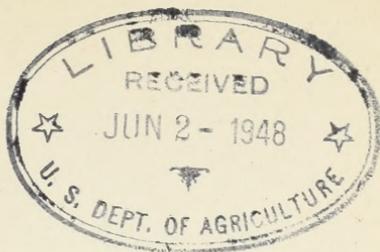


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U. S. DEPARTMENT OF AGRICULTURE,  
FOREST SERVICE—Circular No. 36 (Second Edition).  
GIFFORD PINCHOT, Forester.

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THE FOREST SERVICE:  
WHAT IT IS  
AND HOW IT DEALS WITH  
FOREST PROBLEMS.

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## ORGANIZATION OF THE FOREST SERVICE.

GIFFORD PINCHOT, *Forester.*

OVERTON W. PRICE, *Associate Forester.*

GENERAL INSPECTION,

FREDERICK E. OLNSTED, *in Charge.*

LAW,

GEORGE W. WOODRUFF, *in Charge.*

PUBLICATION AND EDUCATION,

HERBERT A. SMITH, *in Charge.*

DENDROLOGY,

GEORGE B. SUDWORTH, *in Charge.*

GRAZING,

ALBERT F. POTTER, *in Charge.*

RECORD,

JAMES B. ADAMS, *in Charge.*

RESERVE ORGANIZATION,

COERT DuBois, } *alternately in Charge.*  
R. E. BENEDICT, }

FOREST MANAGEMENT,

THOMAS H. SHERRARD, *in Charge.*

FOREST EXTENSION,

ERNEST A. STERLING, *in Charge.*

FOREST PRODUCTS,

WILLIAM L. HALL, *in Charge.*

LETTER OF TRANSMITTAL.

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U. S. DEPARTMENT OF AGRICULTURE,  
FOREST SERVICE,  
*Washington, D. C., July 17, 1906.*

SIR: I have the honor to transmit herewith a manuscript entitled "The Forest Service: What it is and How it Deals with Forest Problems," and to recommend its publication as a revision of Circular No. 36 of the Forest Service.

The figure which accompanies the manuscript is necessary for a proper understanding of the subject.

Very respectfully,

GIFFORD PINCHOT,  
*Forester.*

HON. JAMES WILSON,  
*Secretary of Agriculture.*

## TO THE PUBLIC.

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The Forest Service exists to promote forestry throughout the whole country, for every practical purpose and for the benefit of all. Its knowledge, advice, and cooperation are at the disposal of all forest users.

Those who desire to practice forestry on their timberlands or woodlots should apply for Circular No. 21, which explains the terms of cooperation offered.

Those who desire to plant or improve forest plantations should apply for Circular No. 22, which explains the cooperative terms offered for this work.

Those who desire advice and assistance in the utilization of forest products, the seasoning and preservative treatment of timber or kiln-drying should apply for Circular No. 28.

Following the necessary official action on the part of any State, cooperative studies of State forest problems will be undertaken.

Questions about the forest reserves, about tree species, about the strength, mechanical qualities, preservative treatment, or commercial use of woods, about woods for special purposes, as well as about forests, forest products, and the industries depending upon, will be carefully answered.

Information upon forest legislation may be sought.

All communications should be addressed to

THE FORESTER,

U. S. DEPARTMENT OF AGRICULTURE,

WASHINGTON, D. C.

## CONTENTS.

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	Page.
Organization of the Forest Service.....	9
General inspection .....	9
Law.....	9
Publication and education .....	9
Dendrology .....	11
Grazing .....	12
Record .....	13
Reserve organization.....	13
Forest management.....	15
Forest extension.....	17
Forest products .....	19
Classified list of publications and guide to their contents .....	21
Location and area of the National Forest Reserves.....	30

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## ILLUSTRATION.

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	Page.
Chart of the organization of the Forest Service .....	10



# United States Department of Agriculture,

FOREST SERVICE—Circular No. 36 (Second Edition).

GIFFORD PINCHOT, Forester.

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## THE FOREST SERVICE: WHAT IT IS AND HOW IT DEALS WITH FOREST PROBLEMS.

“Forest Service” has been the name since July 1, 1905, of that branch of the Department of Agriculture which was previously called the “Bureau of Forestry,” and, earlier still, the “Division of Forestry.”

Since February 1, 1905, the Forest Service has been charged, under the direction of the Secretary of Agriculture, with the administration of the National forest reserves. About the management of the reserves, therefore, the work of the Service now centers. The reserves whose area on July 18, 1906, was 107,305,707 acres, are of vital importance for their timber and grass and for the conservation of stream flow. They are so managed as to develop their permanent value as a resource by use. Earlier opposition toward them, based on the belief that preservation would prevent use, has changed with the understanding of their real object to approval and support. The last valid objections to their establishment and maintenance have been removed by the Agricultural Settlement law of June 11, 1906, and by a clause in the agricultural appropriation bill for the year 1906-7. By the first, agricultural land in forest reserves, if classified as chiefly valuable for agriculture, listed in the local land office, and opened by the Secretary of the Interior, may be taken up by home builders. Many small tracts of agricultural lands, scattered here and there along creeks and valleys, have unavoidably been included in reserve boundaries, though the utmost care secured the elimination of all large bodies of such land when the boundaries were drawn. The need of such a law as that of June 11 was clearly seen, and its passage was secured.

The so-called “ten per cent clause” of the agricultural appropriation bill provides that States having reserves are to receive ten per cent of the gross receipts from the reserves within their boundaries, to be distributed among the counties in which the reserves lie and devoted to public schools and roads. Many counties have much of their area, in some cases more than half, in reserves, and this land is

withdrawn from the possibility of private ownership and taxation. By the new law the loss to the counties from the withdrawal of taxable land is offset.

The business management of the reserves is in itself a large undertaking, destined to grow rapidly and to assume far-reaching economic importance. In the fiscal year ended June 30, 1906, nearly \$800,000 was received, chiefly from grazing and timber sales. The returns from timber sales alone, over \$200,000, exceeded the returns under the closer restrictions of the earlier administration nearly threefold. Grazing, which formerly had been free, has brought in over \$500,000 under the permit system inaugurated in January, 1906.

The free use of timber and stone which, at the discretion of the Secretary of Agriculture, is granted to settlers and others who may not reasonably be required to purchase, as well as to school and road districts, churches, or cooperative organizations of settlers, very greatly aids the development of the regions in and near the reserves.

It is the active policy of the Forest Service to manage the forest reserves upon a sound technical as well as business basis. Only improvement in the standard of the technical management can secure steady and constant increase in returns without depleting the forest. To this end careful investigation is essential. This includes special study of the habits and requirements of trees as a basis for the regulation of cutting of every kind. Special attention is given to finding new uses for species at present valueless or little used, as well for the trees already classed as commercial. Studies are made of damage by fire and the best means of preventing it, and, in cooperation with the Bureau of Entomology, of the prevention and control of insect ravages. In these and in many other ways the basis of knowledge necessary for the best forest work is being laid.

Aside from the care and perpetuation of the national forests, the Forest Service has to do with the practical uses of forests and forest trees in the United States, especially with the commercial management of forest tracts, woodlots, and forest plantations. It undertakes such forest studies as lie beyond the power or the means of individuals to carry on unaided. It stands ready to cooperate, to the limit of its resources, with all who seek assistance in the solution of practical forest problems, particularly where such cooperation will result in setting up object lessons to serve as encouraging examples for the general benefit.

Cooperative State studies are carried on with States which request the advice of the Service. Examples of this work are the studies of forest conditions in New Hampshire, which appropriated \$7,000 toward the total cost, and California, which appropriated \$25,000. Maine, Maryland, and Massachusetts have also called upon the Service for expert assistance.

The fruits of its more important studies are published and distributed without charge upon request, or sold at a low price by the Superintendent of Documents.

