

MAINE STATE LEGISLATURE

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PUBLIC DOCUMENTS

OF THE

STATE OF MAINE

BEING THE

REPORTS

OF THE VARIOUS

**PUBLIC OFFICERS
DEPARTMENTS AND
INSTITUTIONS**

FOR THE TWO YEARS

JULY 1, 1926 - JUNE 30, 1928

STATE OF MAINE

SEVENTEENTH
BIENNIAL REPORT

OF THE

FOREST COMMISSIONER



1927-1928

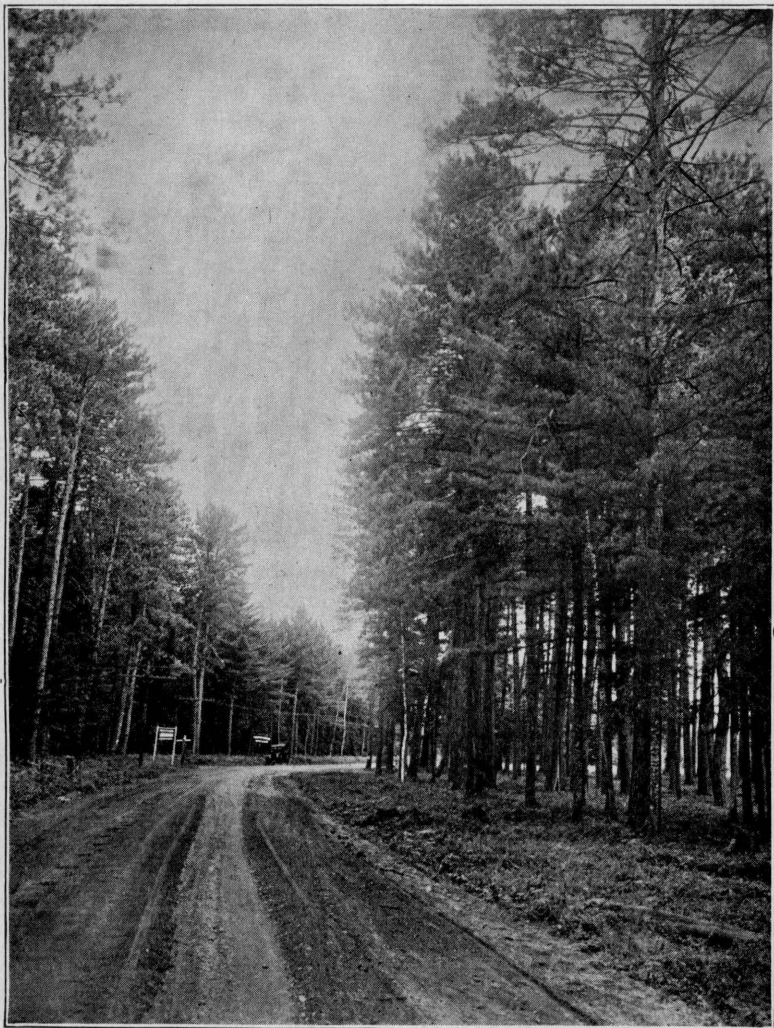
STATE OF MAINE

December 1, 1928

To His Excellency, Ralph O. Brewster, Governor of Maine:

I have the honor to submit herewith my biennial report for the years 1927 and 1928.

NEIL L. VIOLETTE,
Forest Commissioner



Cathedral Pines, Eustis, Maine

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Forest Service

NEIL L. VIOLETTE, *Forest Commissioner*

Augusta, Maine

HENRY B. PEIRSON, *Forest Entomologist*

Augusta, Maine

WALTER O. FROST, *Blister Rust Agent*

Augusta, Maine

District Supervisors

GEORGE A. FAULKNER, Winter Harbor, Maine

REX E. GILPATRICK, Houlton, Maine

GEORGE H. GRUHN, Augusta, Maine

ROBERT G. STUBBS, Hallowell, Maine

JOHN M. BRISCOE, *Professor of Forestry*, Orono, Maine

Assistant Professors of Forestry

C. W. L. CHAPMAN, Orono, Maine

GILBERT I. STEWART, Orono, Maine

LILLIAN J. COLEMAN, *Bookkeeper*
ADRIENNE THEBERGE, *Stenographer*

Brief History

AND PRESENT ORGANIZATION OF THE DEPARTMENT

While the District of Maine was still a part of the Commonwealth of Massachusetts, its wild lands, covered at that time with unbroken forests, were recognized as a valuable resource which could be turned to the benefit of the State. In that early time grants of land varying in size and proximity to the settlements in northern Massachusetts were used instead of cash payments in the settlement of debts incurred by the State. In fact the lack of ready money often made it necessary for Massachusetts to offer grants of land in the District of Maine for almost every conceivable purpose of trade. Schools and academies were endowed with acres of forest land, and in such cases, whole townships were laid out in the wilds of Maine. State improvements, like roads, the building of mills, and the promotion of other enterprises, were often paid for by the selling of lands in this region.

So firmly fixed had become this custom that in later years when Maine became a separate State, our citizens depended largely upon revenue from the wild lands. For years the new State depended upon sales of land and timber for money to pay current expenses. Public institutions, like schools and colleges, were endowed with lands, and citizens by these means helped individually and collectively. When the State House was constructed twelve townships of land were sold by the Legislature, the proceeds being used for the erection of the building.

These activities naturally required supervision. To provide this the Legislature of the State of Maine, in a resolve approved June 26, 1820, authorized the Governor and Council to appoint jointly with the Executive of the Commonwealth of Massachusetts; or separately on the part of Maine if the Executive of that Commonwealth declined to act on said appointment, one or more agents to perform such acts and duties relating to the public roads and the care and preservation of the timber on the public lands as might be

prescribed by the Governor. Various resolves passed in subsequent years providing for the compensation of such agents indicate that land agents for the handling of the public lands were appointed from 1820 on, although the Maine Register for the year 1825 is the first to contain the name of the Land Agent. This was James Irish of the Town of Gorham.

Massachusetts apparently did not care to join in the appointment of land agents, and cooperation with that State is not named in any acts of the Legislature subsequent to that of June 26, 1820. In fact a resolve approved February 6, 1822, repealed the resolve of June 26, 1820, and authorized the Governor and Council to appoint one or more agents "whose duty it shall be to perform all such acts and duties relating to the preservation of the timber and grass on the public lands, or any part thereof, as shall from time to time be prescribed by the Governor and Council." These agents were to receive reasonable compensation, which was to be paid out of the proceeds from the sale of lands and timber. On February 8, 1823, another resolve authorized the Governor and Council to appoint agents to preserve the timber and grass on the public lands, and to sell to actual settlers lands not to exceed 500 acres to each settler.

