

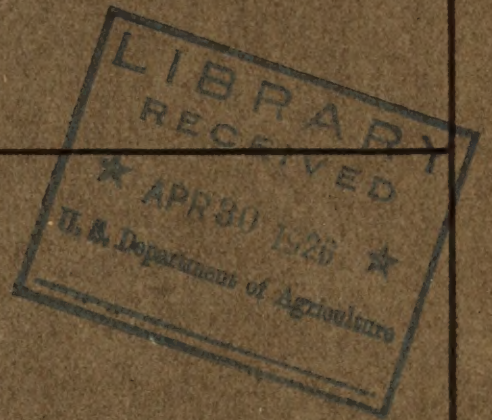
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UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE



MONTHLY REPORT OF THE OFFICES OF  
FOREST EXPERIMENT STATIONS AND DENDROLOGY

MAR 1926





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FOREWORD

Staff of a Research Laboratory  
(Continued from February Report)

There is a considerable advantage in choosing men for a laboratory so that various types of mind are represented. Some men are distinguished for their original ideas, others for their balance in judgment. Some men have a great interest in the study of the literature and are willing to act as bibliographers for their less diligent comrades. A "walking dictionary" is very valuable in any branch of research work. Other men display ability in the design of apparatus and even in its actual construction, though, on the whole, it is a mistake to allow scientifically trained research men to do work which can be done more quickly and to greater advantage by mechanics.

All investigators will find it an advantage to have the ability to express themselves clearly in speech and in writing. It is invariably necessary for an investigator to write up his own work, and a man who has no faculty in this direction may consume a great deal of time in doing so. The college training which a young research man may be expected to have in this direction amounts to a training in English composition and as much précis writing as he can get.

The remaining qualifications of a satisfactory research worker are personal and cannot easily be taught. In the selection of men due regard must be paid to their moral qualities. In order to be successful in association with others a man must be unselfish and willing to co-operate. A certain amount of frankness is desirable, since a man who is extremely reticent about his work is likely to produce a corresponding reticence in others.

A characteristic on which Dr. Whitney places great weight is optimistic activity, because, without it, little that is new can be done except by accident. With active optimism, even in the absence of more than average knowledge, useful discoveries are almost sure to be made.

Dr. Nutting considers that the qualities of mind necessary for a research man may be classified under the heading of imagination coupled with sound judgment, which when combined with incentive form the qualities essential for success in research.

Men who have been conspicuously successful in training and inspiring students, such as Nernst, J. J. Thomson, Rowland, Liebig and Ramsey, have invariably been men from whom students acquire by association a large measure of scientific imagination, sound judgment and a love of knowledge which acts as an incentive to research.

The director of a research laboratory must necessarily have a considerable amount of experience in organization and also be well acquainted with the subject to which the work of the laboratory is to be applied. In a university laboratory he will naturally be a professor and will consequently be experienced in teaching; in a specialized laboratory he should occupy a position of authority in regard to the general subject on which the laboratory is working. In an industrial laboratory it is most important that he should have had some manufacturing experience in the works processes, but, at the same time, it is absolutely essential that the director of an industrial research laboratory should have a considerable sympathy with purely scientific work and a real interest in the advancement of scientific theory. It would be a fatal mistake to select as the director of a research laboratory a man who was not himself keenly interested in scientific work, however good an administrator he might be or however much knowledge he might have of works processes.

If a man of first-class scientific training who is acquainted with the application of the research work cannot be found, then a man of full scientific training should be chosen and given an opportunity to become fully acquainted with the technical side of the subject. Since in many cases a research laboratory will cover several branches of science it is not possible to find men who are authorities in all the branches covered, but the director should have an interest in all the work that is done, and should be sufficiently acquainted with the different branches of science represented to understand the work which is done and to have a sympathy with the methods and aims of the specialist investigators without pretending to any complete knowledge rivaling that of the specialists. He must, moreover, possess natural ability to analyze problems and draw deductions. Whenever new work is undertaken the director is called upon to analyze the problem into its essentials and direct the work into channels likely to be profitable. The results obtained from completed work must also be estimated and utilized to the greatest advantage, this calling for a considerable exercise of judgment and insight.

However great a reputation as an investigator a man may have, he is not suitable as the director of a laboratory unless he is capable of directing the work of others. He should be a good judge of men and able to manage as well as inspire them; he should be a leader rather than a driver. Moreover, he must be of an independent temperament and willing to allow credit to fall on the men under him, being contented himself with credit for the efficient operation of the laboratory as a whole. Nothing is more disastrous for a laboratory than a director who claims credit which rightfully belongs to his men.

In the end, the character and efficiency of a laboratory will be influenced chiefly by the personality of its director, and the development of laboratories will depend upon the possibility of finding men suitable for their organization and leadership. In criticizing a scheme advanced by the author for the establishment of a national research laboratory of great size to undertake researches for the entire industry of a country, W. R. Campbell objects that it would be impossible for one man to supervise adequately so vast an undertaking, that he would inevitably favor those subjects on which he had himself worked, and that a lack of balance would ensue. It is quite possible that at the present time this criticism is valid, but it may be remembered that the same criticism had been made regarding the possibility of operating large armies, and that nevertheless soldiers were found capable of handling the vast groups of armies who fought in the great war. Men of such calibre are, of course, very rare and probably the organization of research has not yet progressed sufficiently to enable them to obtain the necessary experience and training in minor positions.

## FOREST EXPERIMENT STATIONS

### Washington Office

Beginning March 1, grazing investigations were transferred from the Branch of Grazing to the Branch of Research. This will undoubtedly bring about a much closer correlation of the work between the grazing experiment stations and the forest experiment stations. Because of the closeness of our work, we are incorporating in this issue a section dealing with grazing work, and will continue the practice for the time being at least.

### Congressional Action

The Agricultural Bill which passed the Senate on February 27 was given to a conference committee of both houses of Congress to readjust differences in the bill as it passed the two houses. It has been reported out of this committee with favorable recommendation of the increase for the Appalachian station. However, the bill has not been acted on by either house, as there are a few differences still existing between the two Houses of Congress, but none of these affect the work of the Forest Service. Having agreed upon the Forest Service items, it is doubtful if there will be any changes in the silvicultural investigations item now. This means that the California station will be established this year and the Appalachian station will receive a considerable increase. The fire weather item for the Weather Bureau in the bill provides for \$15,000.