### ORGANIZATION OF THE FOREST SERVICE.

The work of the Forest Service is organized under ten offices, most of which have several sections. The chart on page 10 shows this organization graphically.

The Forester is the administrative head of the Service, to whom all the offices are responsible. The Associate Forester is his chief assistant and the administrative head of the Service in the absence of the Forester.

The Special Fiscal Agent is charged with the receipt of funds arising from the Government business in the reserves and other sources, and with the disbursement of all moneys of the Forest Service.

#### GENERAL INSPECTION.

It is the policy of the Forest Service to maintain a thorough system of inspection of its own work. This office has about twenty inspectors, charged with oversight of all the activities of the Service, both in the reserves and elsewhere. It is the duty of the inspectors to see exactly what work is being done and how it is being done, and to advise with all those in charge of projects or having administrative authority on reserves. They are not, however, themselves authorized to issue orders. Their reports are made directly to the Forester.

#### LAW.

This office advises the Service in legal matters, assists in the prosecution of offenders against the laws and regulations which protect the reserves, compiles forest laws, aids applicants in drafting forest legislation, and deals with other legal problems connected with forests, their ownership, taxation, and protection. Within reasonable and proper limits its help and advice are freely open to the public.

#### PUBLICATION AND EDUCATION.

In general, this office has charge of all the editorial and educational work of the Service, including the technical and literary review of its publications. This work is distributed among five sections, as follows:

The section of silvics brings together and organizes, in the interest of systematic knowledge, all information on the habits and behavior of trees in the forest. This is gathered from the field investigations of the Service and from other available sources.

The section of review critically examines the form and substance of proposed publications.

The section of information issues brief progress reports on the varied work of the Service; publishes a monthly field programme of

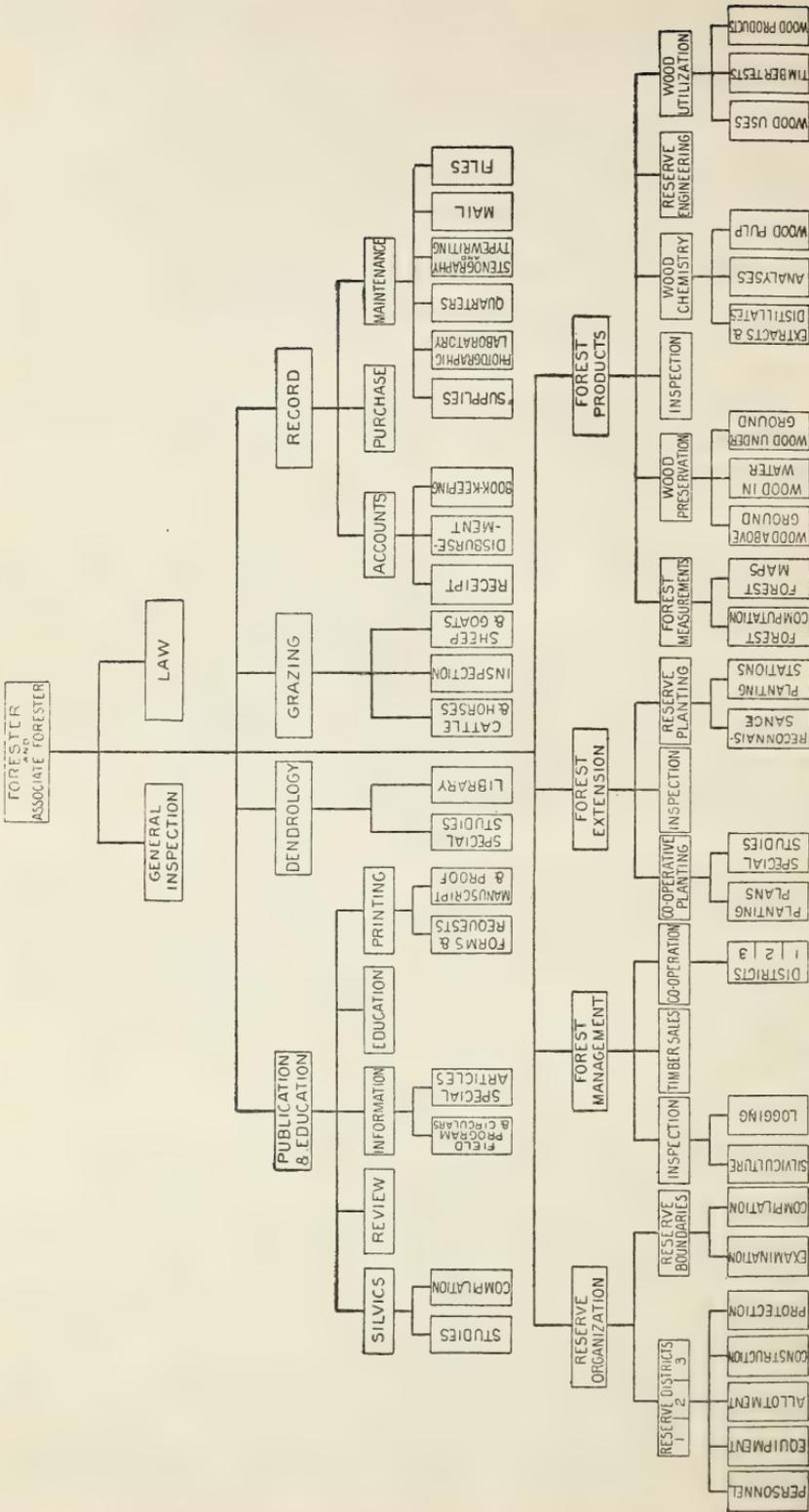


FIG. 1.—Chart of the organization of the Forest Service.

projects under way; and prepares special articles upon the subject of forestry in general and the work of the Service in particular.

The section of education is charged with the broad work of bringing home the lessons of forestry through every available educational channel, such as lectures and addresses, school instruction, and the propaganda of civic, industrial, and other associations.

The section of printing sees through the press all the forms and manuscripts printed by the Service, prepares printing requests, and keeps all necessary Service record of printing work.

#### DENDROLOGY.

The work of the office of dendrology includes dendrological studies proper, direction of the Service's forest library and forest photograph collection, and charge of the forest exhibits prepared by the Service.

A leading branch of the dendrological studies is the making of an accurate forest map of the distribution of tree species in the United States, to show the extent, composition and economic possibilities of our forest resources. Others of these studies concern the forests of the "Big Thicket" region of southern Texas, important indigenous and exotic acacias growing in the United States, eucalypts which grow here or which may be profitably introduced, new and little known pines of California, and the present and probable future supply of western tanbark oak and the various barks used as adulterants. The Bureau of Chemistry is cooperating in the tanbark study by determining the tannin contents of the barks. Included also is a study of basket willows. Experimental holts are established on the Arlington Experimental Farm, near Washington, D. C. Attention is given especially to the conditions under which high-grade basket rods may be produced. Approved basket willow cuttings are distributed free to applicants interested in willow culture.

An improved system of turpentineing, introduced by this office among turpentine operators, is described in Bulletin 40 and Circular 34 of the Forest Service. The system not only conserves the life of the trees much more than any other previous method, but also gives a larger and better yield. Experiments now in progress seek still further saving of the trees by reducing the extent and depth of the wound in chipping.

A series of important publications in course of preparation by this office will describe and illustrate the tree species of the different regions of the United States. The first of the bulletins when ready will embrace the trees of the Pacific coast, and the second, those of the Rocky Mountain States. One special use of these tree books will be the aid which they will give forest officers on reserves in identifying species and in acquainting themselves with their habits, growth, distribution, and other important facts. The third and fourth of the tree

books will deal with the trees of the Southern and Atlantic States. The characteristics by which tree planters may recognize the different species of catalpas will be described in a special publication.

The dendrologist also gives technical information about trees in response to inquiries. A large and growing correspondence evidences the public demand for such information.