The first really comprehensive act "to promote the sale and settlement of public lands" was passed on February 25, 1824. This act provided in some detail for the sale of cultivable land to settlers, and for the sale of timber lands unfit for settlement and cultivation. This act also put the office of Land Agent on a more stable footing by authorizing the Governor and Council "to appoint and commission some discreet and suitable person, as agent to superintend and manage the sale and settlement of the public land; it shall be the duty of such Agent to survey or cause to be surveyed the townships aforesaid, or such of them as in his judgment circumstances may from time to time require. And such Agent is hereby empowered to make contracts and execute deeds in behalf of the State according to the provisions of this act; to receive all money and securities accruing to the State from the sale of land, timber, or grass belonging thereto; and he shall pay unto the Treasurer of the State, for the

time being, all money by him received within six months from the time he shall receive the same; and said Agent is hereby empowered, and it shall be his duty to sell at public or private sale, all grass growing on the public land from year to year; to take all suitable measures for the preservation of the timber and grass standing or growing thereon; and to prosecute in behalf of the State, for all trespasses which may have been or may be made on the same; and to seize and to sell at public auction, all kinds of lumber or grass cut by trespassers, first giving public notice of such sale."

While Land Agents have been appointed from 1820 on, this act may perhaps be regarded as first establishing a land office, with James Irish of Gorham as Land Agent under the act. On February 21, 1826, a resolve was passed authorizing the Governor and Council to appoint an Auditor of the accounts of the Land Agent, and directing said Auditor to furnish for the information of the Legislature a report of all sales and contracts for the sale of land and timber, giving its location, quality and price, and the names of the purchasers. On February 20, 1828, an act somewhat similar to but even more detailed in character than that of February 15, 1824, was passed "to promote the sale and settlement of public lands" and providing for the appointment of a Land Agent. This act repealed all previous acts and parts of acts providing for the sale and settlement of the public lands, but provided that all contracts entered into under any of said acts should be valid. Daniel Ross was appointed as Land Agent under the terms of this act. Shortly thereafter some question appears to have arisen as to the conduct of affairs by the Land Agents during the first few years of the existence of the State of Maine, and on March 3, 1829, a committee was appointed to investigate the acts and to settle the accounts of Land Agents appointed under the resolves of June 26, 1820, February 6, 1822 and February 8, 1823. On March 18, 1830, another member was added to this committee, which appears to have exonerated the Land Agents against whom charges had been brought.

When the State of Maine was separated from the Commonwealth of Massachusetts, the public lands were divided

equally between the two States. In 1821 the Governor of Massachusetts proposed that Maine should purchase the lands within its borders owned by Massachusetts, and a commission was appointed which recommended the purchase of these lands for \$188,922. Neither of the State Legislatures would ratify the agreement, however, and it was not until more than thirty years later that the lands originally assigned to Massachusetts were acquired by Maine. In 1853 the Legislature ratified the action of Governor Hubbard in purchasing 1,198,330 acres of land from Massachusetts for \$362,500, or approximately 30 1-3 cents per acre. Meanwhile both States had sold considerable areas. A report made by the Land Agent in 1835 showed that from the date of separation of Maine from Massachusetts to January 1, 1835, Maine had sold 1,300,450 acres of land for \$393,018.62, and had given away 108,939 acres.

On March 17, 1855, the office of Land Agent was still more permanently established by a resolve, which was subsequently approved by the people, amending the Constitution of the State to provide that "the Land Agent and Attorney General shall be chosen annually by joint ballot of the senators and representatives in convention." So effectively were the public lands disposed of during the next twenty years that on March 4, 1874, a resolve was approved abolishing the office of Land Agent from and after December 31, 1874, and directing the incumbent to bring all unsettled business to a termination as speedily as the public good allows, and to turn over to the Governor and Council all records, moneys, and other property of the State to be administered by them until otherwise provided. This action was followed on February 24, 1875, by a resolve, subsequently ratified by the people, providing for an amendment to the Constitution by striking out Section 10 of Article 9 of the amendment the words "Land Agent."

It appears to have been found, however, that the Land Agent had been legislated out of office too soon, and on February 22, 1875, an act was adopted repealing the resolve of March 4, 1874, and reviving all statutes and parts of statutes relating to the Land Agent, or land office, in force at the passage of said resolve. The Land Agent was, how-

ever, instructed to bring to a termination as speedily as the public good would allow all unsettled business connected with the land office, and the Governor, State Treasurer, and Land Agent were created a commission to inquire what further steps were necessary in order to finally close up the affairs of the land office.

In his inaugural address on January 6, 1876, Governor Conner quoted the Land Agent as reporting only 34,781 acres of settling land still unsold, and added that the revival by law of the land office and its continuance as a separate department of the State would seem to entail unnecessary expense. On February 22, 1876, an act of the Legislature provided for the appointment of a Land Agent by the Governor and Council, but repeated the instructions of the previous Legislature to terminate as speedily as possible all unsettled business connected with the Land office. The time when the office might be permanently discontinued seems never to have arrived, and the land office has continued to function until the present day.

In 1891 a law was enacted which has resulted in a gradual change in the duties of the Land Agent until today his activities have far more to do with forestry than with the sale and settlement or even the administration of the public lands. On March 25, 1891, "An act creating a forest commission and for the protection of forests" was passed making the Land Agent Forest Commissioner of the State and giving him certain duties in connection with the preservation of the forests. This same act also provided a system of forest fire protection both for the organized and unorganized towns, which remained in effect substantially as passed until 1909. Cyrus A. Packard was the first Forest Commissioner appointed under this act. His activities and those of his successors until 1909 were devoted primarily to education, investigation, and cooperation with the county and town authorities in forest fire protection.

On April 1, 1909, was approved "An act creating the Maine Forestry District and providing for protection against forest fires therein." This act established an administrative district, including all unorganized towns and some of the plantations in the northern part of the State of Maine, and

levied a special tax on all property in the District to be used for the prevention, control, and extinguishment of forest fires within the District. The Forest Commissioner was made the administrative officer to handle the fire protection within the District.

In 1923 the Legislature abolished the title of Land Agent, so that now the head of the department is known as the Forest Commissioner.

