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U. S. DEPARTMENT OF AGRICULTURE.



REPORT



# THE FORESTER

FOR

1901.

BY

GIFFORD PINCHOT.

[FROM ANNUAL REPORTS, DEPARTMENT OF AGRICULTURE.]



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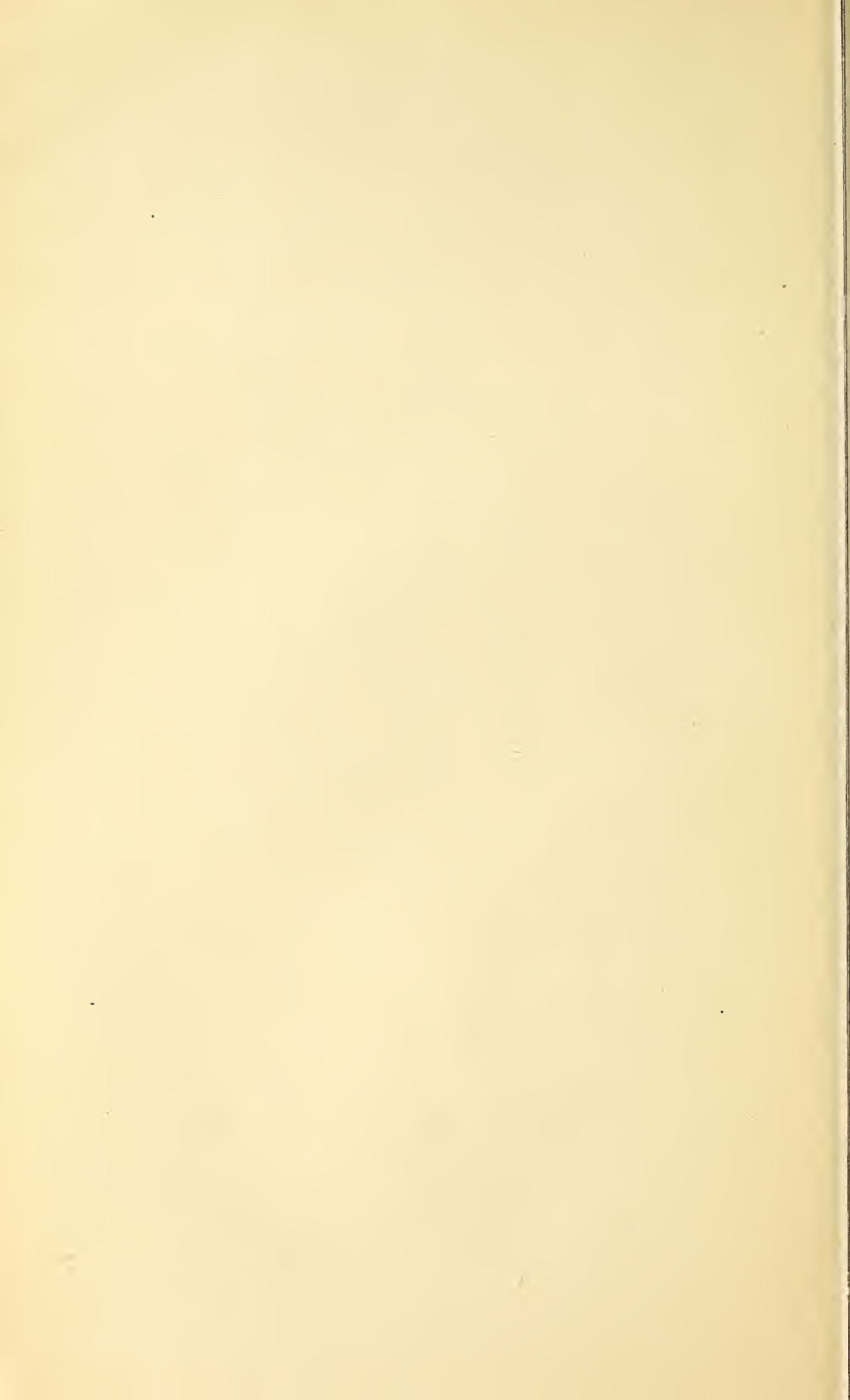
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## CONTENTS.

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	Page.
Work of the year .....	325
General progress .....	325
Efficiency and growth .....	326
Section of Working Plans .....	326
Private lands .....	326
Public lands .....	329
Forest measurements .....	330
Expenditures .....	330
Section of Special Investigations .....	330
Studies of commercial trees .....	331
Cooperative work .....	331
Forests of Nebraska and Texas .....	332
Study of sheep grazing .....	332
Studies of various forest subjects .....	332
Forest exhibits .....	332
Miscellaneous .....	333
Expenditures .....	333
Section of Tree Planting .....	333
Cooperative tree planting .....	333
Studies of planted woodlands .....	334
Forest encroachment on The Plains .....	334
Expenditures .....	334
Section of Office Work .....	334
Personnel .....	334
Library .....	335
Accounts .....	335
Correspondence and publications .....	336
Mailing list .....	336
Photographic laboratory and field instruments .....	336
Quarters .....	336
Expenditures .....	336
Work for the ensuing year .....	336
Forest management .....	336
Private lands .....	336
Public lands .....	337
Inspection .....	337
Computation .....	337
Forest investigation .....	337
Studies of commercial trees .....	337
Studies of North American forests .....	337
Grazing .....	338
Study of forest products .....	338
Cooperative work .....	338
Study of forest fires .....	338
Proposed investigations .....	338
Tree planting .....	339



