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REPORT

OF

THE FORESTER

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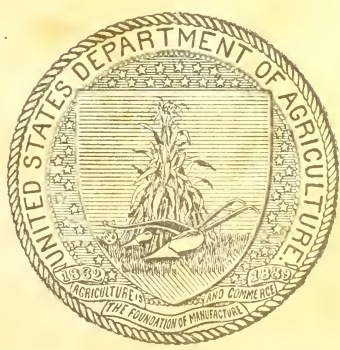
1900.

BY

GIFFORD PINCHOT.



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REPORT OF THE FORESTER.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF FORESTRY,
Washington, D. C., September 10, 1900.

SIR: I have the honor to transmit herewith a report of the work of the Division of Forestry for the fiscal year ending June 30, 1900, together with an outline of the plans for the work of the Division for the current fiscal year.

Respectfully,

GIFFORD PINCHOT,
Forester.

Hon. JAMES WILSON, *Secretary.*

WORK OF THE YEAR.

PUBLIC AND PRIVATE DEMANDS UPON THE DIVISION.

The past year has witnessed a conspicuously wider and more effective and intelligent interest in forest matters in the United States than any previous year; consequently the opportunity for the spread of practical forestry in the woods, through which alone the forests can be saved, is far better than ever before. If this unexampled opportunity is neglected the loss will be correspondingly deplorable and severe.

The Division of Forestry is beginning to move toward the place to which the crucial importance of forest preservation justly entitles it. This statement is illustrated and emphasized by the central fact of the year, which is that the private and official demands for the services of the Division have far outstripped the growth of its resources. In spite of the increased appropriations for the fiscal year 1899-1900, and of the growth of its personnel from 61 on July 1, 1898, to 123 a year later, this Division is proportionately less able to cover the ground of its evident duty than it was a year ago. To cite but one instance, the applications for working plans have grown within one year from 1,513,592 acres to cover an area of 51,192,714 acres. Since the introduction of practical forestry on the national forest reserves and on private lands alike depends more than on any other factor upon the ability of the Division of Forestry to comply with these requests, the meagerness of its resources is the most effective of all hindrances to the progress of forest reform in the United States.

The most conspicuous additions to the demands upon this Division during the year have come from the Secretary of the Interior and from the Forest, Fish, and Game Commission of New York. Simply to comply with the request of the former for working plans for the management of the timber on the national forest reserves and for the investigation of the grazing and other problems within their bounda-

ries, would of itself absorb the whole present force of this Division for many years. To prepare working plans for the New York State Forest Preserve, of a million and a quarter acres in extent, is a far smaller, yet, from the point of view of the resources of this Division, a gigantic task. In a similar way the section of economic tree planting finds it impossible to meet the demand upon it for practical cooperation with tree planters throughout the treeless West and for the study required to make the experience of past planting available for guidance in the future. So also the section of special investigations is checked by the lack of funds in its attempt to bring about a reduction in the number and destructiveness of forest fires and to acquire information of critical necessity to the best management of our forest resources.

When to all this is added the various other work of indispensable importance which overwhelms the three field sections, and the severe strain upon the section of office work involved in the multiplied correspondence and in the elaboration of results, it becomes still more evident that the Division of Forestry is being held by its inadequate resources far below the measure of service which it ought to render, and for which the demand is already of the most insistent kind.

There is no subdivision of agriculture dealt with by this Department which approaches the forest in the amount of its contribution to the material welfare of the country or in the money value of its products, and none which is in such pressing danger or in so imperative need of agitation and practical work.

SUMMARY OF PRINCIPAL RESULTS.

During the year applications were received for working plans for 48,078,449 acres, personal examinations on the ground were made of 2,103,670 acres, working plans were begun upon 1,325,000 acres, plans were completed for 179,000 acres, and 54,000 acres were put under management. In accordance with the request of the Secretary of the Interior, the preparation of a working plan for the Black Hills Forest Reserve was begun as the first step toward conservative lumbering on the national forest reserves. The working plans already in operation under the supervision of this Division were all continued, and the character of the work was in nearly all cases much improved.

Planting plans were prepared for 59 land owners in 11 States. A unique and most promising study of the effect of forest cover on the flow of streams was begun in southern California through the courtesy and cooperation of the Arrowhead Reservoir Company of San Bernardino. Studies of forest fires were made in 26 States, and the grazing investigation requested by the Interior Department for the national forest reserves was inaugurated. Working plans were also begun for the New York State Forest Preserve.