Senator McKinley of Illinois introduced a bill in the Senate providing for a Central States Forest Experiment Station to be located in the State of Illinois and providing \$80,000 for its maintenance. This is the largest bill so far introduced for any experiment station up to the present time.

## Cooperation with Weather Bureau

Following the passage of the Agricultural Bill, a number of conferences were arranged between this office and the Weather Bureau to discuss the expenditure of funds under the fire weather item. Because of the way in which the item came about, approximately \$10,000 of the \$15,000 available will be spent in the West and \$5,000 in the East. Plans are under way to establish in each of the major forest regions a junior meteorologist who will work upon the fire weather problem and chiefly that of predicting conditions favorable for the spread of fires. Under the proposed plan a man is to be located in California, the Northwest, the Northern Rocky Mountains, Lake region and the Northeast. A meeting is to be held in the Pacific Northwest the middle of April to present the proposed plan to a large group of timberland owners, foresters, and related interests, to be followed by possibly a smaller meeting in the East. No details of the plan have yet been worked out and further conferences will be arranged after the result of the meetings become known.

## Committee Work

The Committee on Growth and Yield has sent out for consideration the final draft of the results so far, and for a judgment of the committee members as to the way in which the material should be presented. This has been mimeographed and copies are available for distribution. It is planned that the final work on this committee shall be completed this spring.

A new committee on sample plots has been appointed. This committee consists of representatives from the Association of State Foresters, the Society of American Foresters, the Offices of Pathology and Forest Insects, and the Forest Service. The committee members as appointed from the State foresters by President Besley include W. R. Hine of Louisiana, Edmund Secrest of Ohio, and W. M. Baker of New Jersey. Those appointed by President Dana to represent the society include A. C. Cline of Harvard, J. A. Ferguson of Pennsylvania, J. N. Spaeth of Cornell, and F. S. Baker of the University of California. The Forest Service has requested Dr. Craighead and Dr. Hartley to represent their respective offices and has designated Duncan Dunning, G. A. Pearson, and E. N. Munns as members from the experiment stations. It is planned that this committee will become another all-Service project of the forest experiment stations, and to this end the designation "ME-4, WO" has been assigned it. Because of Munns' participation on this committee, the forest experiment stations not represented will, through him, be represented, as was the case in the growth and yield committee.

## Visitors

Show left about the middle of the month after working for a few weeks with the editors and others in the office on some of his manuscripts which he is endeavoring to complete before getting thoroughly tied up in the District work.



Mitchell arrived to work on some of the Lake States fire study and to utilize the tabulating machine equipment. Following the completion of the work on his study, he is assisting in the Office of Experiment Stations in handling the routine work.

McArdle, who has been in Washington since the beginning of the year, left the first part of April, taking with him the Douglas fir yield study as far as it has been completed. McArdle has found that the preparation of a yield table involves a considerable amount of work in addition to that taken in the field, and that not all field work is capable of being utilized in the final report. In the development of this Douglas fir yield table Reineke developed a method of doing away with one step in the preparation of the yield table through the use of an alinement chart and the possibility of putting the whole yield table in an alinement chart form.

### Measurements

Due to the demands of a number of people, the machine tabulator had an exceedingly busy month. Rush work for Meyer of the Northeast, that he might get away from his present assignment to the Pacific Northwest where he undertakes new duties, the regular work for the office, some additional work on the methods-of-cutting study for Show, Mitchell's fire study, and McArdle's yield study, to say nothing of a few other odd jobs, were responsible for the machine being run practically continuous from early in the morning until late at night. On a number of days approximately 16 hours' work constituted a working day.

A high percentage of the time of the computing force was spent on the Douglas fir yield study, supplemented by a considerable number of other jobs which included the regional yield pine study, the development of mensurational technique, and the checking of manuscripts. The remaining vacancy in the force was filled during the month by the reappointment in the Service of Mrs. G. M. Wood.

### Library

During the month there were 1169 books and periodicals loaned from the library, and 139 members of the Service and others consulted the library in person. During the month 271 books and articles were indexed for the catalogue.

### "CLEAR, EFFECTIVE WRITING"

The editor doubts whether any editing does an author any good that does not make him fighting mad. I should say, fighting mad and yet unable to annihilate the editor. I say this not through any false sympathy for editors, but because the writer, if he be able to commit mayhem upon the editor, will thereby so soothe his irritation that it will no longer drive him to more profitable action. The most profitable condition

of infuriation is that in which the subject can only gnaw his nails in despair, pick up the dear, dead thing that was once his cherished manuscript, and vow to heaven that - failing any other satisfactory form of retribution - he will so recreate these mauled and mangled pages that not the recording angel himself will find a flaw in them.

I know this from my own experience. The most valuable thing any writer can learn is to be hard boiled with himself. And I mean hard boiled enough to bounce. When a writer has reached the point where he is willing to lay aside his manuscript for a week or two and then read it through with a feeling of candid criticism, he has got nowhere at all. When he has reached the point where he is willing to analyze every paragraph and sentence of his manuscript, and to cut it down of his own accord 50 per cent in bulk, after it has reached what he had vowed would be its final form - at that point there is beginning to be some hope for that writer. He is not yet past the wicket on the Hill of Difficulty, however. He will only be past it when he is ready and willing to tear up his manuscript and burn the pieces, and start all over again - when he is ready and willing to do so, and does it.

What? Write every manuscript twice, from the beginning? Nothing would ever be published!

I wonder! Here is Show's Requirements report on the pine region almost in page-proof form and my record says it is one year and three months since the manuscript as revised after the Madison conference came in. Hardly a single Department bulletin or circular can boast any better record. Most of them consume at least half this time in being edited and revised, and edited and rerevised before appearing in galley proof. I'm not convinced that the writer who completely rewrote his material before submitting it, or, at least, who was hard boiled enough to do so if he had any indication that that was the best course, would not avoid much of the delay now suffered.