## REPORT OF THE FORESTER.

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U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF FORESTRY,  
*Washington, D. C., October 10, 1901.*

SIR: I have the honor to transmit herewith a report of the work of the Division of Forestry for the fiscal year ended June 30, 1901, together with an outline of the plans for the work of the new Bureau for the current fiscal year.

Respectfully,

GIFFORD PINCHOT,  
*Forester.*

Hon. JAMES WILSON, *Secretary.*

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### WORK OF THE YEAR.

#### GENERAL PROGRESS.

During the past year the demand for the services of the Division of Forestry has continued steadily to outstrip its resources. In particular, the demand for forest working plans has notably increased, although the gain in acres is less than for the previous year, since the latter included the whole area of the National forest reserves, and no other single application of parallel magnitude is possible.

Beyond the increased demand for the services of the Division, and the increased appreciation of its work in which this demand had its rise, the most notable fact of the year was the advancement of the Division to be a Bureau by the agricultural appropriation bill approved March 2, 1901. The Bureau of Forestry came into existence July 1, 1901.

The Bureau is now called upon to give practical assistance and advice in the management of National, State, and private forests on about 50,000,000 acres, an area larger than that covered by the State of Nebraska. It has become to the people of the United States the recognized source of help in the handling of timber tracts and wood lots, the making of forest plantations, the study of commercial trees, and the investigation of important forest problems. It is occupying more and more fully its natural position as adviser in all forest matters in this country.

During the past year the preparation of the results for publication has been somewhat overshadowed by the urgent demand for field work, to satisfy which must always be the first duty of the Bureau. Provision has, however, been made for the prompt preparation of reports for publication in future, and the large number of manuscripts on hand will be made ready as rapidly as possible.

Satisfactory progress has been made during the year in the further organization of a body of trained men, which was wholly lacking

until recently. The expansion of this force, which has been a matter of great difficulty in the past, will be comparatively easy in the future, since the Bureau may now look for a steady supply of trained men from the forest schools.

The steady growth of public interest in the preservation and wise use of forests during the past year is a subject for congratulation. Not only has the interest in forest management spread among important lumber companies and other holders of forest lands, but the interest in forest preservation has taken firmer hold than ever before of those portions of the country whose prosperity depends upon their water supply. The intimate relation of forests and waters is being realized in the West with a practical force that is altogether new, and it may fairly be expected that from this time on one of the most powerful aids toward forest preservation will be the cooperation of the irrigation farmer.

There has been a marked development of the forest movement in the South during the past year. The growing appreciation of the advantages of practical forestry is here, no less than in the North, largely the direct result of practical assistance from this Division to private owners in handling their forest lands.

Interest in tree planting has revived in the central West to a very marked degree, as a result of the efforts of this Division, and the promise of still wider and happier results is exceptionally bright.

#### EFFICIENCY AND GROWTH.

It is believed that the practical efficiency of the Division has never been at a higher point than during the past fiscal year, and it may fairly be hoped that with larger resources and more numerous trained men, and with a further development of the *esprit de corps* which was already a marked characteristic of the Division, the Bureau of Forestry will reach that still higher plane whose attainment is a necessary condition to the fulfillment of the possibilities which lie in the immediate future of Government forest work.

The larger work of the Division so far outgrew its old rooms, together with all the additional space it had been able to secure from kindred organizations in the Department of Agriculture, that it was forced to find larger quarters. On May 1 it took possession of the seventh floor of the Atlantic Building, 930 F street, NW. Tentative arrangements have been made for necessary expansion to other floors of the Atlantic Building, since the present quarters are already becoming too small.

It is a gratifying fact that for the calendar year 1900 the average sick leave taken by employees of the Division of Forestry was but 7.4 per cent and of annual leave but 65.9 per cent of the legal allowance.

#### SECTION OF WORKING PLANS.

##### PRIVATE LANDS.

The applications from private owners for assistance in handling their forest lands number 38 for the past year. Twenty-one are for timber tracts and 17 for wood-lots, the total area covered being 288,555 acres. The total area of private lands to July 1, 1901, for the management of which assistance has been requested since the publication of Circular No. 21, in October, 1898, is 2,804,648 acres. This circular outlines the terms on which farmers, lumbermen, and others

may cooperate with the Bureau in handling their forest lands. Cooperation on these terms was undertaken in order to create practical examples of the conservative management of private forest lands, to show its advantages over ordinary methods, both to the owner and to the forest, and then by publication to spread a knowledge of the work and its results as widely as possible. Areas of 200 acres and under are examined, and methods of handling are advised, entirely without cost to the owner. In the preparation of detailed working plans for larger tracts, the owners were required to pay the traveling and field expenses of the men engaged in the work, amounting to about one-half the cost of the necessary studies on the ground.