The Service has a photograph collection containing about 20,000 photographs and nearly 3,000 lantern slides, illustrating forests of the United States and foreign countries.

The Government forest exhibits, prepared for State, National, and international expositions, explain what forestry is and show its application to the problems with which the Service is dealing. Through these displays much public interest is aroused and information given concerning our forests, their economic importance, and right and wrong methods of using them.

#### GRAZING.

This office has charge of grazing on ranges in forest reserves. The grazing of cattle and horses and the grazing of sheep and goats are separately handled. There is also a section of inspection.

The live-stock interests on reserves are now very great. In the past much difficulty has arisen over the equitable use of the range. The present system of charging a reasonable fee for all live stock, which was inaugurated at the beginning of 1906, has already been cordially welcomed by live-stock owners. By paying for the right to use the range these owners benefit both by avoiding all cause of dispute and by the protection which the Forest Service gives in consideration of the charge. Opposition to the system of fees has ceased. Fines for trespass or for understatement of the number of the stock have been promptly paid, and not a single suit against the Government has been brought on the score of dissatisfaction with the ruling of the Forester. During the first six months of 1906 the revenue from grazing was over \$500,000.

Among the matters which must be decided in the management of this office are, what number of stock shall be allowed to graze, what portions of reserves shall be open to grazing, the period during which grazing is allowed, the fees to be charged for permits, the settlement of controversies, the examination of title to private lands, the establishment of driveways for live stock, settlements for damages, and the formulation of special rules to meet local conditions. By cooperation with live stock associations through their advisory boards a constant good understanding of rights and duties is made possible between stock owners and the Forest Service.

The section of inspection investigates range conditions and controversies, studies and recommends the proper division of the range, and checks grazing accounts of forest officers.

## RECORD.

This office, in charge of which is the Special Fiscal Agent, consists of three sections, which have oversight of accounts, of the purchase of supplies, and of the general maintenance of the office equipment of the Service for its work.

## RESERVE ORGANIZATION.

This office has charge of the reserve force and its equipment and of the examination of lands for the creation of new forest reserves or for eliminations from and additions to existing reserves.

For administrative purposes the reserves are grouped into three districts: The northern, comprising Idaho, Montana, Wyoming, North and South Dakota, and Minnesota; the western, comprising Washington, Oregon, California, Nevada, and Alaska; and the southern, comprising Colorado, Nebraska, Kansas, Oklahoma, New Mexico, Arizona, and Utah. Through an inspector in charge of each district this office has direct oversight of personnel, equipment, and expenditures. It also examines all matters of an administrative character which are prepared in the other offices, and forms the central agency in which the work of all branches of reserve administration is brought together and harmonized.

The section of reserve boundaries ascertains through field examinations the suitability of public lands for reserves and compiles the data on reserve conditions gained in the field. It is the purpose of the Government to include no large bodies of agricultural land in forest reserves. Through the examinations made by this section such agricultural lands are opened to settlers by changing the boundaries. By the working of the law of June 11, 1906, agricultural lands of small extent within reserves, when so directed by the Secretary of Agriculture, are opened to settlement.

The permanent field force of the forest reserves now contains the grades of forest inspector, assistant forest inspector, forest supervisor, deputy forest supervisor, forest assistant, forest ranger, deputy forest ranger, assistant forest ranger, and forest guard.

Except in the case of forest inspector, assistant forest inspector, and forest assistant, whose compensation will depend on varying circumstances, pay will be fixed as follows, as fast as the necessary funds are available and the promotions are earned:

	Per year.
Forest supervisor.....	\$1, 800 to \$2, 500
Deputy forest supervisor.....	1, 500 to 1, 700
Forest ranger .....	1, 200 to 1, 400
Deputy forest ranger.....	1, 000 to 1, 100
Assistant forest ranger.....	800 to 900
Forest guard .....	600 to 720

Examinations for these positions are held as required in each State and Territory in which forest reserves are situated. Applicants for the positions of ranger or supervisor must be legal residents between the ages of 21 and 40.

The restriction as to residence is not imposed upon applicants for the forest assistant examinations, for which the age requirement is 20 to 40 years.

Forest inspectors are appointed only from those who by their qualifications, training, and experience have gained great familiarity with reserve problems and unusual efficiency in the conduct of reserve business. Their duties are to inspect the reserves in their districts, see and report on existing conditions, recommend changes for the better in both the business and technical management and in personnel, and assist the local officers, by suggestions and advice, in all reserve matters.

Appointments to the position of forest supervisor are made by the promotion of competent forest rangers or forest assistants, when they can be found in the State or Territory in which the vacancies exist. Should there be no thoroughly satisfactory resident forest rangers or forest assistants, examinations of other applicants are held. The qualifications for the position of supervisor include all those required of rangers, as hereafter outlined, with superior technical, business, and administrative ability.

Supervisors have full charge of their reserves, plan and direct all work, have entire disposition of rangers and other assistants, and are responsible for the efficiency of the local service. Under instructions from the Forester supervisors deal with the public in all business connected with the sale of timber, the control of grazing, the issuing of permits, and the enforcement of all regulations which govern the use and occupancy of forest reserves. They keep the records and accounts and conduct the correspondence and general office business of their reserves, and make reports to the Forester on all matters under their jurisdiction. Each supervisor is required to keep, at his own expense, one or more horses for his transportation in the reserve, and is allowed actual and necessary traveling expenses in emergencies.

The position of forest assistant requires technical qualifications of high order. Forest assistants may be assigned to any part of the United States, and must be competent to handle technical lines of work, such as the preparation of working and planting plans, the investigation of the silvics and uses of commercial trees, the study of wood preservation, and other investigations requiring a trained forester. When assigned to a forest reserve a forest assistant is placed directly under the supervisor, from whom he receives his orders and to whom he reports. Forest assistants are required to own and keep horses when necessary.

To be eligible as ranger of any grade the applicant must be, first of all, thoroughly sound and able-bodied, capable of enduring hardships and of performing severe labor under trying conditions. No one may expect to pass the examination who is not already able to take care of himself and his horses in regions remote from settlements and supplies. He must be able to build trails and cabins, shoot, ride, pack, and deal tactfully with all classes of people. He must know something of land surveying, estimating and scaling timber, logging, land laws, mining, and the live-stock business.

The examination of applicants is along the practical lines indicated above, and they are required to show that they can do these things by actually doing them. Where boats, saddle horses, or pack horses are necessary in the performance of their duty, rangers are required to own and maintain them. Rangers execute the work of the forest reserves under the direction of the supervisor. Their duties include patrol to prevent fire and trespassing; estimating, surveying, and marking timber; the supervision of cuttings, and other similar work. They issue minor permits, build cabins and trails, enforce grazing restrictions, investigate claims, report on applications, and arrest for violation of reserve laws and regulations. In the absence of the supervisor, charge of the reserve falls on one of the rangers or the forest assistant.

Deputy rangers and assistant rangers have charge of definite districts, to which they are assigned by the supervisor. They supervise forest guards stationed within their districts, and may also be given temporary laborers when necessary.

In addition to the permanent classified force upon the reserves, forest guards receiving \$60 or less a month are employed to fill vacancies for which the eligible list is inadequate or to supply additional men for patrol and protective work for not over six months at a time. Forest guards have the powers and duties of assistant forest rangers.

#### **FOREST MANAGEMENT.**

This office deals with the problems of management offered by existing forests, whether these are on the National reserves or on tracts belonging to some State, company, or individual. Its work is divided, broadly, between the reserves and cooperative projects.

