho; has been promoted to the position of Assistant Supervisor of the Challis National Forest, and is now located at Challis, Idaho.

Johnston, Royal H., '27, has been with Potlatch

Forest, Inc., since graduation. He is now assistant timekeeper at the mill at Lewiston, is married and has two children. "Jerry" says he would like to hear from some of the old gang of rebels of '27. Address, 917 11th Ave., Lewiston, Idaho.

Kennedy, Fred H., '29, Assistant Range Examiner, on the Supervisor's staff of the Lewis and Clark National Forest, Great Falls, Montana. No word from Fred this year but he had two future foresters in the family last year.

Kraemer, J. Hugo, '34, is Junior Forester at the Northeastern Forest Experiment Station. He has been working there since July, 1935, on production cost studies and growth studies.

Krueger, Otto F., '29, assistant in Grazing and Fire Control on the Klamath Reservation, Klamath Agency, Oregon.

Krummes, William T., '30. Bill is still with the Biological Survey, working on the Migratory Waterfowl Refuge Program, Washington, D. C.

Langer, Charles, '30. No word from Charlie, but Hockaday says that Langer is now District Ranger on the Challis with headquarters at Stanley, Idaho.

Lansdon, William H., '27, Building "A", Wilson Dam, Alabama, Tennessee Valley Authority, Assistant District Erosion Engineer, Reforestation and Soil Erosion control on both government and private land. Married, no children.

Le Barron, Russell K., '31, Box 248, Ely, Minnesota. Russell is at the Superior Branch of the Lake States Forest Experiment Station at Ely.

Lehrbas, Mark M., '27, New Orleans, Louisiana, Assistant Director Forest Survey. "Polly" says he even sees a few Idaho fellers down there.

Lindsay, Clive J., '31, Hazelton, Idaho. Is manager of the Hazelton Bean Growers' Corporation Warehouse. We hope his dream of becoming a stockman is being realized.

Lord, Philip B., '33, Lakeshore, California. "Phil" is District Ranger, High Sierra District, Sierra National Forest.

Lundstrum, F. J., '11. Last address, 1613 North Harvard Blvd., Los Angeles, California. Married, two girls. Resident Engineer, L. A. County Road Department.

Lyons, Raymond D., '35, U. S. F. S., Manistee, Michigan. "Ray" is working on the Master Plan for the Manistee Ranger District.

Makara, Frank.——404 W. 115th St. New York City. Has completed his Ph.D. work at Columbia in the Department of Chemistry. Now looking around for a position in which to settle down for life.

Malmstem, Harry E., '17. Assistant Professor of Forestry at the University of California, teaching fire protection and range management.

McCormick, Henry, '35, Hale, Michigan, c/o W. J. Vaughn. "Mac" is Junior Forester on the Huron National Forest.

McKeever, Donald G., '36. Don is working toward a master's degree in Forestry at the University of Idaho on a fellowship from the Soil Conservation Service.

McLaughlin, Bob, '25, Logan, Utah. Bob is still an Assistant Professor of Forestry at the Utah State Agriculture College. He met Clarence Olson and Bill Guernsey at the Portland meeting. Says Clarence has added a couple of chins.

McNair, J,. M.S.(For.), '34, Longview, Washington. "Mac" is doing good work for the paper interests of the Weyerhauser Corporation.

Miller, Douglas R., M.S.(For.), '32. Doug is employed by The Bureau of Entomology and Plant Quarantine, in capacity of Associate Forester. Doug's hobby is rattlesnake shooting. He got 146 during the field season of 1936. His family is one wife, one boy, one girl. You will find him at 1440 Broadway Ave., Oakland, Calif.

Miller, William Byron, '32, Associate Ranger Examiner, U. S. Biological Survey. Stevenson, Washington is the permanent address. Still two in the family from what we can learn.