Personal examinations were made during the year of 14 timber tracts and 3 wood lots in 11 States, covering 788,890 acres. Five detailed working plans were made. One of these was for 100,000 acres of Shortleaf and Loblolly Pine in Grant, Jefferson, and Saline counties, Ark., the property of the Sawyer and Austin Lumber Company.

The field work necessary to this working plan occupied a party of 6 men for six months. It included the measurement of the stand upon 1,900 acres and of the rate of growth of 625 trees, with a careful study of the forest, the habits of its trees, and the conditions necessary to their successful reproduction. An investigation was made of the effects of fire on the forest and the best means of preventing its recurrence in the future. The effect of present methods of lumbering was studied in order to advise those modifications which, without encroaching too far upon present profits, will hasten the production of a second crop upon the lumbered area. In brief, the field work included a thorough expert examination of the forest and its possibilities to serve as a basis for the best business policy in its management.

The tract of the Sawyer and Austin Lumber Company is generally favorable for practical forestry. It contains an excellent stand of merchantable timber, for which there is a steady market. The logging and transport of timber are not expensive. The reproduction of the pines, and particularly of the Loblolly, can be assured cheaply under effective protection against fire.

Another detailed working plan was made for a tract of 52,000 acres, in Dunklin and Pemiscot counties, Mo., owned by the Deering Harvester Company. This forest, situated in the moist and fertile valley of the Mississippi, contains valuable hardwoods, particularly oak, ash, and hickory, in mixture with trees of little or no commercial importance. In addition to the good opportunity which it offers for conservative forest management on a sound financial basis, this tract presents at least one exceedingly interesting and important silvicultural problem, namely, to foster, by cutting, the reproduction of the valuable hardwoods against that of the trees of little commercial value with which they occur in mixture.

A third large tract for which a working plan was made during the fiscal year was one of 1,600 acres near Lenox, Mass., the property of Hon. William C. Whitney. It is a second-growth hardwood forest from 15 to 40 years old, from which the first growth has been entirely removed. The problem here was to improve the quality of the future mature stand by the removal of worthless kinds and of stunted, unpromising, and malformed trees. It has been found that these cuttings pay, and they will consequently be continued throughout this forest.

A fourth working plan was completed for 60,000 acres of spruce,

pine, and hardwood in the northern Adirondacks, the property of Mr. William G. Rockefeller. The area is notable as containing one of the most valuable bodies of White Pine in New York.

In addition to those completed, the preparation of working plans was begun upon five timber tracts with a total area of 628,000 acres. One of these, 80,000 acres in extent, lies in the Great Smoky Mountains of eastern Tennessee, a region which offers a wide field for practical forestry and in which the Bureau is doing its first work on a large scale in that State. The field work done on this tract included a careful study of the more important hardwoods, particularly of the White Oak and Yellow Poplar.

A tract of 350,000 acres in Maine, owned by the Great Northern Paper Company, is the largest area of private ownership for which the Division has definitely undertaken a working plan and in several ways one of the most promising. The larger portion of the tract is on the Penobscot River near Moosehead and Chesuncook lakes. The country contains a network of lakes and ponds surrounded by low hills, between which are long stretches of fairly level land. It is in consequence admirably adapted to the cheap logging and transport of soft-wood timber. The forest is composed chiefly of spruce and fir, with a varying mixture of hardwoods. The object of the owners is so to lumber the tract as to insure a sustained supply of soft-wood timber for their mill.

It is a noteworthy fact that, before applying for a working plan for its land, the Great Northern Paper Company had already shown its appreciation of the advantages of conservative forest management by incorporating in its logging contracts several of the more important rules which govern lumbering now carried on under the supervision of the Bureau of Forestry in the Adirondacks. It is believed that the voluntary adoption of these rules by a paper company is the strongest argument in their favor yet made.

In the Adirondacks there are now four tracts to which practical forestry is applied under the direction of the Bureau. One tract of 10,000 acres was added during the year, and the total area under management in that region is now 156,470 acres. An important experiment in thinning second-growth hardwoods has been undertaken on the 14,000 acres of hardwood land in Massachusetts to which reference has been made, in order to test the opportunity to make a profit and improve the stand. The results, coupled with the study of the rate of growth of New England hardwoods now in progress, will be of direct value in suggesting lines along which similar New England woodlands may be advantageously handled.

The first year's work in practical forestry on the 6,000-acre domain of the University of the South, at Sewanee, Tenn., has been satisfactory. The cutting advised in the working plan was carried out under the direction of an agent of the Division. It left the forest in good condition and yielded a profit at least equal to that usually earned by ordinary lumbering under similar conditions in that neighborhood.

This Bureau is now acting as the referee between the State of New York and the Moose River Lumber Company, the holder of a contract to lumber township 8, Herkimer County, N. Y., which now forms a part of the Adirondack Preserve. At the joint request of the Forest, Fish, and Game Commission of New York and the president of the company, the Division of Forestry agreed to mark the timber to be cut under this contract, and to assist in the location of lumber roads, the expense of the work to be borne by the company. This request for



what is practically a combination of arbitration and forest management is a gratifying mark of the influence of the practical field work of the Division of Forestry in the Adirondacks.