The section of timber sales has oversight of the disposal of timber on the reserves. Working plans are prepared as far as possible in advance of all sales, and in every case sales are carried on under contracts which provide for the right silvical condition of the forest, careful logging methods, and safeguards against fire. An important provision in all sales of large amount limits the period of the sale, the longest contract being for five years, and requires that each year a definite quantity be removed. In this way speculation in reserve

timber is prevented. Since the transfer of the reserves to the Forest Service over a year ago business methods in the disposal of timber have been simplified and the volume of sales has greatly increased. In the fiscal year ending June 30, 1906, returns from this source exceeded \$200,000, to which should be added nearly \$40,000 for timber trespass and nearly \$3,000 for timber settlements.

The section of inspection comprises timber inspection and logging inspection. The first sees that the principles of forestry are applied wherever timber is cut on forest reserves; the second keeps watch over the logging and scaling done under regulations imposed by the Service.

The section of cooperation has the supervision of work through which the Service gives assistance to private owners in the management of their forest lands.

Private owners of timber lands, large or small, may secure the aid of the Forest Service in the care of their lands under a plan of cooperation fully outlined in Circular No. 21. Any owner who wishes to learn whether forestry might be profitable to him may apply to the Forest Service for a working plan. An agent of the Service is then sent to examine the forest. If the piece of woodland is small, as in farm woodlots, and management is practicable, a plan is outlined on the spot and carefully explained to the owner. In the case of large tracts the preparation of a working plan requires a more prolonged study on the ground. The agent sent to examine the tract therefore first finds out whether a sufficiently good opening for paying management exists to justify the outlay. His report is submitted to the owner, with an estimate of the cost of preparing the plan if a plan is found desirable.

If the owner desires the working plan, a force of men is sent to collect the necessary data. A thorough examination of the tract is made both from the forester's and from the lumberman's points of view. The merchantable and immature trees upon sample strips are counted and their diameter measured, and from these data the stand on the whole tract is calculated. Volume and rate of growth are ascertained for the important species through tree analyses—that is, through measurements of felled trees and counts of their annual rings. Studies are made of reproduction, of the danger from fire, grazing, and insect attack, and of the best means of preventing such injuries. Market and transportation facilities are carefully investigated, and the yield of timber and the character and distribution of the forest are mapped.

When these facts have been collected they are worked up into the plan, which takes into account the special needs or purpose of the owner, as, for instance, to secure permanent supplies of mining timbers, to maintain a game preserve, or to protect a watershed. The recommendations in the plan enable the owner to derive from the forest

the fullest and most permanent revenue which is consistent with his special requirements.

The chief object of this work is to get forestry into actual practice with successful results. When necessary, therefore, a representative of the Service visits the owner again, confers with him on the details of the plan, and at his expense assists, if he desires it, in the actual work of putting the recommendations in force. Subsequent advice, if needed, can be secured by the owner on the same terms. But the Forest Service, in all cases, preserves its interest in the success of the methods which it has suggested and sends one of its experts about once in two years to inspect the progress of management and to make any fresh suggestions which the lapse of time or the owner's desire may have made necessary or advisable.

#### FOREST EXTENSION.

The work of this office falls under two main heads—planting and nursery operations on the National forest reserves, preceded by preliminary examinations and plans, and advisory assistance to private landowners.

The section of reserve planting deals with all phases of forest planting on forest reserves. Examinations are made of reserves or reserve watersheds where the forest cover is deficient, and detailed plans are prepared for portions in need of improvement by planting. Many cities in the West derive their water supply from streams finding source in forest reserves. To protect and improve the water-conserving power of the existing cover on these catchment basins is one of the more striking of the newer projects of the Forest Service. An examination of all important city watersheds within forest reserves has been undertaken. For a number of places in Colorado the field work has been finished.

Reconnaissance studies for forest planting have been made on extensive areas in the Pikes Peak, Wichita, Prescott, Santa Barbara, San Gabriel, San Bernardino, San Jacinto, Sierra, Modoc, Warner Mountains, Bear River, Cassia, Lewis and Clark, Salt Lake, and Gunnison forest reserves.

Six permanent reserve planting stations are now established in the San Gabriel, Dismal River, Pikes Peak, Santa Barbara, Gila River, and Salt Lake forest reserves. Another is to be started in the Bear River Forest Reserve this season (1906). The nurseries contain over 3,000,000 trees, and the seed sown this year should produce not less than 5,000,000 seedlings, making a total of over 8,000,000.

About 500,000 trees—all that were old enough—were planted on the Dismal River, Garden City, Wichita, Pikes Peak, San Gabriel, and Santa Barbara reserves during the spring of 1906.

The Halsey station, on the Dismal River Reserve, is being made the main producing point for the treeless reserves of the Middle West. It contains at present approximately 1,700,000 trees, of which about 1,000,000 will be large enough to set in the sandhills next spring. With the additions, the annual productive capacity of the nursery will be about 3,000,000 trees. Yellow pine and jack pine are the most promising species for local use. Scotch pine, Norway pine, red fir, and red cedar are also being tried. Deciduous trees, such as honey locust, Russian mulberry, Osage orange, and hackberry, are being grown for use in the Garden City and Portales reserves.

In the Santa Barbara and San Gabriel reserves, where planting to reclothe denuded drainage basins is a difficult but very essential undertaking, 62,000 trees, mainly knobcone, Coulter, and Jeffrey pine, bigcone spruce, and incense cedar, have been set out.

The Clyde nursery in the Pikes Peak Reserve contains 410,000 seedlings, and new nursery beds have been sown in Bear Creek Canyon. Twenty thousand red fir seedlings from the Halsey nursery were planted in May.

Reserve planting operations will be extended this year by establishing a large number of small nurseries at permanent rangers' headquarters.

The section of cooperative planting handles the cooperative work done under the provisions of Circular No. 22, and conducts special investigations where further information on forest planting is urgently needed. Under the terms of the circular, planting plans are made without charge for small landowners, public and educational institutions, and other branches of the Government. Similar work is done for large landowners and corporations at their expense. Only a limited amount of cooperative work, however, can be undertaken, and the Service reserves the right to accept only the projects which are of the highest educational value. The assistance offered does not include the preparation of plans for landscape gardening or decorative planting of any kind.

In connection with the irrigation project of the Reclamation Service studies are being made by which tree growth may be encouraged among settlers of the irrigated land. Thus 50,000 trees have been supplied for planting in the North Platte project and field work is under way for forest planting on the Truckee-Carson project. Similarly, cooperation with the North Platte private irrigation project is on foot. On the desert lands which irrigation will reclaim for agriculture settlers are far removed from timber supplies and exposed to the winds, and will need woodlots to supply themselves with fuel, posts, and poles, and similar farm material, as well as shelterbelts to protect both the fields and the farmsteads. The Service will suggest the best trees and methods for these purposes. Again, on the bluffs and slopes, which will not feel the benefit of irrigation, there will be

much land within the projects whose only use will be to grow timber crops for local needs. The planting of these areas will receive due attention also.

#### FOREST PRODUCTS.

To aid the economical use of the materials which come from the forest is the work of the office of forest products. The office comprises the four sections of forest measurements, wood preservation, wood chemistry, and wood utilization.

The section of forest measurements includes forest computation and forest maps. Forest computation embraces plans for field work in forest measurements, the working up and putting into final form of all the measurements and statistics gathered by the Service in all its lines of work, and the carrying on of investigations in the mathematics of timber cruising and log scaling. Forest maps involves the planning and making of maps, drawings, and diagrams, the determination of areas of forest types from maps, the custody of original and reference maps and map data, and responsibility for the development and application of systems for mapping all forest data gathered by the Service.