Mitchell, William W., '28, 1729 Eye St., N. W., Apt. 203, Washington, D. C. Still has the same job with the U.S.F.S. in Washington.

Morganroth, E. S., Box 1999 Boise, Idaho. Assistant Forester in charge of Forest Management on the Boise National Forest. Earl enjoyed his three year experience in Alabama, Tennessee, and Virginia, but says that Idaho is good enough for him. Has two daughters.

Moss, Virgil D., '32, M.S.(For.), '33, 618 Realty Bldg., Spokane, Washington. He is Assistant Pathologist, Blister Rust Control.

Munson, O. C., '21. Supt. of Maintenance and Installations, Pacific Telephone & Telegraph Co., San Jose, California.

Munthe, Bert P., '35, Camp Vinton, McArthur, Ohio. Bert is holding down a position as Junior Forester.

Nelson, Harvey F., '36, Forest Service, Challis, Idaho. Has been in the Challis National Forest since graduation. First as ECW Technical Forester and since November, Junior Forester.

Nero, Edward T., '23. The last we heard from Ed, he was working for the Boise-Payette Co., Boise, Idaho.

Nettleton, H. I., M.S.(For.), '28, Central Agency, Arizona. Harry is Assistant Director of Land Management, Navajo Indian Reservation.

Newcomber, Fred R., Halsey, Nebraska. Senior

(Continued on Page 51)

METEOROLOGICAL STRUCTURE OF STORMS

By M. P. Leonard

Fire protective organizations in the National Forests have been built up to a fine point of perfection, and extensive study is being done to improve their efficiency. But these organizations will never be able to cope with extreme situations, such as occurred in 1935, until more accurate and more advanced storm predictions can be made.

Before advancing any theories, the meteorological structure of lightning storms should be discussed. Lightning storms occur in low pressure areas where the temperature and relative humidity are high and convection currents have developed. The important thing to bear in mind is that a low pressure area is necessary before a lightning storm can occur.

A low pressure area is formed by excessive heating at the surface of the earth. The insulation received by the sun is radiated back into the atmosphere. This causes the air near the earth to become heated and expand. Consequently this warm air will become lighter per unit volume than the surrounding air and a column will weigh less than normal. This process may take place over both large and small areas. Thus a low pressure area is formed which may eventually cause lightning storms.

Lightning storms may develop in connection with low pressure areas in two principal ways. A cold wedge of air, which is denser and consequently heavier than warmer air, may move in on a low pressure area. It will gradually force its way under the warmer air of the low pressure area. The warm, moisture laden air will begin to rise. As the cold air continues its advance, the warm air continues to rise, a convection current is formed. The warm air is cooled adiabatically at the rate of about 1.6 degrees F per 100 feet rise. A point is soon reached, depending upon the amount of moisture in the air, where condensation will take place. This point is commonly called the cloud level. During the process of condensation, heat is liberated, the air is prevented from cooling as rapidly as dry air, and it continues to rise. The rising air finally reaches equlibrium and a cumulus cloud is formed. Cumulus clouds are characterized by billowy tops and flat bottoms. Their presence in the sky indicates the presence of a convection current.

If the cumulus cloud becomes over-saturated, gravity begins to pull upon the water particles and raindrops begin to fall. As they pass through the cloud, the drops collect more moisture and gradually increase in size. The speed of their descent causes the drops to assume shapes similar to a bomb, the lower portions being round and the upper parts pointed.

It is common knowledge that both positive and negative ions are present in the atmosphere. It is also definitely known that the earth carries a negative charge. Consequently, since like ions repulse each other and unlike ions attract, the negative electricity in the earth literally forces the negative ions in each raindrop to the top portion, or tails, leaving the positive ions in the lower part of the drop. If the drops become large enough, friction tears at them and the upper part, or tail, will be torn away. This portion of the drop will be much lighter than the main body and will be carried upward by the convection currents. And it will carry negative ions since the negative charge was in the tail of the drop. This process will result in a large negative charge in the upper part of the cloud. If it becomes large enough to change the negative charge in the earth immediately below the cloud to a positive charge, a difference of potential will be built up, and a lightning flash will occur between the cloud and the earth. Or a flash may occur between negatively and positively parts of the cloud. Again it take place between two clouds. It is the repetition of this process that causes any number of lightning strikes during the course of a storm.