The total area of private forests actually under the management of the Bureau of Forestry is now 176,975 acres.

Of the tracts of which preliminary examination was made during the year and for which detailed working plans will be made as soon as possible, one of the most promising is that of the Okeetee Club, near Ridgeland, S. C. This consists of 60,000 acres of Longleaf Pine land in Beaufort and Hampton counties, about 30 miles north of Savannah. It presents a notable opportunity for the study of the Longleaf Pine and of the relation which fire bears to its reproduction. The fact that it is at the same time thoroughly well adapted for practical forestry makes the preparation of the working plan one of the important pieces of work to be undertaken by the Bureau.

The tract of the Moose River Lumber Company, in the Adirondacks, has been examined and a working plan recommended. That this working plan is now in preparation is significant of the growing appreciation by lumbermen and business men generally of the advantages of conservative forestry.

#### PUBLIC LANDS.

During the past year the Division, as rapidly as its force and its appropriation would allow, has pushed the preparation of working plans for the National forest reserves. This exceedingly important piece of work is the result of a request upon the Secretary of Agriculture from the Secretary of the Interior for technical advice regarding the management of the reserves, which comprise an area of 46,828,449 acres.

During the year the field work necessary to a working plan for the Black Hills Forest Reserve was completed. It occupied a party of 16 men for four months, and included a thorough study of the Western Yellow Pine, or Bull Pine, of local questions of lumbering, grazing, and fire, and of those conditions generally which must determine the best management of the reserve. The total stand of timber and young growth was measured upon 10,234 acres and the rate of growth of 4,500 trees was ascertained, to serve as a basis for calculations of volume and yield. The working up of these results is nearing completion. There is no other forest in the United States in which practical forestry is more urgently needed, or in which results of such importance may be more easily achieved than in the Black Hills Forest Reserve. It is practically a pure forest of Western Yellow Pine, remarkable for the abundance of its reproduction and its thorough adaptation to practical forestry. Upon its preservation depends the timber to supply a great and rapidly growing mining industry which has built up and now maintains the prosperity of this region. Its effect upon the water supply, without which mining in the Black Hills must fail, offers a most striking example of the influence of forests upon stream flow. Already vast expenditures have been made to bring from other streams the indispensable water supply formerly taken in abundance from sources which have failed since the destruction of the forest.

Examinations preparatory to working plans were made of the Prescott, Big Horn, and Priest River forest reserves, a total area of 2,249,600 acres.

Next in importance among the duties of this section to the work in

the Federal forest reserves is the preparation of working plans for practical forestry in the New York State Forest Preserve, the result of a request by the Forest, Fish, and Game Commission in the winter of 1900. The purpose of this request was to enable the commission to present to the legislature an authoritative statement of how the preserve should be handled under practical forestry and upon it to base definite recommendations.

The working plan for township 40, Totten and Crossfield purchase, Hamilton County, N. Y., was completed, and has recently appeared as Bulletin No. 30 of the Division of Forestry. It is the result of the most careful study on the ground which has ever served as the basis for a forest working plan in this country. This study shows that township 40 is fully adapted for practical forestry, and that it contains a sufficient quantity of accessible mature timber to insure profitable lumbering under conservative methods. The original forest which still covers the township includes large quantities of mature and over-mature trees, the prompt marketing of which is necessary both in order to avoid direct loss by decay and to improve the conditions of growth for the young trees, which must make the forest of the future. The working plan for township 40 outlines in detail a safe, practicable, and profitable method of lumbering the soft-wood timber, which will improve the condition of the forest, protect the sources of water supply, and leave untouched the value and beauty of the township as a public preserve. This working plan was made under a State appropriation of \$2,000 for the expenses of the agents of the Division of Forestry while in the field. During its last session the New York legislature appropriated \$3,500 more to prepare working plans for townships 5, 6, and 41. This work was begun in May of the present year and continued throughout the summer.

#### FOREST MEASUREMENTS.

No small part of the work of the Section of Working Plans lies in the computation of results obtained in the field by both this section and the Section of Special Investigations in its studies of commercial trees. During the year this work comprised the calculation and casting into final tables of measurements of the total stand of young and old trees on about 19,000 acres, and of the rate of growth of over 9,000 trees.

#### EXPENDITURES.

The total expenditures during the year by the Section of Working Plans were \$29,088.73, or 32.9 per cent of the total appropriation. Of the \$12,775 contributed by private owners as their share of the expenses in the preparation of working plans begun during the year 1900-1901, \$1,785.36 had been expended at the end of the fiscal year.

#### SECTION OF SPECIAL INVESTIGATIONS.

This section has a wide and increasing field. It includes many important lines of investigation, among which are studies of commercial trees, forest fires, grazing, log scales, forests and water supply, the compilation of forest histories, and the investigation of forest products. The section is confronted by a number of forest problems whose solution is of direct and urgent importance to the best development of our natural resources.