Organization

At the present time the department is divided into six major divisions, viz.:

1. Forest fire protection
 - (A) Maine Forestry District
 - (B) Organized towns
2. Forest Entomology
3. White Pine Blister Rust Control
4. Forestry Department and State Forest Nursery at the University of Maine
5. General Forestry
6. Land Office

1. (A) Maine Forestry District

The idea of the Maine Forestry District originated from a proposed plan of several land owners to protect their lands from forest fires. The plan was as follows: "In 1903, the State appropriated \$10,000 for the purpose of guarding forest property, in order to prevent fires as much as possible. The land owners realized that this fund was very insignificant in times of extreme drought. Many of them employed men at their own expense to patrol their property, but each realized that he was as likely to suffer from fires spreading from other lands that were unguarded, as from fires within his own lines; consequently, the plan was conceived of raising a much larger fund by each of the land owners contributing pro rata according to his acreage. It was found that some land owners would not enter such an agreement and therefore the whole scheme fell through."

In 1908 the State suffered an enormous loss by forest fires, and again the idea of getting forest fire protection was re-

vived. The land owners were advised that the only way that all land owners could be compelled to protect their property would be through an act of legislature. So in 1909, the so-called Maine Forestry District law was passed. By it an administrative district comprising all of the unorganized towns and all of the plantations which are wholly taxed as Wild Lands, and the responsibility for fire protection in this District placed squarely upon the Forest Commissioner. Specific provision was made for the Forest Commissioner to sub-divide this area, and for him to appoint chief fire wardens, deputy fire wardens, lookout watchmen, and patrolmen, and for him to construct lookout towers and telephone lines and to purchase tools as he deems it necessary for adequate fire protection. Most important of all the fire protection work was placed on a stable and more adequate financial basis by a special tax, to be used for fire protection purposes only on all land included in the Forestry District. No other State in the Union has organized its fire protection work along the lines of the Maine Forestry District, which is thus in a class by itself. The system is unique in that the funds for fire protection purposes are virtually contributed by the timberland owners.

The Forestry District has a total area of nearly 10,000,000 acres. It is estimated that approximately 9,000,000 acres of this total area is forest land. During the past twenty years there have been an average of 88 fires per year covering an average area of 31,639 acres and doing an annual damage of \$118,820. The average area burned each year amounts to 0.35 of one per cent of the total forest area of the District—not a bad record when the inflammable character of the forests, their continuity, and their relative inaccessibility are considered.

The District is divided into four sections, each of which is in charge of a supervisor. These sections are sub-divided into twenty-nine fire districts, each of which is in charge of a chief forest fire warden. Under the chief wardens come the lookout watchmen, patrolmen, and other deputy wardens who work only when called upon. The chief wardens are for the most part thoroughly seasoned woodsmen of wide experience, and are the back-bone of the fire protective system. They

are subject only to instructions from the Forest Commissioner, and are in complete charge of the activities in their respective districts. These include the planning, organization, and execution of the work, and the supervision of the personnel. They are employed only during the fire season.

Deputy warden is the official title applied to watchmen, patrolmen, and other assistants to chief wardens. In the latter group are included primarily those who are not regularly employed, but who work from time to time on such specific jobs as may be assigned to them by chief wardens. They have authority to summon assistance and to take charge of fire-fighting pending the arrival of the chief warden.

There are now 68 lookout towers in the Forestry District, 57 of which are of steel construction. Each of these is equipped with a telephone, a pair of binoculars, and a panoramic map which is of assistance to the watchmen in locating fires. Lookout watchmen are the eyes of the service. Upon their effectiveness in locating and reporting fires promptly depends to a large extent the success of the fire protection work. The job is not an easy one. They must know the country thoroughly and must be absolutely dependable. During dry spells they must be on the lookout day in and day out from early morning until dusk. During wet spells there is always work to be done at the tower, at the camp, on the telephone line, or on trails. Moreover, lookout stations are frequently in remote and comparatively inaccessible locations, and the work is apt to become lonely and monotonous. While college men are occasionally employed for the work, they are usually handicapped by lack of knowledge of the surrounding country. They are apt to find the work tiresome before the end of the season, and are frequently not available as early or as late as their services are needed. For these reasons local men are more often employed. Regular patrolmen are used only where there is unusual fire hazard, as along well traveled roads, fishing streams, lakes, and in old cuttings.

The duties of the entire field force of the Forestry District may be summarized under the two heads of fire prevention and fire suppression. In no field is it more true than in forest protection that "an ounce of prevention is

worth a pound of cure." The fire that never starts does no damage. One of the warden's most important duties, therefore, is to keep fire from starting. Fire warning signs are posted freely. A bright yellow background with black letters have been adopted as the standard colors. Another good means of fire prevention is the preparation of public camp sites, which help to prevent travelers from building fires promiscuously and in unsafe places. Not only are travelers inclined to use such sites, voluntarily, but if they are well distributed and conveniently placed we can very properly insist on their doing so. Camp sites are thoroughly cleared of inflammable material, equipped with stone fireplaces, and pleasantly located near good drinking water. In every case their character is clearly indicated by posting the Department's "Camp Site" sign. There are at present eighty-nine of these camp sites and more are being built each year.

Next to preventing forest fires from starting, the most important job of the field force is to put out every fire that does start as soon as possible and without undue expense. To do this means that the force must be so organized and equipped as to respond almost instantaneously when notified of a fire. Time and organization are the important elements of fire-fighting. In its early stages one man may be able to handle a fire that a few hours later could not be controlled by a hundred men. Every chief fire warden is expected to have his plans laid beforehand as to just how he will meet any situation that may arise. He must know where and in what numbers men may be secured, those who can be relied upon to act as foremen, how supplies and equipment may be obtained, how a fire in any given situation can be most quickly reached, and how natural features, such as roads, streams, and ridges, may be taken advantage of in fire-fighting. The work is hard and sometimes dangerous, and can be handled effectively only by men of experience. If additional help is needed, local residents are used whenever possible and city labor employed only as a last resort. Special emphasis is laid on maintaining an adequate patrol after every fire until sure that it is completely out. Many

of our most disastrous fires have been caused by leaving the burned-over area before the first fire had been absolutely extinguished.