The type of lightning storm described above usually occurs in the interior of a low pressure area that extends over a large area. The line of demarcation between the low pressure area and the encroaching colder air is called a wind-shift line. It usually extends the length of the low pressure area. It is along this line that turbulence and lightning storms are found. More than one storm may take place at the same time along the line. The advance of the cold air upon the low pressure area tends to make the southern end of the area pointed.

The second type of low pressure area in which lightning may occur can bt called the local type. In this case the air at the surface of the earth becomes heated to the extent that a convection current is developed. If this rises sufficiently fast, condensation takes place and clouds and rain are formed. As the cold air rushes in towards the center, forcing the warm air upward, turbulence is formed around the outer edges of the low pressure area. Potential differences are created as in

the previously described case and lightning results.

The first place to look for evidence of lightning storms is in the places where low pressure areas are likely to form. In most of the states of the Northwest there are large areas of desert wastelands. The deserts of southeastern Oregon and southeastern Washington are good examples. In these areas, radiation from the earth's surface is especially pronounced. During the day the ground becomes exceedingly warm. Consequently the adjacent atmosphere becomes heated, expands, and becomes lighter than normal. A low pressure area is formed.

In desert areas east of western mountain ranges, these low pressure areas must form. Since the prevailing winds blow from the southwest, air is cooled adiabatically as it crosses the mountains. After breaking over the tops of the mountains, the air is again warmed adiabatically but does not become as warm as the air within the low pressure areas. It, therefore, flows down the east slopes of the mountains and undercuts the low pressure areas. Convection currents are formed, cumulus clouds appear, and lightning storms develop.

When they do, lightning storms occur over the mountain ranges if they form to the east of the ranges, and the prevailing winds are from the southwest. The storms which occur on the west slopes of the ranges undoubtedly are caused by local low pressure areas formed on the west coasts. Here the atmosphere contains so much moisture that it does not have to rise to high elevations to reach the dew-point. The resulting turbulence is carried to the north and northeast by prevailing winds. It may be carried eastward beyond the mountain ranges.

In the storms formed on the east side of the ranges, the convection currents mushroom at the tops. A single cumulus cloud may be as much as six miles thick and may cover a large area. As it mushrooms at the tops, the western edge may extend beyond the mountain range to the west. If the storm weather extends over the entire northwest, the storms formed on the east sides of the mountains may combine with those formed on the west side, and a general lightning storm will occur.

Local storms may occur in any locality where sufficient air has been warmed to cause a convection current. According to certain investigators, only an average of one fire per day results from local storms in western Oregon and Washington. This is undoubtedly because the local storms are small and involve comparatively small amounts of moisture. Where small amounts of moisture are involved, large potential differences are not built up. Therefore, lightning strikes do not occur so often and with such great force.

Investigations have shown that 90 per cent of the lightning storms occur between 10:00 A. M. and 10:00 P. M. This is concrete proof that the earth must be warmed and low pressure areas formed before storms can occur. The storms that occur at other times of the day or night must be either hangovers from storms formed during the day, or the result of extremely warm, humid nights. Investigations have also shown that storms move at an average rate of 20 miles an hour. It should not be difficult to trace them back to their origin.