That is why I believe that the only truly valuable editing is that which is so merciless that the writer in his suppressed rage works himself up to the point of determination to make his material editor proof. He won't succeed, of course, because at least 10 per cent of any editing is quibbling and personal preference; but he will do something vastly more important: He will learn how to write.

#### DENDROLOGY

##### Federal Horticultural Board Activities

It may be recalled that with the close of 1925 further commercial importations of Narcissus bulbs, allowed without restriction during the previous 3 years, were stopped. The object of permitting unlimited importations during this 3-year period was to enable prospective growers to establish yielding bulb plantations in this country so that the needs

of the country could be met by home production, thereby avoiding the further risk of introducing European bulb pests that are known to be dangerous to our large onion-growing industry. In allowing Narcissus bulbs to enter the United States during this temporary period the board realized that the risk was being taken of establishing foreign bulb pests here. But the risk seemed unavoidable and justifiable because of the great horticultural necessity of establishing permanent production here of Narcissus bulbs, which are a necessity in this country. There is now assurance that home production will take care of the country's demand.

Ignoring the board's object in allowing this unlimited 3-year importation period, many importers brought in millions of Narcissus bulbs solely for spring forcing and the production of cut flowers, the spent bulbs being afterward destroyed. Such importers cheerfully certified that the bulbs were to be used for propagation, but they made no attempt whatever to establish permanent plantations. With the cutting off of unlimited importations these people are now claiming that their rights have been arbitrarily denied them. No sympathy is due such conscienceless citizens, and none is given.

Under proper safeguards the board is now permitting legitimate growers still to import limited quantities of new and little known bulbs unobtainable here now, for the purpose of keeping the country supplied with up-to-date material. These bulbs are made safe by treatment with hot water which kills all insects in them and does not injure the vitality of the bulbs.

Already attempts to take advantage of this opportunity for continued importation of new bulbs are being made by dealers who still desire to obtain bulbs for forcing and the cut-flower trade. They are requesting permits to import large quantities of bulbs declaring that propagation only is the purpose. On being informed, however, that treatment of the bulbs with hot water renders them incapable of being forced immediately for cut flowers - but rendering them still capable of being grown for propagation, most of these requests have been withdrawn, because these importers have no real propagating facilities outside of greenhouses or intention of fulfilling their promises to use the stock for propagation. The board's further requirement that importers must show where the stock is to be grown in outside plantations, and the knowledge the board now has that only certain sections of the country are climatically suitable for successful outside culture, enables the board at once to detect fraudulent efforts to obtain stock not to be used for legitimate purposes. These privileges of importation offered to genuine growers are now so safeguarded that there is little or no opportunity for fraudulent operations to "get by," while legitimate propagators are given every encouragement and facility for developing home production.

## NORTHEASTERN FOREST EXPERIMENT STATION

During the early part of the month, Mr. Dana visited the Pennsylvania State College, State College, Penn., where he addressed the Forestry Society on "Research Work in the Eastern Part of the United States." From State College he went to Harrisburg to attend the winter meeting of the Allegheny section of the Society of American Foresters, and thence to Washington for a few days, returning to Amherst March 12. The remainder of the month was spent in getting the Investigative Program ready for final typing, and in making final preparations for a four months' absence in Europe. While in Europe Dana will attend the World's Forestry Congress at Rome as Department of Agriculture representative, after which he will visit the more important forest experiment stations in Austria, Czechoslovakia, Germany, Norway, Sweden, and Finland.

Behre spent the month getting a number of odd jobs out of the way. The revised manuscript on "Form Class Taper Curves and Volume Tables" was forwarded to Washington for publication; the working plan for the studies of the application of the form class system now under way was revised and enlarged to bring it up to date; computation of checks upon the volume tables, prepared for use in the spruce yield table study, were gotten under way. The check upon the table for balsam proved quite satisfactory, the net error in the estimate of the total volume of 306 trees used in the test being -0.61%, and the average deviation of the individual trees only 4.24%. Checks for the other species are not yet completed.

Westveld completed a plan for the establishment of permanent sample plots, together with suggestions for studies of methods of cutting in the spruce region of the Northeast. This work was the result of resolutions adopted by the subcommittee for the Northeastern States of the Paper and Pulp Industry Advisory Committee and of the Northeastern Forest Research Council, urging the Northeastern Forest Experiment Station to submit a list of specific projects on which they desired cooperation of the various wood-using industries and agencies interested in forest research, together with instructions indicating the precise methods to be followed in securing the desired data. The plan will be mimeographed and distributed to interested agencies throughout the Northeast.

Westveld also revised the working plan for his methods of cutting study. The plan for the reproduction phase of the project this season has been considerably elaborated with a view to making a more intensive study of factors affecting the germination and establishment of spruce and fir reproduction.

Meyer is working on the last phases of his yield study of even-aged red spruce and its coniferous associates in an effort to get his manuscript in shape for publication before his departure for the Pacific Northwest Forest Experiment Station about June 1.

In addition to carrying on the computations in connection with the fire statistical study, Stickel visited Sandwich, on Cape Cod, addressing a meeting of the Cape Cod Foresters' Association on "The Forest Fire Investigative Program of the Northeastern Forest Experiment Station" with special reference to the forecasting of fire weather and the statistical analysis of forest fire records. While in that vicinity he went over the region with Fire Warden Crowell. Besides familiarizing himself with the very interesting native vegetation, he found a few specimens of maritime pine,-- the northern limit of that species in the United States, according to Sudworth. Stickel also spent a day in Worcester in conference with Doctor Charles F. Brooks of Clark University on some phases of a fire weather study which is being conducted at that institution.

Spaulding put in several days at the Farlow Herbarium at Harvard University and at the Arnold Arboretum, consulting books and specimens of wood-rotting fungi, and one day at New Haven in conferences on chestnut blight and related work. He devoted the remainder of the month to correcting his manuscript on European blister rust, and in study of old records on wood-rotting fungi of the Northeastern States.

Dr. Crocker, director of the Boyce Thompson Institute for Plant Research, gave an interesting series of exchange lectures at the Massachusetts Agricultural College the fore part of the month, which were attended by members of the staff. His lectures, in addition to a discussion of the organization and equipment of the institute, dealt with some of the more important problems being studied by the institute. The institute is particularly well adapted to undertake studies involving the control of numerous environmental factors affecting the growth and structure of plants. Some of the controls which have been established include temperatures, constant condition light and dark rooms, spectral glass greenhouses, and carbon dioxide plant.