In the section of wood preservation experiments are carried on to determine economical means of handling and treating wood to insure its greatest service. Practically all work is done in cooperation with persons or companies directly interested in the results. In cooperation with railroad companies improved methods have been found of treating with preservatives cross-ties of red fir, lodgepole pine, western yellow pine, red oak, and loblolly pine. Studies in progress on hemlock, tamarack, western larch, western hemlock, and eucalyptus have demonstrated the necessity of air seasoning to secure a uniform absorption of the preservative. Cooperative studies with telephone and telegraph companies, directed to the preservation of poles, have led to the establishment of test lines in which green poles, seasoned poles, and treated poles are placed successively to determine the lasting qualities of each sort through a period of years. As a result of studies in the grading, seasoning, and treating of cross-arms, it is expected to obtain a more uniform, efficient, and economical treatment for this and similar classes of material. A study of the preservative treatment of loblolly pine mine props has shown that these timbers can be efficiently treated without the application of pressure and with no more complicated apparatus than an open tank. The advisability of peeling and seasoning the props has also been demonstrated. In cooperation with the city of Minneapolis, an investigation is being made of various woods for paving blocks. In order to promote the preservative treatment of wood, the Service will, wherever possible, cooperate with those confronted by the important problem of preventing decay of timber.

In the section of wood chemistry are handled the chemical problems connected with the utilization of wood products. Work in progress includes the analysis of wood preservatives and of treated timbers, tests of the suitability of various pieces of wood for paper pulp, as study of wood distillation, and an investigation of the chemical changes involved in water seasoning. A laboratory is maintained in cooperation with Yale University, where a study is being made of the penetration obtained in hemlock and tamarack cross-ties by the Well-house process of treatment, and an investigation of the methods for analyzing creosote is in progress. A special laboratory for the study of wood pulps has been equipped and a small sulphite plant installed at Boston, Mass., to determine the usefulness for paper making of many species of American woods.

The section of wood utilization studies the supply, transportation, markets, properties, and uses of lumber and other forest products, and gives especial attention to the characteristics of woods which fit them for specific purposes. The principal lines of work carried on are grouped under wood products, wood uses, and timber tests. To meet an urgent need for an annual statement of the amount of lumber and other forest products used, statistics of manufacture are gathered and published in cooperation with the National Lumber Manufacturers' Association. The grading specifications under which lumber is manufactured by the various associations are being published. Some studies of special uses for woods have taken form in published reports upon cooperage woods, vehicle and implement woods, box woods, and methods of kiln drying hardwoods.

The timber tests are designed to secure a better knowledge of the comparative strength of timbers under various conditions, to add to the list of commercial species suitable for construction purposes, and to promote economy in the manufacture and use of timbers. The structural value of rapidly grown timber, the effect of preservatives on the strength of timber, and the protection of railroad ties from abrasion under the action of traffic are examples of the subjects studied. Other studies aim at the collection of data for drawing up more accurate and satisfactory rules for the grading of structural timbers, the supplying of information on the properties of unfamiliar woods, and the placing of the technique of timber testing on a scientific basis.

The Forest Service conducts a series of laboratory experiments under a trained staff of testing engineers in cooperation with Yale and Purdue universities and the universities of the States of California, Washington, and Oregon. A bulletin has been printed on the effect of moisture on the strength and stiffness of wood. Preliminary tests to determine the mechanical properties of red fir, loblolly, longleaf, and Norway pines, western hemlock, and tamarack have been made.

## CLASSIFIED LIST OF PUBLICATIONS AND GUIDE TO THEIR CONTENTS.

Application for any of the publications named in the following list, except those marked (\*), may be made to The Forester, United States Department of Agriculture, Washington, D. C.

A star (\*) indicates that the supply at the disposal of the Forester is exhausted. Remittance should be made by postal money order (stamps not accepted) directly to the Superintendent of Documents, Government Printing Office, Washington, D. C.

### GENERAL FOREST SUBJECTS.

\* Bulletin 7: Forest Influences. Price, 15 cents.

A review of the meteorological observations made prior to 1892, chiefly in foreign countries, bearing upon the influence of forests upon climate, with a discussion of the manner in which forests affect the water conditions of the earth and of other kindred topics.

Bulletin 24: A Primer of Forestry, in two parts. \*Part I—The Forest. Price, 35 cents. \*Part II—Practical Forestry. Price, 30 cents.

The Primer, written by Gifford Pinchot, Forester, deals with the facts on which forestry is based. It is designed to place in the hands of the average reader just what he ought to know about trees in the forest, systems of forest management, forest influences, and the history of forestry and its status here and abroad. Numerous illustrations explain the text.

Farmers' Bulletin 173: A Primer of Forestry (paper).

A reprint of Bulletin 24, Part I.

Circular 23: Suggestions to Prospective Forest Students.

Circular 35: Forest Preservation and National Prosperity.

Extracts from addresses delivered before the American Forest Congress at Washington, D. C., in January, 1905, including the address of the President of the United States and that of the Secretary of Agriculture.

Annual Reports of the Forester for 1892, 1900, 1901, 1902, 1903, and 1905.

Extracts from Yearbooks of the Department of Agriculture:

No. 143: Notes on Some Forest Problems (1898).

No. 186: Progress of Forestry in the United States (1899).

No. 372: Progress of Forestry in 1904 (1904).

No. 406: Progress of Forestry in 1905 (1905).

### FOREST RESERVES.

The Use Book: Regulations and Instructions for the Use of the National Forest Reserves.

An outline of the history of the National forest policy, followed by the regulations issued by the Secretary of Agriculture on July 1, 1906, governing the administration

of the reserves, with instructions to forest officers. A compilation of the laws on which the regulations are based is appended.

Bulletin 54: The Luquillo Forest Reserve, Porto Rico.

An illustrated description of this tropical forest and its most valuable species of trees.

\* Bulletin 67: Forest Reserves in Idaho. Price, 10 cents.

Correspondence between the President and Senators Heyburn and Dubois, of Idaho, including letters from the Forester and others, and relating to the forest-reserve situation in the State of Idaho.

#### FOREST MANAGEMENT.

Bulletin 26: Practical Forestry in the Adirondacks.

An account of the general conditions which govern forest management in the Adirondack forest region, and a statement of the work done and the results accomplished there up to July, 1899, in cooperation with the Forest Service (then the Division of Forestry). The two working plans discussed were, with one exception, the first examples of the application of scientific forestry to large holdings in the United States.

Bulletin 30: A Forest Working Plan for Township 40, Hamilton County, N. Y.

The working plan given in this bulletin was made at the request of the forest, fish, and game commission of the State of New York, and marks the first instance of cooperation between the Forest Service (then the Division of Forestry) and the government of a State. This contains also the first detailed study of a problem in logging by a practical lumberman to be published by the Service. Included in the volume is "A discussion of conservative lumbering and the water supply," by Frederick H. Newell, now the head of the United States Reclamation Service.

Bulletin 32: A Working Plan for Forest Lands near Pine Bluff, Arkansas.

Prepared in cooperation with a lumber company owning about 100,000 acres of land, about 85 per cent of the total stand on which is loblolly and shortleaf pine. This plan was adopted by the company.

\* Bulletin 39: Conservative Lumbering at Sewanee, Tennessee. Price, 15 cents.

Prepared for the management of the forest owned by The University of the South, comprising about 7,255 acres of hardwoods. The application of this plan has proved highly profitable to the university.

Bulletin 43: A Working Plan for Forest Lands in Hampton and Beaufort counties, South Carolina.

Prepared in cooperation with the Okeetee Gun Club for a tract of about 60,000 acres, on which the stand is principally longleaf, loblolly, and Cuban pine and cypress.

\* Bulletin 56: A Working Plan for Forest Lands in Berkeley County, South Carolina. Price, 10 cents.

Prepared in cooperation with a lumber company controlling about 44,000 acres of loblolly pine, longleaf pine, and cypress forest lands. This plan is now being executed by a forester in the employ of the company, with extremely satisfactory results.

Bulletin 60: Report on an Examination of a Forest Tract in Western North Carolina.

Bulletin 68: A Working Plan for Forest Lands in Central Alabama.