The main difficulty experienced in the collection of lightning storm data seems to be that no data have been recorded in places other than national forests. Naturally, national forests are found in timbered, mountainous areas. It is in these areas that lightning storms occur, but they are not formed here. The U. S. Weather Bureau has stations scattered throughout the country, but even their stations are lacking in the desert areas. In order to issue accurate and timely storm predictions, weather stations should be installed throughcut the desert areas. They would then be located in the "breeding grounds" of lightning storms. It would be possible to record especially pressure data. Low pressure areas in the process of formation could be observed. Consequently, forests to the north and east could be warned in advance. "General" storm days, which are responsible for approximately 80 per cent of the lightning fires, could be accurately predicted.

If the national forests would install a barometer at each ranger station, and at certain lookcuts, "local" storm days could be predicted. It would also be necessary to install barometers at points outside the national forests where local low pressure areas are likely to form.

The writer has observed lightning storms in northern Idaho for the past seven years. Approximately 90 per cent of the large storms come from the southwest. They appear to be formed in the "Palouse country" and southeastern Washington. The turbulence formed in these semi-desert areas is carried with the prevailing winds. In some cases, local topography deflects the storms from their northeasterly path and they proceed to the north. Undoubtedly, evidence of the formation of these storms can be found in the "breeding grounds". If adequate weather stations were installed in these "breeding grounds", situations,

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similar to that of July 23, 1935, would not arise.

Lightning storm occurrence is a cut-and-dried proposition. After a lightning storm has passed, it is easy to plot its course and concentration on maps. Zone maps are available in every forest supervisor's office. They have been used in connection with fire planning and have consequently served their primary purpose.

Lightning storm prediction is in its infancy. Extensive research must be done in their field, or our highly organized protection organization is helpless. In a good many cases, over-load organizations have been a day late. Large fires occur each year and will probably continue to occur. But their prediction can be reduced to a near certainty.

The theories advanced in this report are based on common sense and a smattering of knowledge of the various meterological elements. They may lead the way to new fields of investigation.

ALUMS

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Forest Ranger on Bessey District of the Nebraska National Forest. This last fall has been working on the 1936 R.C.P. covering Kansas and into Colorado.

Newcomb, Lawrence S., '33, c/o The United States Forest Service, Sumatra, Florida. Larry is working as Junior Forester on the, Tallahassee National Forest.

Olsen C. C., '26, Assistant Supervisor, Siskiyou National Forest, Grants Pass, Oregon. Recalls the senior field trip, in that it gave him opportunity to hobnob with Art Sowder and others.

Olson, Oscar A. Jr., Ex-'27, Meinrath and Company, 120 Wall Street, New York, N. Y. He is handling sugar sales to manufacturers and others. He and Mrs. Olson have two boys, ages 4 and 6 years.

Opie, Robert S., '34. Bob is at present doing graduate work in Forest Pathology at the University of Idaho, Moscow, Idaho.

Otter, Floyd, '29. Master of Forestry, University of Michigan '33. Soil Conservation Service, Spokane, Washington.

Parker, John W., '34, Cascade, Idaho. John is Forest Ranger on the Thunder Mt. District of the Payette National Forest. Last year we found that he was married but this year we did not hear from him.

Pierson, Royale K., M.S.(For.), 33, University of Idaho, Moscow, Idaho. Pierson is now Extension Forester for the state of Idaho.

Pugh, L. R., '26, Springston, Idaho. Sales manager for the Russell and Pugh Lumber company.

Quesnell, Clinton, '36, Lemhi, Idaho. Working as a J. F. on the Salmon National Forest. Pinch-hitting here and there.

Redman, E. E., '34, Grazing Department, Forest Service, Missoula, Mont. Technician on Grazing Surveys. Still married and so far as we know, he has no children.

Richards, Hod., '33, 826 Delaware, Bend, Ore.

Renshaw, E. W., '25, U.S.F.S. Cleveland, Tennessee. Apparently Mr. Renshaw has been transferred from Lincoln, Nebraska to Cleveland, Tennessee.

Rettig, Edwin C., '19, Potlatch Forests, Inc., Lewiston, Idaho. Rettig is Land and Log Agent and Forester for Potlatch Forests, Inc. He is also president of the Clearwater Timber Protective Association and secretary of the North Idaho Forestry Association. He is a married man and has two children.