The course in Forest Ecology, given by Westveld and Stickel, to a group of senior and graduate students, ended with the close of the winter term, and proved an interesting and successful one.

The station force was rather hard hit by the "flu" during the month, necessitating considerable sick leave.

Miss McGowan, who was transferred from the Washington office to the station January 1, left the last of March. W. H. Day, who has been engaged in computation work on the Methods of Cutting study, left the latter part of the month to accept a permanent appointment with the U.S. Veterans' Bureau. George Sargent, who has recently graduated from the Forestry Department of the University of Minnesota, reported as an Under Scientific Helper March 31.

## PACIFIC NORTHWEST FOREST EXPERIMENT STATION

An extraordinarily early spring after a short mild winter has made us turn to field work sooner than we preferred to in order to get done certain jobs that must be done before growth starts. Munger and Westveld spent three days at Wind River early in the month and did all the necessary arboretum transplanting and sowing. Isaac was in the field for nearly two weeks, and Simson left for his summer station at Wind River to start the regular meteorological readings and periodic inflammability of forest fuels tests April 1.

We are taking great satisfaction in having decided upon and put into use during the month a scheme for classifying our pamphlets, bulletins, clippings and manuscripts that should be permanently retained. This task had been postponed for some time; meanwhile the practice in other small office libraries has been studied. Our classification scheme is designed to fit our individual needs, is very simple, and ties in conveniently with the present filing scheme. It provides for subjective filing in pamphlet boxes or in verticle-drawer folders, depending upon the shape of the material, and it can be kept up with the minimum of clerical work.

McArdle has been in Washington through the month putting the finishing (we hope) touches on the Douglas fir yield tables, about which we are getting a number of impatient inquiries.

Isaac spent the first half of the month preparing progress reports on various minor projects. An interesting point that showed up in connection with the germination and survival studies at West Fir, Oregon, was the increased seedling death that accompanied extremely high maximum temperatures. The death rate apparently showed no direct relation to high mean temperatures or moisture conditions. He spent the last half of the month at the Wind River Branch Station where, with temporary assistants, he made the periodic measurement of two thinning plots, started the germination tests of both the Douglas fir seed storage in the duff experiment and the noble fir seed storage test. Also 7,200 replacements were put in the Douglas fir spacing test plantation. This heavy mortality of almost 33 per cent is attributed to the fact that the plantation was on a hot site that was just previously double burned. With practically no shade or cover on the area except a few charred logs, the seedlings in the more exposed places were unable to withstand the extreme drought of last summer.

Westveld worked several days with Munger on the library and compilation files. Most of the remainder of the month was divided between publicity articles on brush disposal and working plans for some of the administrative projects to be conducted by local Forest officers. He left on a field trip through eastern Washington on April 1, to be gone a month, during which he will visit a number of yellow pine lumbering operations to see their brush disposal practices and learn their local problems.

Simson prepared an article for the Oregonian on "Putting Static to Work," and gave a short talk before a meeting of the local section of the American Institute of Electrical Engineers on the use of "The Barrage Receiver in Static Investigations." The current progress report on the static study was completed, and the 1924-1925 lightning study data tabulated. The punch carding will be begun when McArdle returns from Washington. Last year District 6 received rather more than its fair share of lightning fires,- over a thousand - and most of them were caused by storms occurring on fire days so that the fires came in bunches.

The inevitable details of winding up the winter's work and preparing for the field season occupied some of Simson's time. At the Wind River Branch he found almost summer conditions prevailing. One field assistant, a graduate forester, is working with him. A slash fire was visited the evening of the 30th and at 8.00 p. m. was making a very satisfactory burn. Advance sparks from blazing snags were catching in rotten wood and duff and the fire as a whole was behaving in a manner normal to a late June fire. This was largely accounted for by the fact that the fuels had been dried by a prolonged period of subnormal relative humidity and on the evening in question the relative humidity remained low and did not reach its normal high night value until five o'clock in the morning, an unusual condition for even midsummer.

#### DISTRICT 5 - CALIFORNIA DISTRICT

As a result of Mr. Show's trip to Washington, several of his final reports were advanced toward publication. Final editing of the "Timber Growing and Logging Practice" bulletins for the pine and redwood regions was completed and the distribution agreed upon. The general form was agreed upon for the Department bulletin "Forest Nursery and Planting Practice." "Logging and the Forest" is to appear as a Department circular. "Cover Type and Fire Control" will also appear as a Department circular.

Show's transfer necessitated checking over property records covering several years back. As usual, it proved easier to assemble the records than the property itself, but by pooling our resources and much constructive argumentation the property custodian's margin of advantage is gradually being reduced.

The periodic assemblage of methods of cutting data continues to occupy much of the time of the depleted Research organization. We have successfully involved the Section of Computing in Washington to the extent of putting the data through the punch card mill. Most of the twenty-five plots have been under observation for fifteen years and promise to yield significant information on marking and reproduction. In addition to the usual diameter class and plot summaries, a thorough-going analysis is being made by tree or thrift classes. These tree classes are based on the original crown and stem descriptions. Seven fundamental classes are considered for sound trees, combining in various ways the crown, stem and

age factors which control growth, value of product, ability to bear seed and respond to release. An attempt is being made to determine how various injuries, diseases and defects modify growth rates of the fundamental classes. Some preliminary figures of several years ago and first results of the present work give promise of useful application in marking. Of importance is the possibility of reducing insect losses on sale areas. A current study of the Bureau of Entomology indicates conclusively that the western pine beetle selects certain types of trees. If these tree types can be delineated with sufficient clearness, losses may be reduced by improved marking.

A manuscript has been received for review from A. E. Wieslander of the Lassen, covering methods of predicting yield on the Eastern Lassen Working Circle.

The California White and Sugar Pine Manufacturers Association has decided upon a program of forestry research, to be in charge of Mr. S.R. Black. Emphasis at the beginning will be placed on studies of the economics of handling forest lands, fire control, disposal of secondary species and methods of logging.