This plan, which was adopted by the company for which it was prepared and is now in operation, is an example of what forestry promises the owner of longleaf pine, and what it involves. It includes studies of the forest and of lumbering methods, a discussion of the proper diameter limit in cutting, and recommendations for such a treatment of the present crop as will lead to the production of future ones.

Extracts from Yearbooks of the Department of Agriculture:

No. 187: The Practice of Forestry by Private Owners (1899).

No. 214: Practical Forestry in the Southern Appalachians (1900).

No. 249: A Working Plan for Southern Hardwoods and Its Results (1901).

#### CARE OF THE WOODLOT.

Bulletin 42: The Woodlot.

A handbook for the use of owners of woodlands in southern New England, prepared with the object of enabling them, by observation and practice in the woods, to handle their property to the best advantage. A general discussion of woodlot management, illustrated by diagrams, widens the application of the instructions to other similar regions.

Extract No. 144, from the Yearbook of the Department of Agriculture (1898): The Work of the Division of Forestry [now the Forest Service] for the Farmer.

#### COMMERCIAL TREE STUDIES.

\* Bulletin 13: Timber Pines of the Southern United States. Price, 35 cents.

A study of the commercial values of the southern pines. It contains many facts relative to the qualities of wood of the different species, as well as a study of the manner of growth of the trees.

\* Bulletin 31: Notes on the Red Cedar. Price, 10 cents.

A collection of observations of the manner and rate of growth of this valuable wood.

Bulletin 33: The Western Hemlock.

A careful study of one of the common species of the Pacific coast, which until within the last few years was entirely ignored and wasted. The bulletin shows that the western hemlock is a distinctly valuable wood, a fact that is now beginning to be recognized.

Bulletin 37: The Hardy Catalpa.

A careful study of the rate and manner of growth of this much discussed tree. Many facts of importance are brought out and several mistaken ideas corrected.

Bulletin 38: The Redwood.

A brief preliminary study of one of the most remarkable trees in the world. Its manner of reproduction, rate of growth, and great commercial value are made clearly apparent.

\* Bulletin 53: Chestnut in Southern Maryland. Price, 10 cents.

A study in a restricted locality of the habits, requirements, rate of growth, and manner of reproduction of chestnut, containing valuable information as to the capacity of the tree to produce ties and poles, of practical interest to growers of chestnut generally.

\* Bulletin 58: The Red Gum (revised edition). Price, 5 cents.

In two parts; the first dealing with the range and silvical qualities of the tree and with commercial uses of gum lumber, the second with the mechanical properties of the wood.

**Bulletin 64: Loblolly Pine in Eastern Texas.**

A careful study of one of the valuable southern pines, especially in relation to its use for tie timbers. The investigation was limited to eastern Texas, but many of the facts and conclusions may be applied to wider areas. The tree is common in most parts of the South, and grows vigorously on abandoned fields.

**Bulletin 69: Sugar Pine and Western Yellow Pine in California.**

A study of the range, distribution, silvical and silvicultural characteristics, commercial value, and treatment under forest management of two of the most important and valuable commercial trees of California. Its conclusions are that conservative management of sugar pine and yellow pine is practicable; that fire, the greatest obstacle to securing future crops, can be prevented at reasonable cost; and that under effective protection, and with a sufficient number of seed trees left in lumbering, natural reproduction will perpetuate the forest.

**FOREST STUDIES.****Bulletin 47: Forest Resources of Texas.**

A comprehensive study of the forests of Texas, their extent, composition, and economic importance. The types of forest characteristic of different regions are described, their relation to physiography and climate is considered, and suggestions toward a wise State policy are discussed.

**Bulletin 48: The Forests of the Hawaiian Islands.**

A study made at the request of the Hawaiian Board of Commissioners of Agriculture and Forestry. The report outlines a forest policy for the islands, which has been adopted and put into effect.

**Bulletin 49: The Timber of the Edwards Plateau of Texas.**

A study of the character and distribution of the forest in the region named. It shows distinctly the importance of utilizing to the fullest extent the limited timber supplies of the region.

**Bulletin 55: Forest Conditions of Northern New Hampshire.**

A study made in cooperation with the State of New Hampshire, which appropriated \$5,000 for the purpose. A study of forest conditions in southern New Hampshire, now in progress, will complete the work.

**Bulletin 66: Forest Belts of Western Kansas and Nebraska.**

This report deals with forest conditions in the western portions of Kansas and Nebraska. It includes a comprehensive study of the present forest growth of the region and of the factors which tend to prevent its increase. The conclusion reached is that the present forests are much more restricted in area and are poorer in character than they need be, and practical suggestions are given for their extension.

**FOREST BOTANICAL AND DENDROLOGICAL STUDIES.**

\* Bulletin 17: Check List of the Forest Trees of the United States. Price, 15 cents.

Giving the common and scientific names of each species, together with their geographical distribution.

\* Bulletin 28: A Short Account of the Big Trees of California. Price, 10 cents.

An account of the location and character of the Big Tree groves. The possibility of maintaining them through forest protection is pointed out.

\* Bulletin 35: Eucalypts Cultivated in the United States. Price, \$1.

This bulletin enumerates and describes a large number of species of eucalypts. Though no definite conclusions are reached regarding the adaptability of many species, a number of important facts in relation to the manner of growth of the trees are brought out.

Bulletin 40: A New Method of Turpentine Orcharding.

An account of the naval-stores industry in the Southern States, in which the old methods of turpentine orcharding are described and the new "cup and gutter" system is recommended as more economical. The successful operation of the cup and gutter system is described and its results are compared with those of the older box method.

Circular 34: Practical Results of the Cup and Gutter System of Turpentine.

Showing the gains effected by the system recommended in the preceding bulletin.

\* Bulletin 46: The Basket Willow. Price, 15 cents.

An account of willow culture, here and abroad, with suggestions for improvements in cultural methods. An account of the insects injurious to basket willow and statistics showing the production and consumption of willow in the United States are added.

Bulletin 59: The Maple Sugar Industry.

A complete account of old and new methods of maple-sugar manufacture, giving directions for handling the maple-sugar grove and statistics showing the extent and growth of the industry since 1850.

Farmers' Bulletin 252: Maple Sugar and Sirup.

A brief presentation of the material used in the preceding bulletin.

#### FOREST EXTENSION AND REPLACEMENT.

\* Bulletin 21: Systematic Plant Introduction. Price, 5 cents.

A general study of the question of systematic plant introduction, with a bearing upon acclimatization of forest-planting material.

Bulletin 29: The Forest Nursery.

Instructions for the collection of tree seeds and the propagation of seedlings, with other information of value to tree planters.

Bulletin 45: The Planting of White Pine in New England.

An account of existing white pine plantations in this region, and a discussion of the conditions under which commercial or protective plantations may be successfully made.

Bulletin 52: Forest Planting in Western Kansas.

An investigation for the purpose of determining the kinds of forest trees best adapted to western Kansas and the cultural methods which have proved most successful.

Bulletin 63: The Natural Replacement of White Pine on Old Fields in New England.

A description of the manner in which pastures and cut-over lands in this region tend to encourage the second growth of white pine; a discussion of the growth, reproductive power, and value of white pine groves and woodlots; a consideration of the best means of encouraging natural replacement of white pine and of supple-

menting it with artificial replacement, and a statement of the profits which may be derived from the culture of white pine.

\*Bulletin 65: Advice to Forest Planters in Oklahoma and Adjacent Regions. Price, 5 cents.

This discusses in detail the forest-supporting capacity of Oklahoma and portions of Indian Territory, Kansas, Colorado, Texas, and New Mexico, and gives practical directions for the establishment and care of forest plantations on the prairies and plains, with several planting plans for windbreaks and farm woodlots in various situations.

Circular 37: Forest Planting in the Sand Hill Region of Nebraska.

Circular 41: Forest Planting on Coal Lands in Western Pennsylvania.

Extract No. 212, from the Yearbook of the Department of Agriculture (1900): Forest Extension in the Middle West.