Roberts, Earl C., '36, is Junior Range Examiner at large on the Wasatch National Forest with headquarters in Salt Lake City. 518 B street, Salt Lake City is his home address. Earl spent the summer making range surveys and grazing capacity determinations and is at present working in the Regional Office at Ogden. He has developed quite an interest in photography, has built an enlarging machine and has a satisfactory dark room. His family status is unchanged.

Rowe, Percy B., '28, M.F. Yale, '30, California Forest and Range Experiment Station, Berkeley,

California. He is Associate Silviculturist in charge of Watercycle and Soil Studies.

Saling, Wallace M., '28, M.S.(For.), '29, U. S. Forest Service, Oakley, Idaho. "Smoky" writes that he now has two children, a boy three years old and a girl about five months. He spent a little over a month on range survey and says that stockmen in that area are displaying fine range management principles in the handling of their ranges on private and leased lands.

Sajor, Valentin, '26, Forester, Philippine Forest Service, Assistant Professor of Range Management in the University of the Philippines, Chief, Silviculture Section, Division of Forest Studies and Research, Bureau of Forestry. On the 29th of August, 1936, the family was increased by one boy. Valentin now has two boys and two girls. Drop him a line at 843 Dapitan corner Constancia Samploco District, Manila, Philippines.

Sargeant, Howard J., '30, Box 1770 St. Louis, Mo. He is Assistant Land Valuation Engineer, Division of Land Acquisition, Bureau of Biological Survey.

Schwartz, Jerry, Ranger Course, '24, Box 13, Vail, Washington. He is still working for Weyerhaeuser Timber Co., on logging engineering and construction.

Schumaker, Franklin O., '31, 2011 Hill Ave., Alexandria, Louisiana. Frank is working on land acquisition for the U. S. Forest Service.

Scribner, C. H., Ranger Course, '24, St. Maries, Idaho. Ranger, Calder District, St. Joe National Forest.

Shaner, Fred W., Ranger Course, '24. Fred is District Ranger at Kooskia, Idaho, in the Nez

Perce Forest. He is married but has reported no children.

Shank, Paul J. This year finds Paul still on the Targhee, but on a different district. He is now ranger on the Big Springs District with headquarters in the new station at Island Park, Idaho. Has two children, both boys. How about a quart of ice cream Paul?

Sharp, A. G., Kapuskasing, Ont. Sharp is still with the Spruce Falls Power and Paper Co., as control engineer making newsprint and sulphate pulp.

Snow, E. A., '25, Forest Supervisor on the Harney National Forest, Custer, South Dakota.

Sowder, Arthur M., 4905 First St. N. W. No. 2, Washington, D. C. Art left school in November to enter the employ of the U.S.F.S. in Washington. (Refer to index)

Sowder, James E., Klamath Agency, Oregon. The last we heard from Jim he was working for the forestry branch of the Indian Service, on the Klamath.

Space, J. W., '27, Glorieta, New Mexico. Senior Ranger, Santa Fe National Forest.

Space, Ralph S., '25, U.S.F.S. Flathead National Forest. Assistant Supervisor, Kalispell, Montana.

Spence, Liter E., '28, M.S.(For.), California '30. Liter is still with the Soil Conservation Service, Pacific Northwest Region with headquarters at Spokane. He is now Assistant in the Agronomy and Range Management Section directing the range management work. His region has seven projects and twenty-two camps where soil conservation work is being demonstrated. He says, "I run into Idaho alumni quite often and there are several working in the S.C.S." His present address is W2424 Pacific, Spokane, Wn.

Stanley, Wilfred B., '30, 12-E-27th Ave. Special Agent, Equitable Life Assurance Society of New York.

Staples, H. W., '20, Moscow, Idaho. Howard is working for the First National Bank in Moscow.