A working plan was prepared for a small scale administrative slash disposal study to be conducted under the supervision of Forest Management.

#### NORTHERN ROCKY MOUNTAIN FOREST EXPERIMENT STATION

The month was spent by almost the entire staff on compilation of field data on various projects and the preparation and revision of reports.

A good part of Gisborne's efforts in the way of compilation of field data this month was devoted to the working up of weather records for comparison with the 5-year summary of fire data recently completed by the District office. In a good deal of work of this sort that Gisborne is doing, we have in mind a proposed bulletin by Flint and Gisborne covering the forest fire situation for District 1.

Good progress was made in the big task of revising our local volume tables. Haig and Forest Ranger Regnes gave full time to the project and Ranger Yochelson was able to spend 7 days on the work.

After finishing the first draft of another report for publication, "Experiments with Classes of Stock Suitable for Planting in Northern Idaho," Wahlenberg terminated his winter detail of  $2\frac{1}{2}$  months and returned to Savenac Nursery. Because of the very mild weather in March, nursery and field planting activities are being started much earlier this year than usual.



Visitors to the office of the Experiment Station during the month were Dr. C. A. Schenck of Darmstadt, Germany, Mr. Detwiler of Blister Rust Control, and Mr. Evenden of the Forest Insect Station at Coeur d'Alene, Idaho.

#### ROCKY MOUNTAIN FOREST EXPERIMENT STATION

March witnessed the completion of Roeser's compilation of past records for the individual acre plots and sub-plots of the station forest. A brief report was prepared and is being circulated, showing the general plan for a sustained yield. The weakness of the plan is obviously in the lack of sufficiently comprehensive increment data, but these are accumulating and this, like all other "working plans," will improve with age and frequent revisions.

The report on "Forest Growth in the Central Rocky Mountains," embodying all of the sample plot results available to date, as well as all other worthy contributions to the study of increment rates, was finished and forwarded to the Forester under the joint authorship of Bates and Roeser.

At the end of the month Bates had sufficiently cleared his desk of routine matters to be able to turn to a critical re-examination of the T-5 data and other evidence of the importance of soil chemistry in influencing the growth of trees. While it is not thought that anything conclusive has yet been shown which can be made of practical use, a thorough examination of the past experiments should point the way to a more systematic plan for the future and possibly lead to a parallel system of soil studies in some of the other regions, where soil variations cause a good deal of confusion in classifying sites, etc.

Four or five days were spent by Bates in travel to line up the tree-planting contest under the auspices of the Colorado Springs Chamber of Commerce and to observe the results of past planting in eastern Colorado. On covering a sufficiently large territory a good many successful examples of plantations from 10 to 30 years old are observed, which show clearly what can be done when the matter is approached in the right way. Localities differ a great deal, and the question is left somewhat open as to whether this is due to variations in soil or is largely a matter of the attitude which prevailed at the time of settlement or later. Certain it is, however, that there are areas of heavy clay on which, with the low rainfall, trees will have to be nursed very carefully to succeed.

About twenty schools are formally enlisted in the contest for 1926, but this is no measure of the planting which will be done as the result of this campaign and of other educational forces which are becoming more and more active each year. The real difficulty is not so much in getting people to plant trees as in getting the follow-up necessary to insure success. This is especially a problem for school grounds where the adage "everyone's business is nobody's business" applies. Where the teaching staff is stable, the best results are to be expected.

This activity has led to a couple of conferences with the new State Extension Forester, Mr. C. A. Lee, who feels not only that the Colorado Springs interest in plains tree planting is desirable and not in conflict with his aims, but that it relieves him of a good deal of responsibility for the local area. However, no responsibility is being assumed beyond that which can be carried incidentally.

One day was spent with M. W. Thompson in going over the Public Requirements report for D-2 and another day will probably be required before this is completed.

Roeser put in the second half of the month compiling a general spruce volume table in cubic feet which is needed by several Forests.

Field work at the station will not be started before the middle of April, although a large number of evaporimeters required to be calibrated and returned for use of other Service units will demand some attention before that time.

An extremely interesting outgrowth of the local publicity given to forestry over a period of several years is the desire of a group of landowners in the "Black Forest" to organize for fire protection and sane forest management. It is a case of "minimum requirements" for public protection, on a local scale, since the denudation of any of the numerous holdings would react unfavorably on the entire area, which is being developed to some extent as a summer-home area. This is solid forest of western yellow pine over an area of 60 square miles, with "streamers" which are gradually, in the absence of grass fires, extending the forest over a much larger area. The experiment station sees in this area of private holdings an opportunity to apply much of the information which has been accumulated, though local study of growth will have to be made. It is hoped, with the cooperation of the owners, to establish a demonstration area where the best forestry possible can be practiced under their eyes, and more exact information on growth gradually accumulated. The situation is fortunate in that there is a good market for fuelwood as well as larger products, ties and props. At the same time that the experiment station is attempting to "sell" management, Supervisor Hamel expects to be able to organize the group for fire protection. Both phases are to be discussed at a community meeting April 4.

## APPALACHIAN FOREST EXPERIMENT STATION

### General

The item of greatest interest in March was the approval of an increase of \$18,000 for the Appalachian Station by the House and Senate Conference Committee on the Agricultural Supply Bill. If this item is retained it will enable the station to enlarge its work considerably. It will be possible to put field parties into the eastern and northern parts of the territory where relatively little work has been done hitherto. Some thought has already been given to plans for the expansion of work in case the increase becomes a fact. While nothing definite has been decided upon, emphasis will probably be given to the leading projects in the station's present program before entering upon new studies. A wider geographical extension of the current projects is very much needed. The station will also be able to remedy its present shortage of equipment and to continue the developments at Bent Creek on a more substantial basis.

A. W. Budd, who was with the station last summer as field assistant, is again with us for a few weeks, assisting in field work on the inflammability study, in computations for various projects, and in the perennial library work.