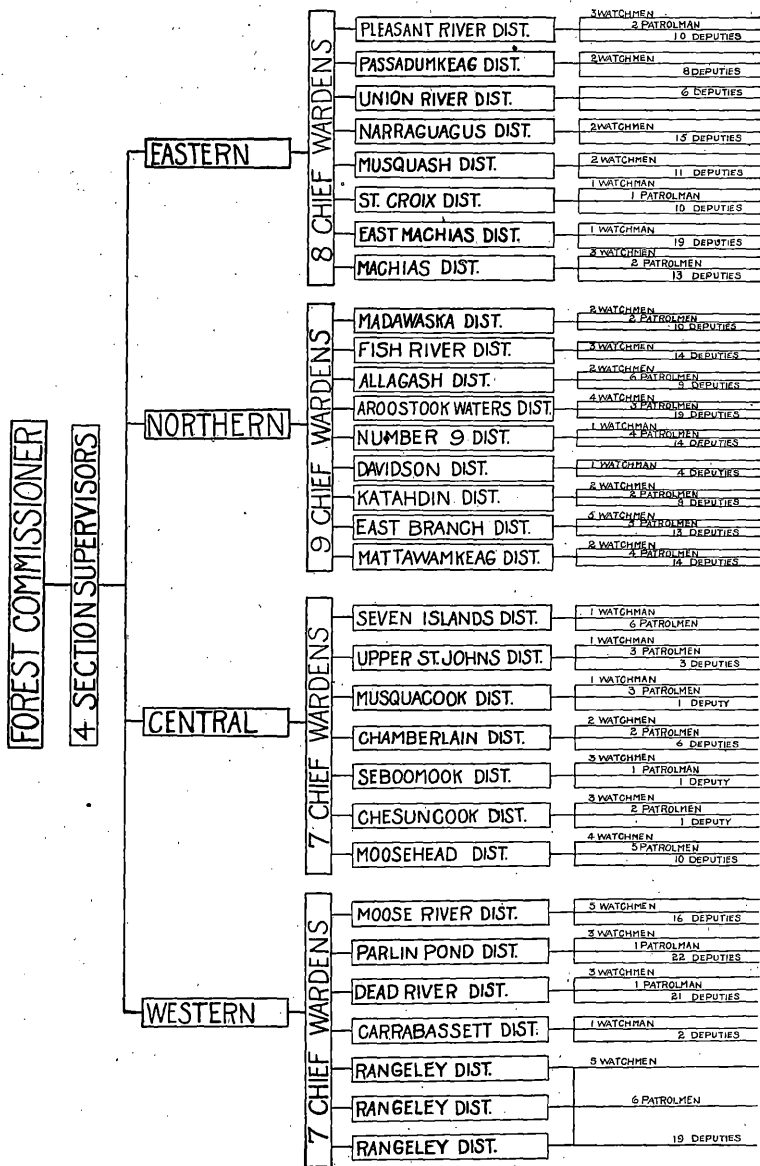
Besides the sixty-eight lookout towers, the District owns fifteen hundred miles of telephone lines, ninety camps, thirteen motor boats, twenty-seven automobiles or fire trucks, thirty-six portable fire pumps, and enough fire fighting tools to equip ten thousand men.

On the next page is found a chart showing the organization of the District.

1. (B) Organized Towns

The first real step in the direction of organized fire protection was taken in 1891. In that year the Legislature passed an act making the land agent forest commissioner of the State and at the same time made provision for fire protection in both the organized and unorganized towns. Curiously enough, as we now look at it, the forest commissioner had no administrative authority, and the actual control of forest fires was left entirely to the selectmen in case of organized towns, and to the county commissioners in the case of unorganized towns. This arrangement continued in force for twenty years, but did not result in stopping the forest fire damage, particularly in the northern part of the State. Accordingly in 1903 the law was amended so as to authorize the forest commissioner "to take measures for the prevention, control, and extinguishment of forest fires in all plantations and unorganized townships", and an appropriation of \$10,000 a year was made for this purpose. Fire protection in the organized towns was still left in the hands of the selectmen. While the new system was an improvement, it fell far short of solving the fire problem and in 1909, through the creation of the Maine Forestry District, further action was taken to place fire protection in the wild land districts in the northern part of the state on a really comprehensive and efficient basis, but no changes were made in the organized towns. In other words, practically no changes have been made in the fire protective organization in organized towns since the original law of 1891, except for an amendment passed in 1921, providing that selectmen may,

Organization of Maine Forestry Districts



if they desire, appoint deputy wardens. The forest commissioner cooperates with local officials through the maintenance of lookout stations, furnishing fire signs free to the town, the enforcement of slash disposal, railroad patrol, and the portable saw mill laws, but no control over the fire-fighting or other activities of the local wardens. For the last four years, a special agent was appointed by the department to cooperate with the selectmen in the enforcement of all forest fire protection laws.

2. Forest Entomology

The real results of the budworm outbreaks of 1912-1916 did not become apparent to the landowners in general until 1919 and possibly even a little later. The realization that forty per cent of the total stand of spruce and fir in the State had been destroyed emphasized the great necessity for taking measures to curb the loss from insects that yearly were taking a far greater toll than fire. In the fall of 1921 private individuals interested in seeing the State start constructive work in protection of the forests from insect pests financed the employment of a forest entomologist. H. B. Peirson, at that time research entomologist at the Harvard Forest School, was appointed to the position. The interest in the entomological work carried on by the Maine Forest Service continued to grow and other landowners cooperated financially in the work. In 1924 there were twenty cooperating companies. The calls for assistance were such that it became necessary to employ an assistant, and Mr. James A. Beal, who had made a specialty of forest insects, was engaged to assist in the field work. He became connected with the Department in July, 1923, and remained until September, 1924, when he resigned to continue his studies at the New York State College of Forestry.

The fact that the insect problem is a State wide one affecting not only individual land owners but the forest resources of the State as a whole and through these the industries made it seem only fair that the State should carry on the work, and the Legislature of 1925 made provisions for it. The calls for assistance reach well over the thousand mark each year and are constantly increasing. Through the interest

and courtesy of the Brown Company at Oquossoc, the Bates Forest at Alfred, and the Lafayette National Park at Bar Harbor, experimental problems in forest insect protection have been worked out. In 1927 Mr. George B. Dorr, superintendent of the Lafayette National Park, offered the Department a field laboratory with excellent facilities for experimental work. The laboratory is situated in an ideal location for forest insect studies as every conceivable forest type in the State is within easy reach. The presence of a large private nursery has also been of great help. The laboratory has been maintained during the past two summers, the work being carried on by Mr. Kenneth A. Salman, and a report of the results can be found in the section under Forest Entomology.