Stillinger, C. Roy, Special '19, 618 Realty Bldg., Spokane, Washington. Roy is with the Blister Rust Control.

Stillwell, Clarence E., '34, c/o U. S. Forest Service, Missoula, Montana. Clarence has a Technician appointment in Region 1.

Stouffer, David J., M.S.(For.), '32, U. S. Forest Service, Safford, Arizona. Dave is Assistant Forester in the Crook National Forest in Arizona, and is acting inspector of the ERA and ECU camps in that region. He writes: "Although I took my undergraduate work at Michigan State, I feel that I am just as much an alumnus of Idaho as the rest of the crowd I met there. I'm still single with no prospects in sight. My hobby is still collecting forest pathology specimens."

Swayne, Allen P., Halfway Camp F-1, Ely, Minn. Last year he was working as foreman of a

CCC camp but his latest news says, "A recent assignment to work in the Superior Branch of the Lake States Forest Experiment Station is giving me some fine experience in experimental work."

Taylor, Cyprian D. N., '32, Route 1, Nelson, British Columbia, Canada.

Tippets, Vaughn E., '36, St. Anthony, Idaho. Vaughn is Junior Forester on the Targhee and has had one nice winter marking timber when not fighting drifts and blizzards. Tippy is thinking of installing a bath in his new coupe, it has all the other conveniences of home.

Toole, Arlie W., '27. Did Arlie get his promotion to the Shelterbelt work in North Dakota?

Towns, W. L., '34, Box 1770, St. Louis, Missouri. Bill is employed in the Bureau of Biological Survey, Division of Land Acquisition.

Turner, George, '36, 1000 Ackerman Avenue, Syracuse, New York. George is a last year's graduate and is still one of the boys to most of us. He is now at the University of Syracuse working toward a Master's Degree in Forest Ecology. In a recent letter he tells us: "I am thoroughly enjoying the east while I work toward my degree. However, I was surprised to find that some people here don't know what an "Idaho Spud" is.

Walrath, F. J., '27, Lawrenceburg, Tenn., is working as Project Superintendent for the E.C.W. He now has three children and all are homesick for the West!

Wellner, C. A., '33, Northern Rockey Mountain

Forest and Experiment Station, Missoula, Montana. Chuck, like several of the Alumni doesn't have much time to keep us posted as to what he is doing and how he is doing. The last reports were that he is getting along in fine order with his work in the Division of Silviculture of the Experiment Station.

Wiesehuegel, E. G., M.S.(For.), '29. Wiese. is now Chief of the Forest Management Planning Section of the Tennessee Valley Authority, with headquarters at Norriss, Tenn.

Wheaton, R. G., '24, M.F., Yale, '25, 631 White Street, Springfield, Mass. Although Rod hasn't given us any news concerning himself this year, we do know from previous connections that he is still salesman for the Line Material Co., in Springfield.

White, Harold Z., '26, 1113-10th Street, Lewiston, Idaho, is working for the Potlatch Forests, Inc., as Superintendent of Dry Kiln. He has always been very interested in our Associated Forester Activities and writes us this year as follows: "Am looking forward to the annual banquet this spring. Be sure to send me a notice in plenty of time so I can arrange to get away."

Woodward, Doren E., '30, Box 989, Ogden, Utah. He has been officially stationed in Ogden for the past eighteen months and is head of the Division of Land Acquisition of the Bureau of Biological Survey of that district. He reports: "The big event of the year was the acquisition of a seven pound son on January 5. He promptly assumed control of the household and rules the roost with a tyrannic hand."

Ziminski, H. V., '35. "Zim" is holding down a J. F. position on the Chippewa Forest, Cass Lake, Minn. He is being transferred to the administration end of the forest soon. Henry has not become hitched as yet. . . . "Met Fred Ahrenholz about a month ago and have heard from 'Milt' Edwards, who is in Wisconsin."