## STUDIES OF COMMERCIAL TREES.

The studies of Redwood and of Red Fir and Western Hemlock, continued from last year, have been completed. These studies, which embody the results of careful and very extensive investigations on the ground, will be prepared for publication during the current year.

Incident to the preparation of a working plan for the Black Hills Forest Reserve by the Section of Working Plans, a very extensive study of the Western Yellow Pine was carried on. This study, the first made by the Division of Forestry, will form the basis for a contribution to the knowledge of a most important timber tree. The collection of similar data for this tree was begun toward the close of last year in the Prescott Forest Reserve, Arizona.

A careful study was made of the Big Tree groves in the California sierras, and their ownership was ascertained. In view of the incomplete information hitherto available for these groves, this study is of great value, both to show their comparative suitability for reserves and for the general knowledge of the tree. A number of groves, hitherto unrecorded, were examined and mapped in the course of an investigation of the northern part of the Sierra Forest Reserve.

Of the monographic studies of Red Cedar, White Cedar, and Bald Cypress, completed last year by the late Dr. Charles Mohr, that of Red Cedar is now in press. Dr. Mohr had also completed studies of eleven of the more important oaks. Frequent requests are received for precisely the information given in these unpublished monographs.

Incident to a working plan for the tract of the Sawyer and Austin Lumber Company in Arkansas, valuable data were collected for the Loblolly and Shortleaf Pines, while a thorough study of the Longleaf Pine in South Carolina was begun.

In the preparation of a working plan for a forest tract in the northern Adirondacks, the growth and habits of the Balsam were investigated. The importance of this tree for the manufacture of paper pulp is increasing steadily with the decreasing supply of spruce. A similar study of the Balsam was begun in Maine as a part of the field work necessary to the working plan for the tract of the Great Northern Paper Company.

In the preparation of a working plan for the domain of the University of the South, at Sewanee, Tenn., the study of the important hardwoods of that region was well begun; while a large number of measurements were obtained for White Ash, Hickory, Cow Oak, and White Oak, during the making of a working plan for the tract of the Deering Harvester Company in Missouri.

Incident to a working plan for a tract in Massachusetts an important study of the second-growth hardwoods of that region was begun, and has been extended widely during the year over second-growth lands in other portions of New England.

## COOPERATIVE WORK.

In cooperation with the U. S. Geological Survey, a study was made of the region of the proposed Appalachian Forest Reserve. This investigation was specifically authorized by Congress and had for its object to ascertain the suitability of the region examined for a National forest reserve, the probable cost of such a reserve, and to consider the direct and indirect returns under practical forestry. One of the important results of the work is a map, showing the woodland, tim-

berland, and agricultural and other lands within the area of 9,600,000 acres examined.

An examination of 3,049,120 acres in the Sierra Forest Reserve was made, also in cooperation with the U. S. Geological Survey. Special attention was given to the kind, quality, distribution, and stand of the forest trees. The effects of lumbering, fire, and sheep grazing on the forest were also noted. A map which accompanies the report shows the distribution of forest and other lands, the density of the forest, and the location of lumbered, burned, and grazed areas.

#### FORESTS OF NEBRASKA AND TEXAS.

An extensive investigation of the present forest condition of Nebraska was begun and carried far enough to demonstrate the practical feasibility of replanting large areas hitherto believed to be permanently treeless.

An elaborate report on the forests of Texas was completed and will be published during the coming year.

#### STUDY OF SHEEP GRAZING.

During the season 12 of the Federal forest reserves were examined with special reference to the effects of grazing on the forest. The result of this work was to develop, in harmony with the conclusions reached after similar study in the past, a workable system of proposed regulations, whose enforcement would sustain equally the welfare of the forest, of the uses of water, and of the grazing interests.

#### STUDIES OF VARIOUS FOREST SUBJECTS.

*Forest fires.*—An extended study on the ground was made of forest fires and reproduction in the North Park and Medicine Bow Mountains of Colorado. Special attention was given to this subject in the reserves of Arizona, California, Oregon, Washington, and Wyoming.

In the historical study of forest fires, records of about 1,800 fires were added during the year, bringing the total number recorded to over 10,000.

*Forest history.*—Histories of lumbering in Mississippi, Louisiana, and Texas were undertaken, and that of New York was pushed far toward completion.

*Log scales.*—The first volume of the Woodman's Handbook is nearing completion. It contains information useful to foresters, forest students, lumbermen, and laymen. A feature of the preparatory work for the Handbook is an exhaustive collection of American log scales, with a discussion of their comparative accuracy.

*Forest products.*—A useful report has been prepared on the maple-sugar industry. It deals with the history and distribution of the industry and with methods of manufacture of the pure and unadulterated product.

#### FOREST EXHIBITS.

The forest display installed at the Paris Exposition in the spring of 1900 remained on exhibition during the remainder of that calendar year. The general purpose of the exhibit was to illustrate the relation of forests to agriculture. Its most notable part consisted of 92

transparencies, bromide enlargements, and maps, some of the first being the largest glass pictures ever made. The exhibit was awarded a gold medal.