There has been an influx of visitors from New England during the last two months. Among these were William B. Hill, of Bangor, Me., industrial agent for the Bangor and Aroostock Railroad; Mr. Z. Chafee of Providence, R. I.; Mr. and Mrs. Theodore F. Borst of Framingham, Mass.; and Mr. Blake of Portland, Me. Several of these were shown the plantations in the Biltmore Estate by Haasis. Roy L. Hogue of Jackson, Miss., dropped in on his way to New York to join Dr. Schenck's party en route for Europe. Hogue will be present at the World's Forestry Congress at Rome as a delegate appointed by the Governor of Mississippi.

### Dr. Humphrey Leaves

Dr. C. J. Humphrey has resigned as forest pathologist at the station and has accepted a position as pathologist and mycologist for the Philippine government under the War Department. Dr. Humphrey left the station March 17. He will sail for Manila with his family on May 11. His resignation is very much regretted by all at the station; we wish him the best of success in his new duties. Dr. Humphrey's successor has not yet been named.

### Silvicultural Requirements

The report for a bulletin on "Timber Growing and Logging Practice in the Southern Appalachian Region," by Frothingham and McCarthy, was completed and forwarded to Washington.

Frothingham attended the Clarke-McNary Section I conference at Raleigh, N. C., principally to place the fire control section of the report before the State and Federal foresters for criticism. One afternoon of the sessions was spent in a rather thorough review of the part of the report dealing with fire control, and valuable suggestions were received and incorporated.

### Planting in the Spruce Type (Ep-3)

Preparations are being made by Haasis for the spring experimental planting on Clingman's Peak, along the Mount Mitchell motor road. The planting will take place in April, in connection with the larger planting to be done by the Pisgah National Forest staff. Supervisor M. A. Mattoon plans to put in 86,000 transplants this year, mostly Norway spruce, from the Gladwin, W. Va., Forest Service nursery, and State Forester J. S. Holmes expects to plant some areas on the Mount Mitchell State Park. The station planting will be in chain square plots of 100 trees each, several species being tested on two exposures. A shipment of two-year-old Japanese larch seedlings, from State Forester Secrest of Ohio, has already been received and heeled in. Small lots of seedlings or transplants of northern white cedar, white fir, sugar maple, lodgepole pine, red pine, Scotch pine, and Engelmann spruce have been promised by the Syracuse and Cornell forest schools, the Pennsylvania Department of Forests and Waters, the forest experiment station at Cloquet, Minn., and Forest Service nurseries in Colorado, Montana, and Michigan.

Small quantities of seed of a number of exotic conifers have been received, and these will be sown in the Champion Fibre Company's nursery at Canton, N. C.

### Fire Weather and Inflammability (Pf, B-2)

A comparatively dry period between March 23 and March 28 made possible the continuation of tests on the rate of drying of leaf litter. Records were obtained during five days of this period on a south slope at the Bent Creek laboratory. The leaf litter, which is more compact than when tested last fall, is still capable of drying to an inflammable condition in one day under the influence of the sun, a medium wind, and relative humidity of 50 per cent or lower. On three days out of the five it reached a moisture content of 6 per cent of its dry weight or lower. This was true in spite of comparatively high humidities and low temperatures. A 0.24-inch rain raised the moisture content to 135 per cent and this dried during the following day to 25 per cent. That night without rain it re-absorbed water to 54 per cent and dried the following day to 5 per cent. The conclusion is unavoidable that one moderately dry day will create a fire hazard on south exposures.

Grazing Damage (Pa-1)

Haasis completed his report on the importance of grazing in the Southern Appalachian region, which grew out of his study of grazing damage. On account of the station's hitherto cramped financial condition and the fact that grazing on the unfenced timberlands in the mountains is at present of minor importance, it has been recommended that the grazing damage study be dropped as a project for the time being. Observations of grazing damage will be continued, however, in the study of methods of cutting and natural reproduction in the hardwood types.

## LAKE STATES FOREST EXPERIMENT STATION

A meeting of the Wisconsin Agricultural Council was held at Madison during the month to which representatives of the State Drainage, Equity, State Department of Agriculture, State Agricultural College, Bureau of Markets, and Farm Bureau were brought together. Mr. Zon was invited and attended this meeting and gave an address on "Forestry as a Part of the Land Utilization Policy." He felt that the meeting was thoroughly in earnest and promised to result in improvement in the trend and policy of development of the Wisconsin Agricultural College. It seems probable that forestry will have a place and a more important place in the new policy than it has had in the past in Wisconsin.

The preliminary draft of the working plan for the study of swamps was completed during the month, and arrangements made for cooperation in this study with the Minnesota and Wisconsin State College Divisions of Agricultural Engineering. The Minnesota arrangement provides for the expenditure of \$300 by the Division of Agricultural Engineering on the cooperative project. The Drainage Division of the Bureau of Public Roads in Washington will also probably cooperate, although the definite agreement with them has not yet been received.

Considerable time has been spent by Zon in conference regarding the re-organization and plans for the development of a satisfactory research program for the Cloquet station. Good progress has been made.

The reports for the individual operations in the study of Comparative Costs of Logging Small and Large Timber were completed during the month and sent to the three companies which cooperated. Favorable comment has been received from one of them. The combination of these three reports into one remains to be done.

Mitchell spent most of the month in Washington running the cards for his fire studies through the sorting and tabulating machines. This work was practically completed by the end of the month.

A draft of a report and article on the Survival and Growth of Trees Planted in Rock Creek Park Arboretum, Washington, D. C., was prepared by Brown. The manuscript of the jack pine growth and yield study has been revised and rewritten. The forest planting manuscript has been subjected to careful scrutiny by Mr. Zon and will require some revision and retyping as suggested by the editorial insertion of a question mark in the last monthly report.

Mr. S. R. Gevorkiantz terminated his temporary employment with the station on March 15 after having rendered a large amount of faithful high-grade work in connection with the logging cost and the growth studies. He is to be employed by the Cloquet station beginning April 1.

Arrangements have been completed and are working smoothly for the placing of forestry movie films with several of the moving picture theaters and high schools here in the Twin Cities. The arrangements include the showing of the pictures at several of the larger towns throughout the State which are on the Finkelstein & Ruben circuit.

The station had an interesting visit from Francis Kiefer, formerly a member of the Service in District 7, and since the War engaged in the pulpwood business with headquarters at Port Arthur, Ontario. He is interested in the possibility of growing spruce in Michigan under the new tax law for the Port Huron Sulphite & Paper Company.