Extract No. 270, from the Yearbook of the Department of Agriculture (1902): Practicability of Forest Planting in the United States.

Extract No. 376, from the Yearbook of the Department of Agriculture (1905): How to Grow Young Trees for Forest Planting.

Farmers' Bulletin 134: Tree Planting on Rural School Grounds.

Farmers' Bulletin 228: Forest Planting and Farm Management.

This treats of the best use of forest trees for planting on farms, and gives planting plans based upon the ideal practical relation between farmstead, woodlot, shelter-belt, and windbreak.

#### **PHYSICAL PROPERTIES, SEASONING, AND PRESERVATIVE TREATMENT OF TIMBER.**

Bulletin 6: Timber Physics, Part I: Preliminary Report.

This discusses the need, object, and scope of investigations into the nature of our important woods, especially their mechanical and technical properties, giving references to preceding works and explaining the methods to be pursued by the Service (then the Division of Forestry), including the forms of record and illustrations of the machinery in use.

\* Bulletin 8: Timber Physics, Part II: Progress Report. Price, 15 cents.

Contains the results of tests for strength made on longleaf pine prior to 1893; a comparative study of their significance, particularly as dependent on certain conditions of the test specimens; a comparison of bled and unbled timber, accompanied by a study into the chemical conditions of both, and an account of the general characteristics of longleaf pine timber, of the geographical distribution of the species, and of the experimental methods used in the tests.

Bulletin 10: Timber: An Elementary Discussion of the Characteristics and Properties of Wood.

A discussion of the characteristics and properties of wood in general, and of the American woods in particular, designed to be of service to engineers, architects, carpenters, lumbermen, and all wood workers.

Bulletin 41: Seasoning of Timber.

A study of the general effects and advantages of seasoning timber, with especial reference to railroad ties and their preparation for preservative treatment, including

tests of the rate at which seasoning takes place under different conditions and of the effect of different methods of piling ties.

Bulletin 50: Cross-Tie Forms and Rail Fastenings, with Special Reference to Treated Timbers.

A study of the forms of railroad ties and methods of fastening rails, the object being to show how railroad ties may be made more efficient and their life prolonged.

Bulletin 51: Report on the Condition of Treated Timbers Laid in Texas in February, 1902.

Results secured from various timbers which received preservative treatment and were then laid in an experimental track on the Gulf, Colorado and Santa Fé Railway, near Pelican, Tex.

Circular 12: Southern Pine: Mechanical and Physical Properties.

Circular 15: Summary of Mechanical Tests on Thirty-two Species of American Woods.

Circular 32 (Revised edition): Progress Report on the Strength of Structural Timber.

Three progress reports, of which the first two deal with the earlier series of timber tests conducted by the Division of Forestry.

Circular 38: Instructions to Engineers of Timber Tests.

Circular 39: Experiments on the Strength of Treated Timber.

Circular 40: The Utilization of Tupelo.

Extract 315, from the Yearbook of the Department of Agriculture (1903): Recent Progress in Timber Preservation.

Extract No. 395, from the Yearbook of the Department of Agriculture (1905): Prolonging the Life of Telephone Poles.

#### FORESTRY AND LUMBERING.

\* Bulletin 34: A History of the Lumber Industry in the State of New York. Price 20 cents.

Bulletin 36: The Woodsman's Handbook.

Chiefly tables and rules for the measurement of wood and timber, including a comparison of 43 log rules employed in the United States and Canada, with a brief statement concerning the origin and use of each.

Bulletin 61: Terms Used in Forestry and Logging.

A brief dictionary of words and phrases in use by forester and logger, prepared in cooperation with The Society of American Foresters, and designed to promote uniformity of usage and to serve as the basis for a more careful and exact forest terminology.

Bulletin No. 73: Grades and Amount of Lumber Sawed from Yellow Poplar, Yellow Birch, Sugar Maple, and Beech.

Showing, by tallies at the mill, the amount of lumber actually sawed out from certain kinds of trees of different sizes. It serves, first, to indicate the actual gain in quality of the lumber with the increase of the sizes of the trees; and, second, to set a limit below which trees yield too little lumber, or are too poor in quality, to pay for cutting. The tables enable the lumberman to tell how much lumber of each grade

he may expect to saw from trees of each diameter. Thus he may not only avoid cutting at a loss, but may also foretell the quality increment which combines with the quantity increment to make up his future gain.

Circular 25: Forestry and the Lumber Supply.

Three addresses on the relation of the problem of lumber supply to applied forestry. The first address was delivered by the President of the United States before The Society of American Foresters; the second by Mr. R. L. McCormick, president of the Mississippi Valley Lumbermen's Association; and the third by the Forester.

Extract No. 274, from the Yearbook of the Department of Agriculture (1902): The Influence of Forestry upon the Lumber Industry.

Extract No. 359, from the Yearbook of the Department of Agriculture (1904): Determination of Timber Values.

Extract No. 398, from the Yearbook of the Department of Agriculture (1905): Waste in Logging Southern Yellow Pine.

#### FOREST FIRES.

Circular 26: Forest Fires in the Adirondacks in 1903.

A report on the great forest fires in the Adirondack region in 1903, with an estimate of the damage done and suggestions for controlling fires in the future.

Extract No. 337, from the Yearbook of the Department of Agriculture (1904): The Attitude of Lumbermen Toward Forest Fires.

#### GRAZING.

\*Bulletin 15: Forest Growth and Sheep Grazing in the Cascade Mountains of Oregon. Price, 5 cents.

A careful study of the grazing question as it was found to exist in 1897.

Bulletin 62: Grazing on the Public Lands. (Published also in the second partial report of the Public Lands Commission, Senate Document No. 189, 58th Cong., 3d sess.)

A history of grazing on the public lands of the United States, with a comparison of the methods of grazing now and formerly in force, and recommendations as to the establishment of regulations governing grazing.

#### FOREST LAW.

\*Bulletin 57: Federal and State Forest Laws. Price, 15 cents.

A compilation of all the State and National laws relative to forests and forestry, including 1904.

#### FORESTS AND STREAM FLOW.

Bulletin 44: The Diminished Flow of the Rock River in Wisconsin and Illinois, and its Relation to the Surrounding Forests.

A discussion of the effect of forests upon stream flow with special reference to the region drained by the Rock River. The discussion is supplemented with practical advice as to the management of woodlands for increasing the water-storing capacity of the soil as well as the profits of the individual owner.

Bulletin 49: The Timber of the Edwards Plateau of Texas.

Circular 27: Reclamation of Flood-Damaged Lands in the Kansas River Valley by Forest Planting.

A study of the damage done in the Kansas River Valley in 1903, with suggestions for lessening the danger of similar damage in the future.

Extract 329, from the Yearbook of the Department of Agriculture (1903): The Relation of Forests to Stream Flow.

Results of observations conducted in the San Bernardino Mountains, in southern California.

**TERMS OF COOPERATION OFFERED BY THE SERVICE.**

The following circulars, which may be had upon application to the Forester without charge, explain the terms of the cooperative agreements which the Forest Service will make with those desiring assistance in the care of their forests or woodlots and in the establishment or care of forest plantations.

Circular 21: Practical Assistance to Farmers, Lumbermen, and Others in the Management of Forest Lands.

Circular 22: Practical Assistance to Tree Planters.

Circular 28: Practical Assistance to Users of Forest Products.

LOCATION AND AREA OF THE NATIONAL FOREST RESERVES IN THE UNITED STATES, ALASKA, AND PORTO RICO.

JULY 18, 1906.