The investigations of the growth and reproduction of commercial trees were continued and extended, and the studies in the history of forestry produced important results, now ready for publication. A report upon the Big Trees of California was prepared for the Senate Committee on Public Lands and was printed as Senate Doc. No. 393, Fifty-sixth Congress, first session. A complete compilation of the laws relating to forestry in all the States was finished, and will shortly be submitted for printing. In addition to the reprints from the Yearbook, 5 bulletins and 1 circular were published during the year, with a total circulation of 89,000 copies, and more than twice as many papers were awaiting editorial revision at the end of the year. Of

one bulletin, *A Primer of Forestry—Part I*, a second edition of 35,000 copies was ordered by act of Congress. An exhibit, in some respects altogether novel in character, was prepared for the Paris Exposition, in illustration of the relation of forestry to agriculture; and an extensive examination of the forests of the southern Appalachians was begun. During the year field parties have been at work in 26 States and Territories. The general efficiency of the personnel was increased to a marked degree during the year. These results were obtained by the expenditure of an appropriation of \$48,520.

SECTION OF WORKING PLANS.

PRIVATE LANDS.

The applications for advice and assistance in handling private forest lands have continued to be so numerous during the past year that the small force of the Division has been entirely unable to meet the demand. New applications have been received for 964,450 acres, making a total of 2,478,045 acres of private lands applied for since the circular offering assistance to private owners was issued in October, 1898.

Personal examinations were made during the year of 48 tracts in 14 States, covering 878,670 acres. Detailed working plans were made on 4 large tracts—2 in the Adirondacks, aggregating 170,000 acres; 1 in Tennessee of 6,000 acres, and 1 in central New York of about 3,000 acres. Marking was done upon 2 wood lots in Maryland, 1 in New Jersey, and 1 in Vermont. In June, 1900, a working plan was begun for a tract of Shortleaf Pine in Arkansas, covering about 100,000 acres. This latter is the first extensive technical forest work which has been undertaken by a lumber company in the South.

Applications for working plans had, on July 1, been received from all the States and Territories except 13, and from nearly all of the latter requests for planting plans have reached the Division.

In the Adirondacks the third season's work of practical forestry was successfully begun on two adjoining tracts, which cover an area of 108,000 acres. A third tract in the Adirondacks was placed under actual forest management during the month of June, and the working plan prepared by the Division for 6,000 acres owned by the University of the South at Sewanee, Tenn., was put into operation at nearly the same time.

PUBLIC LANDS.

The most important work yet undertaken by the section of working plans of the Division is that of preparing working plans for the entire area of the federal forest reserves. This work is the result of a request upon the Secretary of Agriculture by the Secretary of the Interior for technical advice regarding the management of the reserves. On account of the lack of funds and the inability of the Interior Department to participate in the expenses, it was possible to organize the work upon only one reserve during the year. A party was sent to the Black Hills Forest Reserve in March, and by the end of the fiscal year several hundred thousand acres had been studied.

Still another very important piece of work has been undertaken upon the New York State Forest Preserve. During the winter a request was made by the Forest, Fish, and Game Commission of New York for working plans for the State preserve. The purpose of this

request was that the commission might obtain and make public an authoritative statement of how the preserve should be handled if under actual forest management, and upon this basis make definite recommendations to the State legislature. The sum of \$2,000 was appropriated by the legislature for the expenses of the agents of the Division in this work, and two foresters in the employ of the State were placed at the disposal of the Division. The work was organized at the close of the year at Raquette Lake, Hamilton County, N. Y.

EXPENDITURES.

The total expenditures during the year under the ledger head of "Working plans," were \$12,476, or 25.7 per cent of the total appropriation. The total amount of money contributed by private owners to the expenses of preparing working plans upon their tracts was \$1,750.

SECTION OF ECONOMIC TREE PLANTING.

COOPERATIVE TREE PLANTING.

The plan of cooperative tree planting outlined in Circular No. 22 of the Division was put into operation during the year. The farms of the earliest applicants were visited in September, 1899, and from that time until the close of the fiscal year planting plans were made for 59 applicants. The work extended from New York to California and from North Dakota to Texas, but it centered in the States of the Plains, where the necessity for wood lots, wind-breaks, and shelter belts is very great. During the year planting plans were made for 3 applicants in Texas, 12 in Oklahoma, 26 in Kansas, 6 in Nebraska, 5 in North Dakota, 2 in Iowa, and 1 each in New York, Minnesota, New Mexico, Colorado, and California.

In connection with cooperative tree planting in the Plains region, an excellent opportunity occurs for the study of the natural encroachment of trees upon the Plains. This work has been pursued during the year by the members of the Division working in that region. It is of great value in giving more accurate information upon the adaptability of different species of indigenous trees for planting on the Plains.

Special investigations and experiments were made in forest-tree planting at Ridgway, Pa., and examinations of tracts of land were made in Maine and Pennsylvania, and reports submitted regarding their management, with special reference to planting.