The members of the station, together with the Forestry faculty, were hosts at a meeting of the Plant Science Group of the University here at the station. This group consists of the faculty members and graduate students of all the divisions of the University of Minnesota concerned with plant sciences including agronomy, forestry, horticulture, botany, pathology, genetics, soil and pharmacy. About 40 attended. Zon talked on Forestry and Botany, and Kittredge on Forestry and Soils.

#### SOUTHERN FOREST EXPERIMENT STATION

##### General

Forbes and Demmon spent practically the whole month at headquarters, the latter making short trips to Texas and Bogalusa. Hadley and Wakeley spent most of their time at McNeill and Bogalusa, respectively, with occasional trips to New Orleans.

All members of the technical staff were at headquarters on the first of the month, at which time a conference was held relative to past work and future plans for the extensive surveys.

Wyman addressed the Naval Stores "Get-Together," held in New Orleans during the first three days of March. He spoke on the experiments at Starke, and particularly on the yield table and short season test. Forbes, Demmon, and Hadley attended several of these sessions. The first two members also went to most of the sessions of the Southern Pine Association meeting held from the 22nd to the 24th.

Wyman attended a meeting of the Board of Directors of the Florida Beautification and Forestry Society at Gainesville. He also made a trip to Sterling, Georgia, with Mr. R. E. McKee of the Florida National Forest, and Mr. R. E. Benedict of the Brunswick Land and Lumber Company. At Sterling he met Mr. J. T. Young, who is to put in 3,000 French and 3,000 American faces in young timber. Mr. Benedict hopes to develop a system whereby turpentine can be used as a by-product.

We were fortunate to have the Pine Institute of America, Gull Point, Florida, purchase \$300 worth of weather instruments for our use at Starke. This additional equipment will enable us to carry on some very worth while experiments for which the station did not have the funds.

Hadley accompanied Messrs. J. O. Hazard, Secretary of the Florida Beautification and Forestry Society; W. F. Hill, H. L. Baker, and G. T. Backus to Bogalusa and showed them our own and the Great Southern Lumber Company's reforestation experiments, and to McNeill, where he explained our grazing project to them.

Visitors at the station headquarters during March, aside from those already mentioned, were as follows: Miss Eloise Gerry; Frank E. Haskell, Forester for W. M. Carney Mill Co., Atmore, Alabama; George F. Cornwall, Editor of the Timberman, Portland, Oregon; Donald Bruce and Mr. Stevens of Mason & Stevens, Washington; Messrs. Durland, McClellan, Tinker, and Wellington stopped in on their way to examine forest properties in Panama.

#### Protection, Fire

Demmon visited the Cherokee State Forest, Texas, in company with Assistant State Foresters Bond and Eberly and made a preliminary examination of the Forest preparatory to the proposed establishment of a short-leaf pine fire plot there.

#### Measurements

While in New Orleans Mr. Bruce gave one day to review of Hadley's computations of tupelo volume and yield and suggested minor changes in methods of checking that should be used. Only slight changes in final yield figures will be necessary.

#### Management

Cole spent the first week of the month in the office making computations on core measurements for the accelerated growth study. Demmon put in a considerable portion of his time during the month on this study and, with Forbes and Bruce, had several conferences relative to methods used in the computations.

Demmon, with the assistance of Mr. Barron of the Great Southern Lumber Company, completed the field work in the method of cutting study recently laid out at Talisheek, Louisiana, on land of the Great Southern Lumber Company. Permanent reproduction strips were established, keeping seedling counts separate for each of 30 chains of line run.



## Forestation

Germination and seedbed counts, plantings, etc., were made by Wakeley and Chapman. The sand flats were set up and put in working order. The installation of these experiments necessitated the counting and re-counting of 16,400 seeds.

## GRAZING RESEARCH

The members of the office are well pleased with their transfer to the Branch of Research. If we may judge by the results of the month of March, it will mean greater coordination of effort between the Office of Grazing Research and the other offices of the Branch. This is bound to stimulate research effort, and in the end undoubtedly more thorough application of the findings of research may be expected.

The members of the office attended an interesting conference April 7 in the Extension Service, at which Professor Paul J. Kruse of Cornell University discussed some phases of psychology in extension work. It is planned to issue the two lectures he gave in mimeograph form, and these are commended to all men concerned with getting better management principles into practice.

## Visitors

Director C. L. Forsling, of the Great Basin Experiment Station, spent the month of March in Washington for the purpose of final organization of his manuscripts on the 11 years' results of the grazing and erosion project at the station, and on grazing management of the browse type in southern Utah.

Mr. W. G. McGinnies, in charge of range investigations in District 1, completed the school work for his doctor's degree at the University of Chicago in the latter part of March, and is now in Washington on detail for the purpose of preparing reports on his range management project on the Madison Forest, and the Poker Jim experimental carrying capacity test on the Custer. He has recently accepted an assistant professorship at the University of Arizona, and will also be Grazing Range Specialist of the Experiment Station. He assumes his duties there about September 1 of this year.

Director B. Youngblood, of the Texas Agricultural College Experiment Station, called at the office to discuss their and our range investigative work. He was particularly interested in our experimental work on carrying capacity.

Professor C. B. Hutchison, of the International Educational Board, Paris, France, called at the office particularly to discuss with Colonel Greeley and Mr. Clapp the research activities of the Forest Service in

forestry. This board, a Rockefeller foundation, has as its function the encouragement of education and research in the physical, mathematical, and biological sciences throughout the world, though at the present time its work is largely concerned with Europe. The board plans to aid certain universities, with a view to developing the best facilities for training research personnel and for conducting research. They also finance additional training of outstanding men. Prof. Hutchison states that many of the prominent research men of Europe are working under great handicaps of equipment, supplies, and funds. Dean James E. Russell, of the University of Wisconsin, has recently gone to Asia to consider the situation there, in the interest of the board.

Dr. J. Arthur Harris, head of the Department of Botany at the University of Minnesota, called at the office to discuss the cooperative project which he and Director Forsling have under way at the Great Basin Experiment Station on cell tissue fluids.