The aim of the Department has been to offer advice, when requested, on methods of controlling forest and shade tree insects and, as far as one man can do it, to keep the forest owners posted as to insect conditions. With 15,000,000 acres of forest growth it has been impossible to keep very close touch on conditions. It is hoped though that through the forest fire protective force and through men whose work calls them into the forest, a gradual knowledge of forest insects can be built up so that with this increased force, reports of insect damage will be received before the pests assume wide spread epidemic form.

3. White Pine Blister Rust

This foreign fungus disease so deadly to all species of five-needle pines was first discovered in the United States at Geneva, New York, in 1906, having been imported on shipments of European grown white pine transplants several years before. The United States Department of Agriculture, Bureau of Plant Industry, took immediate steps to determine the extent of its spread in the Northeast, but it was not until the summer of 1916 that the disease was found to be in Maine; when Federal agent G. B. Posey showed conclusively that the White Pine Blister Rust already had a wide distribution in Maine and that remedial measures were imperative.

In December, 1916, the Maine members of the Committee on the Suppression of Pine Blister Rust in North America were present at a conference held in Washington, D. C., where it was decided that some definite steps should at once be taken to provide means for combatting this disease in Maine. They, therefore, addressed a letter to the Governor, petitioning him to bring the matter to the attention of the Legislature, then in session, and to urge the appropriation of funds for the purpose of controlling the disease. This letter presented the facts, and included a tentative bill to be presented to the Legislature. A bill was passed by the Legislature, Chapter 178, P. L. 1917, authorizing the Department to cooperate with the Federal Government in controlling the disease and appropriating five thousand dollars for the years 1917 and 1918. This sum was appropriated by succeeding Legislatures until 1927 when it was increased to six thousand two hundred and fifty dollars, the Federal Government making a similar increase.

During the period 1917 to 1921, the field work was under the supervision of Professor J. M. Briscoe, professor of forestry at the State University, being conducted during the summer months and consisting mainly of demonstration and eradication areas in the towns of Kittery, Alfred, Hollis, and Brunswick, mapping of the pine areas in York County, inspection of nurseries and plantations, and a general scouting throughout the State for the disease.

In 1921 the disease was found to be so widespread throughout the southern part of the State that a change of policy was deemed necessary if the pine was to be protected, a policy that would involve cooperation with towns and pine owners, thus dealing direct with the parties concerned, and making them a party to the work. Consequently, the Washington Office of Blister Rust Control and this Department entered an eight-year agreement placing the work on a year-round basis, to cooperate with townships, cities, associations, and individuals in the local eradication of currant and gooseberry plants, and to furnish educational material pertaining to the disease. Under this agreement the Federal Government agreed to expend about \$20,000 yearly and the State \$5,000 yearly, the Federal fund to be

met by the State on a dollar for dollar basis. (Town appropriations and owners' labor are considered in meeting Federal expenditures). Four county blister rust agents, and a State Leader were appointed, paid from Federal funds, the county agents being stationed in York, Cumberland, Oxford, and Androscoggin and Sagadahoc Counties; the State Leader working from the Augusta Office. During the eradication season about sixteen additional temporary men are employed by both cooperating parties. These temporary men act as scouts, educational and supervisory agents among the cooperating towns and pine owners.

Pursuing this policy of dealing direct with towns and pine owners the control work has been very successful, at present being carried on in York, Cumberland, Oxford, Franklin, Androscoggin, Sagadahoc, Lincoln, Kennebec, Somerset, Waldo, and Hancock counties by the county agents, not including smaller activities in other sections of the State.

The present personnel consists of:

Walter O. Frost, State Leader, State House, Augusta, Maine.

Solon D. Conner, Agent for York and Cumberland Counties, 904 Washington Avenue, Portland, Maine.

Daniel S. Curtis, Agent for Oxford and Franklin Counties, North Bridgton, Maine.

Guy H. Kimball, Agent for Androscoggin, Sagadahoc, Lincoln, and Kennebec Counties, 374 Court Street, Auburn, Maine.

John M. White, Agent for Kennebec, Somerset and Waldo Counties, 22 Edgemont Avenue, Waterville, Maine.

Arthur J. Lambert, temporary agent for Hancock County, State House, Augusta, Maine.

The above assignments are not permanent, as new territory or other changes may be made at any time.

4. Forestry Department and State Forest Nursery at the University of Maine

The general law forming the foundation of the present work of the Forestry Department was passed by the Maine

Legislature in 1891. Section 56 of this law reads as follows: "The forest commissioner shall take such measures as the State superintendent of public schools and the president of the University of Maine may approve, for awakening an interest in behalf of forestry in the public schools, academies and colleges of the State, and of imparting some degree of elementary instruction upon this subject therein." (Revised Statutes, Chapter 8, Section 56).

Since no money was appropriated for carrying out the purpose of this section, nothing was done until a resolve carrying an appropriation of \$2,500 was passed by the Legislature in 1903. It was agreed that the major part of this sum should be used for establishing a chair of forestry at the University of Maine, and that the balance should be used for investigation and research along the lines of public instruction in forestry. An appropriation has been made for this purpose ever since, and the amount has been increased from time to time as the demands required, until now \$10,000 is appropriated annually for this purpose, and \$1,000 for the maintenance of the State Forest Nursery, under the direction of the Forest Commissioner. It was felt that more could be accomplished by concentrating the funds available for this work. A four year undergraduate course in forestry was established at the University of Maine, which would serve not only as a basis for practical work in forestry, but also as a liberal education. The purpose of the forestry work at the University has always been to give an opportunity for all students in the University to acquire a general knowledge of forestry, to give agricultural students special training in the management of the farm woodlot, and to provide a technical training for major students who take the entire curriculum and intend to make forestry their profession and life work.

The first Professor of Forestry at the University of Maine was Samuel N. Spring, M. F. (Yale '03), a then recent graduate of the Yale School of Forestry. The work in forestry was given in the College of Technology, and was first announced and offered in 1903. It consisted of courses in forestry, totaling about thirty-one hours as it is now reckoned, and was required of all students desiring to grad-

uate with a degree in Forestry, in addition to other prescribed courses in botany, zoology, horticulture, and civil engineering.

In 1905, Professor Spring resigned to go to Cornell University, and was succeeded by Gordon E. Tower, M. F. (Yale '05). He remained in charge until 1910, when he resigned and was succeeded by Professor John M. Briscoe, who has been in continuous charge since.

The first class awarded the degree of Bachelor of Science in Forestry, graduated in June, 1906. There were four men, all still active in forestry work, in widely separated localities.

They are:

Howard E. Churchill, Forester, Finch Pruyn Company, Glen Falls, New York.