STUDIES OF GROWING PLANTATIONS.

Careful measurements of the results of plantations already made resulted in much valuable material, a part of which was published in Bulletin 27 of the Division. In addition, local investigations relating directly to trees and tree planting were carried on in 5 States by collaborators of the Division.

FORESTS AND WATER SUPPLY.

An opportunity which is believed to be without parallel for the study of the relation of forest cover to the flow of streams was sought and found in southern California upon the lands of the Arrowhead Reservoir Company, whose observations of precipitation, run-off, evaporation, and temperature for eight years, through the courtesy of the

engineer in charge, Mr. H. B. Hedges, by whom they were made, have been placed at the disposal of this Division. A careful study of the subordinate watersheds, which differ completely among themselves in the character of their forest covering, was undertaken, and strong hopes are entertained of valuable results from the comparison of the run-off from various types of cover.

A preliminary examination was made, followed by rough plans and recommendations, in cooperation with the section of working plans, for the drainage basin from which the city of Johnstown, Pa., obtains its supply of water. To assist in preventing the possibility of a recurrence of the great disaster was one of the chief objects in view.

EXPENDITURES.

The expenditures for the section of economic tree planting during the year were \$5,756.07, or 11.8 per cent of the total appropriation.

SECTION OF SPECIAL INVESTIGATIONS.

STUDIES OF COMMERCIAL TREES.

The work commenced last year upon the Redwood and Red Fir of the Pacific coast was resumed before the end of the fiscal year, and a study of the Western Hemlock was begun. Cooperation with the Redwood lumbermen continued as before, and the field work was made to include a thorough study of the possibilities of Redwood second growth. A study of the Southern Longleaf Pine was begun and one of the Adirondaek Balsam Fir. The latter is particularly timely because, with the decrease in the supply of Spruce, the Balsam is used more and more largely in the manufacture of paper. The data collected in the field for Adirondaek hardwoods has been worked up into tables intended particularly to assist the private owner in managing his hardwood lands. The studies of the Western Yellow Pine, the Southern Loblolly Pine, the White Oak, the Yellow Poplar, and the Black and Shellbark hickories were continued or begun.

FOREST FIRES.

Studies of forest fires were made during the year in 26 States and Territories, and valuable results were reached, especially in New York, Michigan, Wisconsin, Minnesota, Colorado, Montana, Arizona, and California. Much material was awaiting editorial attention at the end of the year. In the historical study, records of about 3,500 forest fires were added during the year, and the cost of compilation was decidedly reduced.

STUDIES IN FOREST HISTORY.

A history of forestry in New York and a summary of the forest laws now in force in the various States were completed and are awaiting publication, and much material was gathered for the forest histories of Pennsylvania, Maine, New Jersey, Massachusetts, Vermont, Wisconsin, Minnesota, and Michigan; together with some material for California and several of the Southern States.

An investigation upon the reliability of the widespread views regarding the effect of denudation upon the once forested lands bordering the Mediterranean Sea was begun, and the conditions in Tunis, Algeria, and Tripoli were studied.

STUDIES OF NORTH AMERICAN FORESTS.

Reports on the Red Cedar, the White Cedar, and the Cypress, and upon four commercial oaks were completed during the year, but not carried through to publication. In cooperation with the forest division of the United States Geological Survey, reports were completed upon the White River Plateau and Battlement Mesa forest reserves, and the field work for similar reports on the Stanislaus and Lake Tahoe reserves and adjacent regions was done, including a study of fire and grazing. In cooperation with the State geologist of Maryland, an examination and a report were completed for Allegany County. Three of the reports prepared in cooperation were in print at the end of the year.

A short account of the Big Trees of California was prepared for the Senate Committee on Public Lands, and was published, fully illustrated with maps and reproductions from photographs, as Senate Document 393, Fifty-sixth Congress, first session. The maps of the distribution of Big Trees in Fresno and Tulare counties, with tables of ownership, were prepared by Prof. W. R. Dudley, of Stanford University, a collaborator of this Division, and are of original and peculiar value.

An investigation was made of the forest on the watershed of Rock River, in northern Illinois, where severe cutting, coupled with excessive artificial drainage, has very harmfully affected the regimen of the stream.

EXHIBIT AT THE PARIS EXPOSITION.

An exhibit along somewhat new lines, consisting mainly of various types of photographs and transparencies, was prepared for the Paris Exposition, illustrating the relation of forests to agriculture in the United States. In addition to maps, a few specimens, and a large number of photographs, carefully chosen and described, the exhibit includes colored transparencies, 6 by 10 feet in size, of typical forest and agricultural lands, which are believed to be the largest ever made. Without the kindly cooperation of the Director of the United States Geological Survey these notable transparencies could not have been prepared.