The forest exhibit of the Department of Agriculture at the Pan-American Exposition was prepared in the Division of Forestry, and was installed by June 20, 1901. It consisted chiefly of colored transparencies and bromide enlargements and maps, and illustrated the general progress and condition of forestry and forests in the United States.

#### MISCELLANEOUS.

Much attention was given during the year to the photographic collections and to the identification of botanical specimens submitted by the various Divisions, by the National Museum, and by several State experiment stations.

With the Bureau of Plant Industry, a plan for labeling trees on the grounds of the Department was devised, a list of names was supplied, and attention was given to the placing of the labels.

#### EXPENDITURES.

The total expenditures of the Section of Special Investigations were \$21,616.73, or 24.4 per cent of the total appropriation.

#### SECTION OF TREE PLANTING.

There has been notable development in the work of this section during the year. The plan of cooperative planting when first announced drew many applications for small tracts, principally in the prairie States. The practical assistance given in these cases and the better understanding of the purpose and results of economic tree planting have since drawn applications from a wider territory and for larger tracts. Owners of unprofitable cleared or treeless land are beginning to see in the cooperation offered by the Bureau a means of rendering their lands valuable, and are applying for assistance in planting.

The proof given by examples on the ground that commercial plantations are profitable in the Middle West has started a movement toward large plantations of timber for the production of fence posts, telegraph poles, and railroad ties. Private landowners are entering this work in increasing numbers every year. Several railroad companies are seriously considering large plantations of forest trees, and are already in consultation with the Bureau.

The study of the encroachment of forests on the plains has already shown that portions of the semiarid public lands, wholly unfit for farming and of little value for grazing, can be forested at reasonable expense. If further investigation shows that large areas of such land can be reclaimed in this way, as it seems altogether likely to do, a vast field will be opened for useful work.

#### COOPERATIVE TREE PLANTING.

The applications for assistance in forest planting numbered 148 for the fiscal year; 46,145 acres were examined and detailed planting plans were prepared for 5,785 acres. The greater number are for small tracts. There is a conspicuous increase in the number of large tracts for which planting plans are asked. Applications are on file

for several tracts of over 5,000 acres each. In other instances the planting begun on small areas will be extended over hundreds and even thousands of acres as rapidly as the facilities for planting will permit. Requests have been received for planting plans for commercial plantations in the treeless plains, for the production of fence posts, telegraph poles, and railroad ties. Fertile agricultural land is employed for these purposes, there being no longer any question that such land can, under certain conditions, be used as profitably for a forest as for an agricultural crop.

For all this planting the Bureau of Forestry furnishes direction and advice. The planting material and the necessary labor are invariably furnished by the owners.

#### STUDIES OF PLANTED WOODLANDS.

Forest measurements were made in 32 of the largest commercial plantations in Nebraska, Iowa, South Dakota, and Kansas, including the Hunnewell, Munger, and Yaggy plantations, and that of the Kansas City, Fort Scott and Memphis Railroad. These results are of the highest value, not merely in showing the growth of some plantations in these regions, but especially because they exhibit also the profitable nature of these undertakings. A bulletin embodying the results of these studies is in preparation.

#### FOREST ENCROACHMENT ON THE PLAINS.

This investigation, tentatively begun a year ago, was continued in nearly all the States of the Great Plains. The immense area to be covered will make the investigation a long one, but it has already yielded important information on tree planting in many localities. The work was done mainly in connection with the field work for cooperative tree planting and the studies of planted woodlands, but in May, 1901, a careful investigation was begun in Nebraska to determine the possibility of reclaiming portions of the nonagricultural public lands by judicious planting, and by protection from fire and grazing. This study was carried far enough to show that portions of the sand hills, heretofore considered almost worthless, can be forested with valuable timber at comparatively small expense.

Much attention was given during the year to the spread of information on tree planting. Circular No. 22 was revised and enlarged, and more than 10,000 copies were sent out. A Farmers' Bulletin, "Tree planting on rural schoolgrounds," was prepared and submitted for publication. Forty mimeographed circulars giving directions for the planting and care of various species of forest trees were prepared, and a special mailing list of 2,000 names was compiled. Public lectures, illustrated with lantern slides, were frequently given by the members of the section while in the field.

#### EXPENDITURES.

The expenditures for the Section of Tree Planting during the year were \$9,523.61, or 10.8 per cent of the total appropriation.

#### SECTION OF OFFICE WORK.

#### PERSONNEL.

On July 1, 1900, the number of employees in the Section of Office Work was 14. During the year this number was increased by the

appointment of 3 stenographers, a property clerk, 2 library assistants, 2 photographers, 2 laborers, and 2 charwomen, being a total of 26 employees in this section at the close of the fiscal year.

In addition to the above, the Section of Office Work carried on its rolls an accountant, who was assigned to duty with the division of accounts.

The total amount expended for salaries in this section was \$19,233.39.