Lincoln Crowell, Assistant Forester, Massachusetts Conservation Commission, Sandwich, Mass.

Walter O. Frost, Associate Pathologist, U. S. Department of Agriculture, State Leader, Blister Rust Control, Forestry Department, Augusta, Maine.

David N. Rogers, Supervisor, U. S. Forest Service, Superior, Minn.

Prior to Professor Tower's resignation, the Forestry Department was transferred from the College of Technology to the College of Agriculture, in line with the general placement of the forestry work in other institutions, and in the United States Department of Agriculture, where the Forest Service was transferred from the Department of the Interior about the same time.

The classes in forestry at first were small, and the graduates numbered from two to six each year until about 1920, when a marked increase in the number of students took place. Since 1924 the number of graduates has been as follows: In 1924, 15; 1925, 21; 1926, 22; 1927, 26; and 1928, 20.

With the increase in the number of students, and a greater appreciation of the importance of forestry educational work in Maine, where 78% of the land area is wooded, and the forests contribute the most important source of employment and wealth, it was found that the work could no longer be

handled by one man. An additional instructor was therefore engaged. Mr. Carleton W. Eaton, a graduate of Bowdoin ('11) and of Yale Forestry School ('12), was the first appointee. He served from 1913 to 1918, and was succeeded by Mr. C. W. L. Chapman (Maine '14). Mr. Chapman has since been promoted to the position of Assistant Professor, and is in charge of the work in forest measurements, products, and fire protection.

By 1923 it was necessary to have an additional assistant, due to the increase in the number of students and the expansion of the curriculum. Mr. Dwight B. Demeritt (Maine '22 and Yale '23) was appointed as second assistant professor, in charge of the work in wood technology, logging, lumbering and winter camp. In 1926 Professor Demeritt resigned to take up work in Louisiana as Extension Forester for that State. He was succeeded by Mr. Gilbert I. Stewart (Michigan '22 and Yale '26).

The present teaching staff consists of:

Professor John M. Briscoe, M. F., Yale '10, Head of the Department.

Assistant Professor C. W. L. Chapman, B. S., Maine '14, M. S., Maine '21.

Assistant Professor G. I. Stewart, B. S., Michigan '22, M. F., Yale '26.

The Forestry Department is now the third largest department in the University of Maine in point of number of major students in attendance. 150 credit hours are required for graduation, and the degree of Bachelor of Science in Forestry is awarded by the University of Maine to those students completing the four year curriculum, which is outlined in detail, together with descriptions of the courses offered, in the catalog of the University.

Besides the major work of the Department, which is the training of professional foresters, special courses are offered for all students interested in forestry in a more general way. These are the course in Economics of Forestry in the Fall Semester, and Woodlot Forestry in the Spring Semester. Enrollment in each of these classes runs from fifty to seventy students each, and a University credit of two hours is allowed for each course.

A winter camp course of eight weeks in the logging woods was inaugurated in 1923, and made possible by the cooperation of the Great Northern Paper Company, the latter furnishing camps and equipment for this work. This course is made a part of the regular curriculum and is required of all Senior students. It gives an opportunity to observe and carry into practice some of the work taught in the class room and laboratory, and furnishes the student some first-hand experience before graduation.

An ever increasing demand is being made on the Department for special outside lectures on forestry by schools, granges, civic clubs, and women's clubs throughout the State.

An Extension Specialist in Forestry is employed by the Extension Service, who is paid from funds through the Smith-Lever Act. The subject matter and program for this work are also under the supervision of the Forestry Department. The first Extension Specialist was appointed by the College of Agriculture in 1922. Mr. Myron W. Watson (Maine '22) was the first appointee, and he met with eminent success in his work. He resigned in 1926, and was succeeded by Mr. Ralph M. Hutchinson (Maine '24) who is the present incumbent. Much has already been done in the way of extending reforestation and improving protection on the farm woodlots of the State, and now a program for woodlot improvement in the way of cleanings, thinnings and scientific management is under way. The importance of this work may be appreciated when the U. S. Census figures show that 45% of the land listed as farms is still wooded; that farm woodlots in Maine occupy 25% more area than the improved land, and that the yield in forest products is third in money value of all crops from the farm.

State Forest Nursery

Up to 1913 there was no available supply of planting material for economic forest planting in the State of Maine. All plant material had to be obtained either from other New England States or from New York. Upon the urgent request of the Forestry Department an annual appropriation of \$1,000 was passed by the 1913 Legislature for the purpose of establishing and maintaining a State Forest Nursery as

a part of the work of the Department. This was to serve as a training laboratory for forestry students in nursery work, and to produce suitable forest planting stock at cost for prospective forest planters in this State.

A plot of about two acres in extent was provided by the University of Maine on the campus for this purpose, and the output of the nursery is between 150,000 and 200,000 trees per annum. To date more than 2,500,000 trees have been sold from the State Forest Nursery, and the returns from these sales make the work practically self-sustaining. Through this agency also a number of private and corporation nurseries have been established throughout the State, so that now there is an abundant supply of good planting material at reasonable prices for all who are far-sighted and progressive enough to establish forest plantations.

The object of the State Forest Nursery is not to force planting on anyone, but rather to furnish suitable stock for those who need it at prices that will make the results financially profitable, as well as produce needed material for our industries, in localities and cases where methods of natural reproduction would give negative, or at least very questionable results.

5. General Forestry

Under this division comes the administration of other forest projects, such as publicity, education, tree planting, the B. C. Jordan Fund, and all other forestry laws such as the Town Forest and Auxiliary State Forest laws not included in the other divisions.

6. Land Office

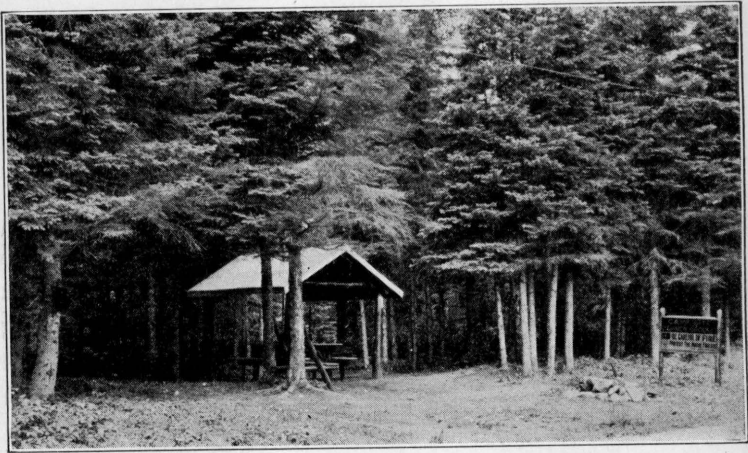
The original duty of this office was to supervise the sale of all public lands of the State and, although this work has been completed, there still remains the duty of the State to act as trustee for the reserved or school lots, commonly called the public lots, in unorganized towns and plantations. In the unorganized townships long term permits to cut timber and grass have been sold and the proceeds of such sale credited on the books of the State Treasurer, to the