PHOTOGRAPHIC FOREST DESCRIPTION OF THE UNITED STATES.

Because of insufficient funds, the photographic laboratory has but recently been placed on an effective working basis. The work accomplished during the past year was little more than enough to secure and preserve the new records of the season. Nevertheless, about 1,400 prints from various sources were mounted and made ready for filing, and some 3,000 new negatives were added to the collection.

EXPENDITURES.

The total expenditures of the section of special investigations were \$15,288.40, or 31.5 per cent of the total appropriation.

SECTION OF OFFICE WORK.

CORRESPONDENCE.

The very notable increase in the amount of correspondence, which was about twice as large as in the preceding year, required the assignment of a special file clerk and the establishment of separate files for

the sections of working plans and tree planting. The correspondence for the year numbered 8,800 letters, of which 3,200 were prepared in the section of office work. In addition, 5,000 postal cards were sent out.

MAILING LISTS.

The mailing lists were kept well posted, and new names were added sparingly, so that the lists have but slightly increased. This unfortunate necessity was brought about by the limited appropriation available for publication. During the year nine publications were sent out—five bulletins, one circular, the Report for 1899, and two extracts from the Yearbook for 1898, numbering in all but 70,000 copies.

ACCOUNTS.

The workmanlike handling of the accounts of the Division has contributed greatly to the general efficiency of the work, and to its quantity as well.

PHOTOGRAPHIC LABORATORY.

While progress in the photographic work was made early in the year and the current work of the Division was fully covered, the laboratory was not placed in a thoroughly satisfactory condition until June. It is now in a position to meet the demands of the work at every point.

LIBRARY.

In November, 1899, a trained librarian was appointed, and the work of classifying and cataloguing the great accumulation of literature on the subject of forestry has made good progress during the year.

MAP COLLECTION.

The collection of maps and topographic sheets of the U. S. Geological Survey and of maps of the General Land Office was completed as far as possible and filed for ready reference, and numerous maps and plans were prepared for other sections of the Division.

QUARTERS.

Owing to the very limited quarters now occupied by the Division, a satisfactory assignment of separate rooms to the different sections is impossible. Consequently the work has been greatly hampered.

CHANGES IN PERSONNEL.

Two notable changes in personnel were brought about after the end of the fiscal year by the resignation of Henry S. Graves, superintendent of working plans, and James W. Toumey, superintendent of tree planting, to take the positions of professor and assistant professor, respectively, at the Yale Forest School. The loss of their devoted services would be still more keenly felt in the sections which they built up if their work had been less thorough and sound. Each left his section in admirable working order, and each remains a member of the Division as collaborator. Professor Graves is replaced by Mr. Overton W. Price.

OBITUARY.

On June 17, 1900, Mrs. Alice Norris, long a faithful and efficient member of this Division, passed away in this city after a long and painful illness.

On August 6, 1900, Victor B. Fay, a student assistant, passed away at Pine Bluff, Ark., after a brief illness.

On August 30, 1900, Hiram Hurlburt, a student assistant, passed away at Holland Patent, N. Y., after a brief illness.

WORK FOR THE ENSUING YEAR.

No conspicuous changes of plan are contemplated for the current year. The work of preparing manuscripts and figures for the press will be pushed more vigorously than has hitherto been possible, and it is expected that much valuable material will be ready to print during the year.

WORKING PLANS.

The working plans for the Black Hills Forest Reserve, and for township 40 in the New York State Forest Preserve will be completed, together with numerous plans for private owners, and it is confidently expected that considerable additional areas will be put under management. The work on the national forest reserves should be pushed as rapidly as possible.

ECONOMIC TREE PLANTING.

Special emphasis will be laid on the study of growing plantations, the investigation of the encroachment of trees on the plains will continue, and special studies of valuable trees will be pushed forward. The preparation of planting plans will remain the most conspicuous work of the section.

SPECIAL INVESTIGATIONS.

Results for the Red Fir, Redwood, and it is hoped for the Western Hemlock, will be reached during the current year. The work on the Loblolly Pine should be made ready for the press, and that upon numerous other species will be carried forward. It is intended to publish some of the results of the forest-fire and forest-history investigations. Reports by collaborators, notably for California and Texas, will be ready for the press. The grazing investigation undertaken for the Department of the Interior will be carried on and should produce definite results in most or all of the 15 reserves which have been or are being studied.

OFFICE WORK.

Through the courtesy of Dr. H. W. Wiley, Chief Chemist, additional space has been temporarily assigned to this Division in the building of the Division of Chemistry. Without such an opportunity to expand, the work of the present year would be wholly impossible, since the old quarters of the Division are altogether outgrown.