## LIBRARY.

The main collection of forestry literature still remains in the Department Library, as the quarters assigned for the library of the Bureau are inadequate to store this collection. Only such works, therefore, as are most frequently referred to are kept in the Bureau library. There are at present 110 bound volumes and 1,300 pamphlets in the Bureau collection. During the year 3,200 newspaper clippings were purchased, and these have been numbered, classified, indexed, and filed. A large part of the old subject index has been revised and copied, and, in addition, 15 French, German, and English periodicals have been regularly indexed. A file has been kept of all Congressional bills, acts, documents, and reports bearing on forest topics.

The photograph collection of the Bureau numbers 4,968 prints, of which 2,000 have been fully described, labeled, and classified, and are ready to be catalogued; 567 lantern slides were added to the collection. A special case has been made to hold the slides, and they will be arranged to correspond with the photographs. During the past year the library staff was too limited to record properly the mass of collected material, but it is expected that during the coming year complete records will be kept, all the accumulated material catalogued, and current accessions regularly disposed of.

## ACCOUNTS.

The following statement, prepared by the accountant, gives the expenditures in the different sections of the Division for the fiscal year July 1, 1900, to June 30, 1901:

*Expenditures for fiscal year 1900-1901.*

Section.	Salaries.			Expenses.			Total expenditure.	Per cent of total appropriation.
	Amount.	Per cent of total salaries.	Per cent of total appropriation.	Amount.	Per cent of total expenditures.	Per cent of total appropriation.		
Chief of Division.....	\$2,500.00	3.9	2.8				\$2,500.00	2.8
Working plans.....	22,933.02	35.9	25.9	\$6,155.71	24.9	7	29,088.73	32.9
Special investigations.....	14,180.38	22.2	16	7,436.35	30.2	8.4	21,616.75	24.4
Tree planting.....	5,022.48	7.9	5.7	4,501.13	18.3	5.1	9,523.61	10.8
Office work.....	17,136.43	26.8	19.4	2,338.43	9.5	2.6	19,474.86	22
Photographs.....	2,096.96	3.3	2.4	1,880.13	7.6	2.1	3,977.09	4.5
Instruments.....				2,338.98	9.5	2.6	2,338.98	2.6
Total.....	\$63,869.27	100	72.2	24,650.73	100	27.8	88,520.00	100

<sup>a</sup> The large percentage of the total appropriation paid for salaries requires explanation. The proportion between 72.2 per cent paid for salaries and 27.8 per cent paid for expenses does not represent the relative importance of field and office work in the activity of the Bureau. A very considerable part of the field expenses was met by the contributions of owners of forests for which plans were made. It should be remembered also that the cost of computing the field results, which appears wholly under the heading of salaries, is necessarily very great.

## CORRESPONDENCE AND PUBLICATIONS.

Close attention was given to the prompt handling of correspondence. With few exceptions action was taken and acknowledgment made within forty-eight hours after the receipt of any communication. The increase in the amount of correspondence recorded for the previous fiscal year was maintained. The correspondence for the year numbered 15,051 letters, as against 8,800 for the preceding year.

During the year there were published three bulletins (25,000 copies), two extracts from Yearbook (30,000 copies), the Report of the Forester for 1900 (8,000 copies), and six press bulletins (19,100 copies), a total of 82,100 copies. In addition there were reprinted 1,000 copies of Bulletin No. 22; 4,000 of Bulletin No. 28; 2,000 of Circular No. 12; 2,000 of Circular No. 21; and 22,000 of Circular No. 22, to which should be added a Congressional reprint of Bulletin No. 24, "A Primer of Forestry, Part I" (35,000 copies), of which 20,000 copies were placed at the disposal of the Division of Forestry. There were distributed in all 81,575 copies.

## MAILING LIST.

In the early part of the fiscal year a radical change was made in the manner of distributing bulletins. Because of the largely increased demand, it was decided to forward them only upon application. Notices of their appearance, with brief descriptions, are now sent to those persons whose names are on the mailing list of the Bureau, and applications are honored in the order of their receipt. The annual report of the Forester, the circulars of the Division, and the reprints of its contributions to the Yearbook of the Department are sent to all addresses on the mailing list, as heretofore.

## PHOTOGRAPHIC LABORATORY AND FIELD INSTRUMENTS.

At the beginning of the fiscal year the photographic laboratory was placed in a satisfactory working condition, and excellent work was done throughout the year; 4,778 films and plates were developed; 6,632 prints were made, and altogether 16,474 items of work were performed.

During the year the supply of field instruments was largely increased, the total amount expended for this purpose being \$2,338.98. At the beginning of the present fiscal year the Bureau was well furnished with the tools necessary for its work in the field.

## QUARTERS.

On May 1, 1901, the Division was removed to more commodious and satisfactory quarters in the Atlantic Building, 930 F street NW.

## EXPENDITURES.

The expenditure for the Section of Office Work during the year was \$28,290.93, or 31.9 per cent of the total appropriation.

**WORK FOR THE ENSUING YEAR.**

## FOREST MANAGEMENT.

## PRIVATE LANDS.

It is expected that working plans will be completed for 5 timber tracts, upon which field work has already been begun. These tracts



have a total area of 628,000 acres. A working plan for the 60,000-acre tract of the Okeetee Club, near Ridgeland, S. C., will be begun in the early winter.