State or Territory.	Reserve.	Area.	Total.
		<i>Acres.</i>	
Arizona .....	Black Mesa.....	2,030,240	8,728,730
	Prescott.....	423,680	
	Grand Canyon.....	2,307,520	
	San Francisco Mountains.....	1,975,310	
	Santa Rita.....	387,300	
	Santa Catalina.....	155,520	
	Mount Graham.....	118,600	
	Chiricahua.....	169,600	
	Pinal Mountains.....	45,760	
Tonto.....	1,115,200		
California .....	Tahoe <sup>a</sup> .....	838,837	18,877,110
	Stanislaus.....	627,780	
	Sierra.....	5,040,520	
	Santa Barbara.....	1,838,323	
	San Bernardino.....	737,120	
	San Gabriel.....	555,520	
	San Jacinto.....	668,160	
	Trabuco Canyon.....	109,920	
	Warner Mountains.....	306,518	
	Modoc.....	288,218	
	Plumas.....	579,520	
	Trinity.....	1,243,042	
	Klamath.....	1,896,313	
	Lassen Peak.....	897,115	
	Diamond Mountain.....	626,724	
	Shasta.....	1,377,126	
	Yuba.....	524,287	
	Monterey.....	335,195	
	San Luis Obispo.....	363,350	
Pinnacles.....	14,108		
Colorado .....	Battlement Mesa.....	797,720	12,698,825
	Pikes Peak.....	1,681,667	
	White River.....	970,880	
	San Isabel.....	321,227	
	Gunnison.....	901,270	
	Leadville.....	1,219,947	
	Medicine Bow <sup>b</sup> .....	1,155,909	
	San Juan.....	1,437,406	
	Park Range.....	757,116	
	Wet Mountains.....	239,621	
	Cochetopah.....	1,133,330	
	Montezuma.....	576,719	
	Uncompahgre.....	478,111	
	Holy Cross.....	990,720	
	La Sal <sup>c</sup> .....	29,502	
	Fruita.....	7,680	

<sup>a</sup> Total of Tahoe in California and Nevada=897,952 acres.

<sup>b</sup> Total of Medicine Bow in Colorado and Wyoming=1,574,668 acres.

<sup>c</sup> Total of La Sal in Colorado and Utah=158,462 acres.

Location and area of the national forest reserves in the United States, Alaska, and Porto Rico—Continued.

State or Territory.	Reserve.	Area.	Total.
		<i>Acres.</i>	
Idaho .....	{ Bitter Root <sup>a</sup> .....	3, 860, 960	10, 638, 240
	{ Priest River <sup>b</sup> .....	541, 160	
	{ Pocatello .....	49, 920	
	{ Yellowstone <sup>c</sup> .....	177, 960	
	{ Sawtooth .....	1, 947, 520	
	{ Weiser .....	1, 059, 520	
	{ Henrys Lake .....	798, 720	
	{ Payette .....	1, 460, 960	
	{ Cassia .....	326, 160	
	{ Bear River <sup>d</sup> .....	415, 360	
Kansas .....	{ Garden City .....	97, 280	97, 280
Montana .....	{ Yellowstone <sup>c</sup> .....	1, 229, 680	12, 248, 200
	{ Bitter Root <sup>a</sup> .....	691, 920	
	{ Gallatin .....	888, 660	
	{ Lewis and Clark .....	4, 670, 720	
	{ Madison .....	958, 800	
	{ Little Belt .....	583, 560	
	{ Highwood Mountains .....	45, 080	
	{ Elkhorn .....	186, 240	
	{ Hell Gate .....	1, 581, 120	
	{ Big Belt .....	630, 260	
	{ Helena .....	782, 160	
Nebraska .....	{ Niobrara .....	123, 779	556, 072
	{ Dismal River .....	85, 123	
	{ North Platte .....	347, 170	
Nevada .....	{ Tahoe <sup>e</sup> .....	59, 115	482, 775
	{ Ruby Mountains .....	423, 660	
New Mexico .....	{ Gila .....	2, 823, 900	5, 209, 921
	{ Pecos River .....	430, 880	
	{ Lincoln .....	545, 256	
	{ Portales .....	172, 680	
	{ Jemez .....	1, 237, 205	
Oklahoma .....	{ Wichita .....	60, 800	60, 800
Oregon .....	{ Bull Run .....	142, 080	8, 990, 426
	{ Cascade Range .....	4, 424, 440	
	{ Ashland .....	21, 120	
	{ Wallowa .....	747, 200	
	{ Wenaha <sup>f</sup> .....	413, 250	
	{ Chesnimnus .....	220, 320	
	{ Maury Mountain .....	54, 220	
	{ Blue Mountains .....	2, 675, 620	
	{ Heppner .....	292, 176	
South Dakota .....	{ Black Hills <sup>g</sup> .....	1, 163, 320	1, 263, 880
	{ Cave Hills .....	23, 360	
	{ Slim Buttes .....	58, 160	
	{ Short Pine .....	19, 040	

<sup>a</sup>Total of Bitter Root in Idaho and Montana=4,552,880 acres.

<sup>b</sup>Total of Priest River in Idaho and Washington=645,120 acres.

<sup>c</sup>Total of Yellowstone in Wyoming, Montana, and Idaho=7,988,560 acres.

<sup>d</sup>Total of Bear River in Idaho and Utah=683,280 acres.

<sup>e</sup>Total of Tahoe in California and Nevada=897,952 acres.

<sup>f</sup>Total of Wenaha in Oregon and Washington=731,650 acres.

<sup>g</sup>Total of Black Hills in South Dakota and Wyoming=1,209,760 acres.

Location and area of the national forest reserves in the United States, Alaska, and Porto Rico—Continued.

State or Territory.	Reserve.	Area.	Total.	
		<i>Acres.</i>		
Utah .....	Fish Lake .....	288, 800	6, 489, 623	
	Uinta <sup>a</sup> .....	2, 148, 510		
	Payson .....	167, 280		
	Bear River <sup>b</sup> .....	267, 920		
	Manti .....	777, 920		
	Aquarius .....	639, 000		
	Grantsville .....	68, 960		
	Salt Lake .....	95, 440		
	Sevier .....	710, 920		
	Dixie .....	465, 920		
	Beaver .....	261, 593		
	La Sal <sup>c</sup> .....	128, 960		
Vernon .....	68, 800	7, 785, 600		
Fillmore .....	399, 600			
Washington .....	Priest River <sup>d</sup> .....		103, 960	
	Mount Rainier .....		1, 943, 520	
	Olympic .....		1, 466, 880	
	Washington .....		3, 952, 840	
	Wenaha <sup>e</sup> .....		318, 400	
Wyoming .....	Yellowstone <sup>f</sup> .....		6, 580, 920	8, 202, 395
	Black Hills <sup>g</sup> .....		46, 440	
	Big Horn .....		1, 151, 680	
	Medicine Bow <sup>h</sup> .....		418, 759	
	Uinta <sup>i</sup> .....		4, 596	
Total of 101 forest reserves in the United States .....			102, 329, 877	
Alaska .....	Afognak .....	403, 640	4, 909, 880	
	Alexander Archipelago .....	4, 506, 240		
Porto Rico .....	Luquillo .....	65, 950	65, 950	
	Grand total of 104 forest reserves .....			107, 305, 707

<sup>a</sup> Total of Uinta in Utah and Wyoming=2,153,106 acres.

<sup>b</sup> Total of Bear River in Idaho and Utah=683,280 acres.

<sup>c</sup> Total of La Sal in Colorado and Utah=158,462 acres.

<sup>d</sup> Total of Priest River in Idaho and Washington=645,120 acres.

<sup>e</sup> Total of Wenaha in Oregon and Washington=731,650 acres.

<sup>f</sup> Total of Yellowstone in Wyoming, Montana, and Idaho=7,988,560 acres.

<sup>g</sup> Total of Black Hills in South Dakota and Wyoming=1,209,760 acres.

<sup>h</sup> Total of Medicine Bow in Colorado and Wyoming=1,574,668 acres.

<sup>i</sup> Total of Uinta in Utah and Wyoming=2,153,106 acres.