several townships to which they belong. By the term of these permits all rights of the grantee cease when the township is organized for plantation purposes. During the time the township is a plantation the care of these reserved lands is in the hands of the Forest Commissioner who is authorized to sell the wood, grass and lumber from them, turning the net proceeds of such sales into the State treasury each year, and the plantation receives from the State treasurer each year 6 per cent interest on the fund. When the township is incorporated, however, the title to these lands passes directly to the town and the State treasurer pays to the trustees of the school fund all moneys in his hands received from sale of grass and stumpage, and the town is expected thereafter to guard this fund carefully and honestly and to devote the income of it to the support of common schools.

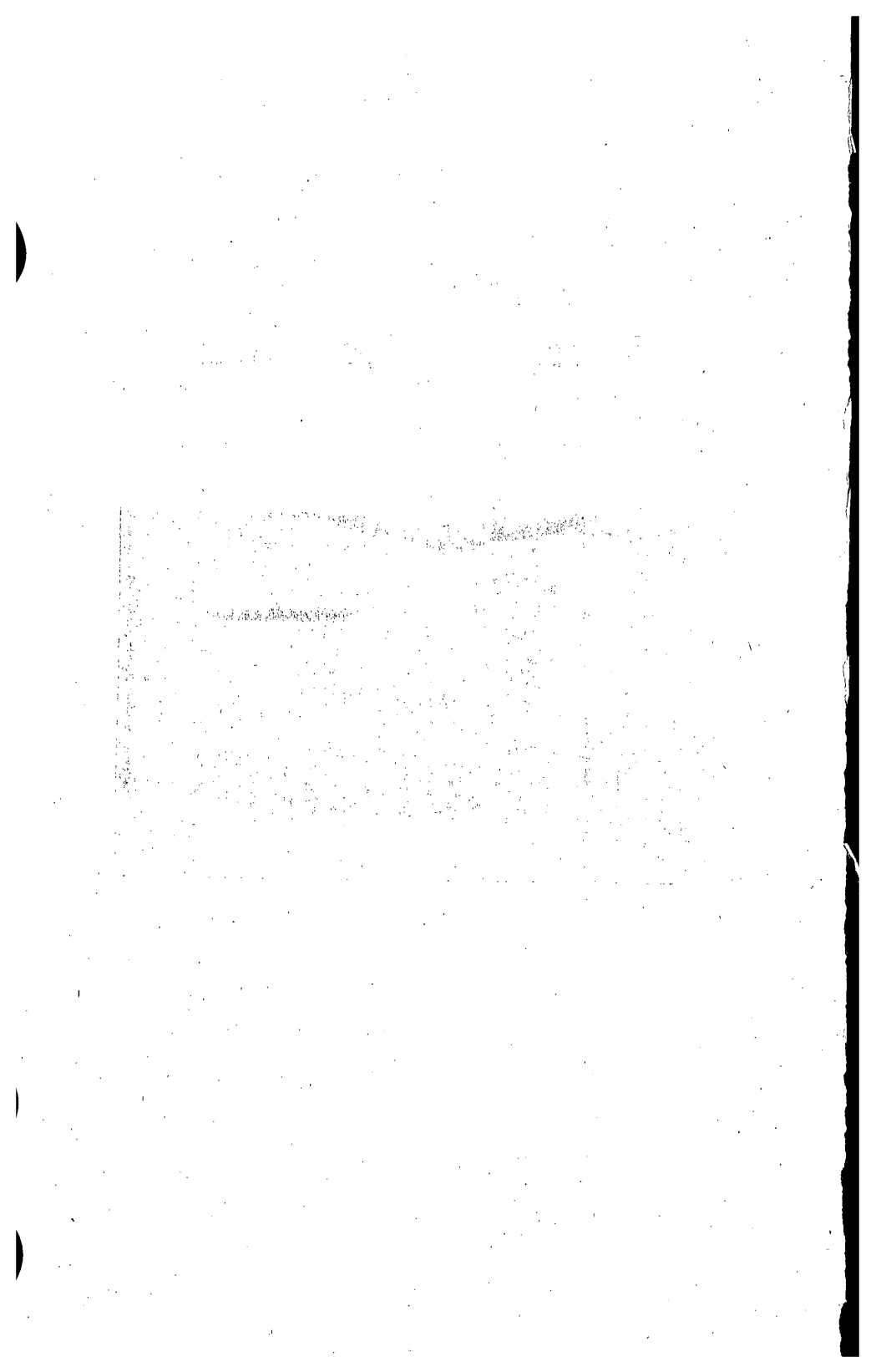
This office has also the administration of about 300 islands on the coast of Maine, still owned by the State. According to a law passed in 1913, Chapter 132, these islands cannot be sold and must be held by the State for public uses.

In this office is recorded all of the original field notes, plans, deeds and grants of all the lands of this State, which records are at the disposal of the public. These old records could not be replaced and represent the expenditure of an enormous amount of money.

Forest Fire Protection



Camp Site



Maine Forestry District

Season 1927 and 1928

The fire season of 1927 opened up about the middle of April with as hazardous a condition as is often encountered. The snow went off gradually with no rains to help melt it and no rains after the snow had gone. Warm days, high winds, and low humidity caused a serious condition in the central and southern portions of the State. This condition crept gradually northward into the Forestry District, but was relieved by rains during the second week in May. During the fire season, which is from spring until fall, we usually have one or more dry periods. The dry period occurred this year from about the middle of June to the 7th or 8th of July. During this period the two largest fires started; that on Chase Stream town which burned over 6,000 acres and cost \$25,209.91 to extinguish, and that on Township 10, Range 13 and Township 10, Range 14 of about 2,400 acres. Out of the 60 fires in the District 34 occurred during this dry period.

The 1928 fire season started as the 1927 fire season, very dry and dangerous until the middle of May, when heavy rains followed by warm sun brought out an early vegetation and thereby greatly diminishing the danger from fires. Although the weather was very hot at times the humidity was abnormally high, and the rain during the summer months was unusually heavy. The fire record shows very few fires and the most of them were before the middle of May.