Preliminary examinations will be made of about 1,000,000 acres of Longleaf Pine land in Texas, 50,000 acres of Longleaf Pine land in South Carolina, 16,000 acres of hardwood land in North Carolina, 60,000 acres of hardwood land in Tennessee, 10,000 acres of Shortleaf Pine land in Georgia, and 17,000 acres of second-growth hardwood land in New York, and will be followed by working plans for some of these tracts. As many other examinations as possible of private forest lands, for which assistance has been requested, will be made. It is intended to devote more attention to the study of wood lots than has been practicable during the past year.

#### PUBLIC LANDS.

Preliminary examinations will be made of 4 of the Federal forest reserves, and the field work incident to working plans will be begun upon at least 2 of them. Plans already in preparation will be continued or completed.

#### INSPECTION.

Markings and inspection of lumbering will continue upon those tracts in the Adirondacks which are under the oversight of the Bureau, upon the 6,000-acre domain of the University of the South, at Sewanee, Tenn., and upon a 14,000-acre tract near Lenox, Mass. Markings and inspection will be begun upon the 14,000-acre tract of Mr. E. H. Harriman, in New York, and upon other lands for which they are requested and advised in working plans already prepared.

#### COMPUTATION.

An effort will be made to complete the working up of all field results obtained during the year. The quantity to be handled exceeds considerably that of the fiscal year 1900-1901.

#### FOREST INVESTIGATION.

##### STUDIES OF COMMERCIAL TREES.

Studies of important hardwoods will be carried on in the Smoky Mountains and the Cumberland Plateau. The investigation of second-growth hardwoods in New England and of Balsam in Maine will be continued, while a study of the White Pine in Michigan will be begun. Western Yellow Pine will be studied in South Dakota and Arizona, and Sugar Pine and the Bristle-Cone Fir in California.

Monographic studies of Southern timber trees will be continued, and will include the hickories, additional important oaks, ashes, elms, beech, chestnut, tulip poplar, lindens, and sweet gum.

##### STUDIES OF NORTH AMERICAN FORESTS.

Forest distribution in Nebraska, Colorado, and Montana will be investigated. The study of the influence of forest cover on the run-off of streams, begun in southern California during the last fiscal year, will be continued.

At the request of the Michigan State Forest Commission a study

will be made of State forest lands in Michigan, in order to devise a plan for their management. The forests of the Sacramento Mountains of New Mexico will be studied on the ground.

#### GRAZING.

Studies of the effect of grazing on the forest will be continued in Wyoming (Yellowstone Timberland Reserve and Teton Forest Reserve), in southern New Mexico (Sacramento Mountains), in the southern and central California forest reserves, and in Montana.

#### STUDY OF FOREST PRODUCTS.

In cooperation with the Bureau of Chemistry, important investigations will be begun of native trees of the United States and Philippine Islands yielding commercial tan barks, resins, and gums. About fifty species will be studied during the year. The recent establishment in the Bureau of Chemistry of a dendro-chemical laboratory makes this investigation possible.

A study will be made of the production of commercial resins by Southern pines, particularly of the Longleaf Pine, and an effort will be made to devise an improved method of tapping. The need of a less destructive method than the one now in use is greatly felt.

An investigation of the supplies of railway timber available from forest plantations, especially in the Middle West, will be undertaken. Special attention will be given to the study of timber trees producing railway ties in the shortest time.

A study of the conditions, causes, and prevention of decay in railroad and other timber will be undertaken on a large scale in collaboration with the Bureau of Plant Industry. This is work of the first importance

#### COOPERATIVE WORK.

Forest descriptions will be made of additional areas in the region of the proposed Appalachian Forest Reserve, and in the southern portion of the Sierra Forest Reserve of California, in cooperation with the U. S. Geological Survey.

A preliminary forest description and study of important forest problems are to be undertaken in Vermont.

In cooperation with the Maryland geological survey forest descriptive work will be continued covering 4 of the best timbered counties of the State.

#### STUDY OF FOREST FIRES.

Studies of forest fires will be made this year in Wyoming, California, New Mexico, Idaho, Michigan, Maine, and other States.

The collecting of forest-fire records will be continued, and will include the examination of a large number of Western papers.

#### PROPOSED INVESTIGATIONS.

Other lines of investigation which will be undertaken, if the resources of the Bureau will permit, are as follows:

A study of various woods, with a view to determining those suitable for the manufacture of excelsior.

Studies and experiments to show the fuel value of various woods as compared with that of hard and soft coals.

#### TREE PLANTING.

Extensive forest measurements will be made in the planted woodlands of New England and the Eastern States, and additional facts will be collected in the plantations already studied in the Middle West. The study of forest encroachment on The Plains will be continued, with Nebraska as one of the principal fields. As many preliminary examinations for planting plans as possible will be made. Some of the applications are for very large tracts, notably one of 8,000 acres in Wisconsin and one of 160,000 acres in Washington. The demand for work in tree planting has already far outgrown the resources of the office, and is still increasing.