#### DISTRICT 1

##### The Poker Jim Experimental Pasture Carrying Capacity Test

A pasture of about 3,900 acres on the Guster Forest has been placed under experimental control to determine its carrying capacity and, in connection therewith, what intensity of grazing and season of use will prove most favorable to the production of timber and forage.

The volume of forage produced in 1925 was slightly below average. The actual use by cattle for a season from May 17 to September 7 gave 76 per cent utilization of the range forage crop. Grazing that would have given proper utilization would have required .88 forage acre per cow per month. Two of the three units of the pasture required .79 and .81 forage acre per cow per month, respectively. The third unit required 1.22 forage acres per cow per month. In the latter case the average growth of the important forage plants was 30 per cent below that in the balance of the pasture, probably the result of past over-utilization with consequent deterioration of stand and slight erosion of the valuable surface soil.

Mr. E. W. Hartwell is studying the influences of grazing on reproduction and spread of western yellow pine in a correlated project.

#### JORNADA RANGE RESERVE

The weather conditions here during the past week have been very exceptional in that somewhat more than an inch of rain has fallen with a fairly good showing of snow in the mountains. From all reports, this precipitation has occurred pretty generally over the southern part of the State. This moisture, together with that which has already fallen during

the late winter and spring, will no doubt cause considerable growth; in fact, a good weed crop has already been reported in several localities in this section. So far the weed crop on the Jornada has been rather light, but Schoeller looks for a considerable improvement in the near future. A number of grasses including Black grama, the Aristidas and Panicle grass have already put on some growth and Schoeller rather anticipates some Tobosa growth very soon. In view of this unusual condition Schoeller hardly believes that it would be advisable for him to go on military leave next month, since there will in all probability be considerable vegetative work to look after. He has therefore decided not to take military leave as was contemplated.

Both Mr. John Kerr and Dan D. Casement called at the office yesterday. The afternoon was spent on a trip to the Jornada, looking over the range and discussing conditions. They also visited the College Feeding Experiment at Summerford. Mr. Kerr said that this section of the State and the Jornada in particular looked better from a range standpoint than he had ever seen it before. Mr. Casement was very much interested in the Jornada investigations and particularly in the plan of management under the new cooperative agreement with Mr. Waggoner. He seemed to think that the plan was very conservative but at the same time he was of the opinion that Mr. Waggoner should be able to realize a reasonable profit out of the undertaking.

The Black grama period study enclosures are nearly completed, and Schoeller believes that they will prove to be quite satisfactory. It will, he believes, be well to establish the quadrats and complete the initial charting during the coming month.

#### MANUSCRIPT REPORTS RECEIVED

##### Northeastern

Form Class Taper Curves and Volume Tables and Their Application.  
C. Edward Behre (For Jour. Agr. Res.).

Timber Growing and Forest Practice in the Central Hardwood Region.  
C. R. Tillotson.

##### Washington

Standardization of Methods of Preparing Volume and Yield Tables (Committee on Growth and Yield. Mimeographed statement).

##### District 8

Progress of Restocking Cut-over Areas, Tongass National Forest.  
J. M. Wailey.

### Appalachian

Timber Growing and Forest Practice in the Appalachians. R. H. Frothingham and E. F. McCarthy, with an introduction by Colonel Greeley.

The Influence of Weather on Inflammability of the Forest in the Southern Appalachian Region. E. F. McCarthy.

Report on a Study of the Importance of Forest Grazing in the Southern Appalachian Region. F. W. Haasis.

The Decreasing Importance of Forest Grazing in the Southern Appalachian Region. F. W. Haasis.

### Rocky Mountain

The Management of the Station Forest. J. Roeser, Jr. (Office Report).

Forest Growth in Central Rocky Mountains. C. G. Bates and J. Roeser.

### District 5

Results of Nursery and Planting Investigations in California. S. B. Show (Dept. Bul).

### Pacific Northwest

Temperature Distribution and the Effect of Seedbed Covering. A. G. Simson (Jour. For.)

New Method of Pine Brush Disposal. R. H. Westveld. (The Timberman, February 1926.)

Measuring Tree Heights on Slopes. R. E. McArdle and Roy A. Chapman (Jour. For.)

Preliminary Report on Brush Disposal for the Yellow Pine Region of Oregon and Washington. R. H. Westveld.

### Northern Rocky Mountain

Age Classes of Western White Pine Stock in Relation to Aspect of Planting Site in Northern Idaho. W. G. Wahlenberg (Jour. Agr. Res.)

IN PRINT

- Behre, C. Edward. Chart for Application of Percentile Taper Curves to Trees of Any Size Class. (Jour. For. March, 1926.)
- Brewster, Donald and J. A. Larsen. Studies in Western Yellow Pine Nursery Practice. (Jour. Agr. Res. December 15, 1925.)
- Brown, R. M. and H.D. Petheram. The Conversion of Jack Pine to Red and White Pine. (Jour. For. March, 1926.)
- Bruce, Donald. A Method of Preparing Timber Yield Tables. (Jour. Agr. Res. March, 1926.)
- Clapp, E. H. The Interdependence of Utilization and Silviculture. (Jour. For. March, 1926.)
- Gisborne, H. T. The Trend of Forest Fire Research in Northern Idaho. (Spring Issue of Idaho Forester.)
- Isaac, L. A. Flight of Fir Seed Recorded. (Four-L Lumber News, March, 1926.)
- Krauch, Hermann. The Determination of Increment in Cut-over Stands of Western Yellow Pine in Arizona. (Jour. Agr. Res. March 15, 1926.)
- Munns, E. N. Weather Prediction and Forest Fires in the Western United States (Indian Forester, March, 1926.)
- Reineke, L. H. Comparison of Caliper and Diameter Tape Measurements of Second-growth Loblolly Pine. (Jour. For. March, 1926, p. 336.)
- Simson, A. G. Study of Static Promises Aid in Forest Protection (Sunday Oregonian) March 21, 1926.
- Westveld, R. H. New Method of Pine Brush Disposal (The Timberman, February, 1926.)
- Zon, Raphael. Forestry and the Mining Industry in the Lake Superior Region. (Lake Superior Mining Inst. 24th Annual Report, 1925.)

James E. Howard. Study for the... of...  
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