Comparison of Burned Area 1925 to 1928:

1925	1926	1927	1928
2,328 acres	3,717 acres	9,096 acres	1,562 acres

District Supervisors

Carrying out plans undertaken in 1925, the District has been divided into four sections as follows:

- I. Eastern Section, in charge of Supervisor George A. Faulkner, with headquarters at Winter Harbor.

- II. Northern Section, in charge of Supervisor Rex E. Gilpatrick, with headquarters at Houlton.
- III. Central Section, in charge of Supervisor George H. Gruhn, with headquarters at Seboomook.
- IV. Western Section, in charge of Supervisor Robert G. Stubbs, with headquarters at Augusta.

In 1925 the first supervisor was placed in charge of the Eastern Section, which comprises all of Washington and Hancock Counties, and the lower part of Penobscot and Piscataquis Counties. In 1926 another supervisor was placed in the Northern Section, which comprises all of Aroostook County, except the Upper St. John Waters, and the northern part of Penobscot County. In 1926 a third supervisor was placed in the Central Section, which comprises all of the territory from Greenville to Seven Islands on the St. John River, and in 1928, a fourth supervisor was placed in the Western Section, which comprises all of the Androscoggin Watershed and all of the Kennebec Waters except the Moosehead District.

Chief Wardens

With the beginning of the 1927 fire season there were no changes in the Chief Wardens of the year previous, other than the division of the Chamberlain District into two Districts, the Chamberlain and the Musquacook District (with headquarters at Umsaskis Lake) which necessitated the appointment of a Chief Warden for the latter.

In August, 1927, the death of Mr. S. C. Cummings, Chief Warden of the Mattawamkeag District, came as a great shock to the Service. He was one of the oldest men in the Department in years of service, having been a Chief Warden for twenty years. Mr. Harry Tingley, of Island Falls, succeeded Mr. Cummings. In September, 1928, Mr. Thomas Griffin, Chief Warden of the Katahdin District, died. Mr. Griffin served as a deputy from 1907 to 1916, when he was appointed Chief Warden. A new appointment will be made in the spring of 1929. Mr. Maurice Bartlett, of Ashland, was appointed Chief Warden of the Musquacook District, replacing Mr. Kenneth F. Lee, who resigned in the fall of 1927.

Deputy Wardens

Deputy Warden is the official title applied to watchmen, patrolmen and other assistants to Chief Wardens. For the past two years very few changes have been made in the personnel of the deputies. We have several deputies who have been connected with the Department for over twenty years. The Department in 1928 had the misfortune of losing one good watchman, Mr. George H. Monroe of Milo, who had been in the service for over fifteen years.

Lookout Stations

Four new steel towers were erected, viz.: A 12 foot tower on Spencer Mountain, replacing the old wooden tower; a 36 foot tower on Wadleigh Mountain (a new station); a 36 foot tower on Musquash Mountain, and a 48 foot tower on Dill Ridge. There are now in the District 68 lookout stations, 57 of which are of steel. Steel towers have already been bought for two new stations, and for two replacements, viz.: A 73 foot tower for a station in Macwahoc Plantation, on the road to Haynesville; a 24 foot tower for Clear Lake Mountain on Township 10, Range 11; a 48 foot tower to replace the 12 foot tower on DeBoulie Mountain, and a 24 foot tower to replace the 12 foot wooden tower on Priestly Mountain. All of the stations are in perfect condition, and are being painted every third or fourth year.

Patrol

Five auto road patrols were started in 1928, as follows:

1. Macwahoc, Silver Ridge and Haynesville road in the Mattawamkeag District.
2. Lacroix road from English Lake to Churchill Lake in the Seven Islands and Musquacook Districts.
3. Great Northern road in the Seboomook District.
4. Great Northern road in the Chesuncook District.
5. Kokadjo to B. Pond in the Moosehead District.

A patrol was stationed on the road which is being built between Eustis and Canada in the Dead River District, who had the supervision of the burning of the brush and debris caused by the cutting of the right of way.

Telephone Lines

About 250 miles of new telephone lines were erected in the past two years. The most important ones are:

1. Caucomgomoc Lake to Baker Lake, 18 miles.
2. The Big Black River, copperweld wire, 20 miles.
3. The Stockholm to Cross Lake pole line, 20 miles.
4. The Aroostook Road pole line, 18 miles.
5. The Chamberlain and Soper Mountain line, 8 miles.
6. The West Forks to Lake Moxie pole line, 7 miles.
7. The Rocky Mountain to Fraser Company's line in Canada, 10 miles.
8. The DeBoulie Mountain to Carr Pond Mountain and Portage, 25 miles.
9. St. John River copperweld wire, 6 miles.
10. Lapomkeag to Spoon Mountain and to Aroostook Road, 14 miles.
11. Silver Ridge and Benedicta roads, 27 miles.
12. East Branch Mattawamkeag River to Haynesville, 13½ miles.
13. Wadleigh Mountain line, 10 miles.
14. Almanac Mountain to Dobsis Lake, 15 miles.
15. Poplar Tavern to Pistol Lake and Dill Ridge, 8 miles.
16. Pocomoonshine Mountain to Little Musquash River, 11 miles.
17. Grace Pond line, 12 miles.

Pumps

The addition of 19 four cylinder Northern pumps to the District in the past two years completes the plan which was started in 1924 to furnish each Chief Warden with at least one pump and 1,500 feet of hose. The District has now \$35,000.00 invested in pumps and hose.

Portable five-gallon hand pumps were added to the service in 1928. These pumps are known as the Smith fire pumps, and are highly recommended by the wardens who have already had a chance to try them. Early last spring each Chief Warden was given at least two of these pumps, and more will be purchased in the spring of 1929.

Roads and Trails

The bushing out of 268 miles of woods roads and trails is a new project initiated in 1928. The object of this project is to have these roads and trails in such shape that our supplies can be taken over them when necessary in case of fires. This work was done by our regular men during wet spells without extra cost to the Department.

General Improvements

The weather for forest fire protection was so favorable in 1928 that all of the improvements planned for the year were completed before August first. At that time the improvements planned for 1929 were started, and when the season closed about October 15, all 1929 improvements were completed, thereby placing that particular work a year ahead.

Airplane Patrol

For a number of years it has been suggested by some that an airplane be tried out by the Maine Forest Service to augment the present system. At the 1927 spring meeting of the landowners, this subject was discussed with one of the members of the Curtiss Flying Service, Inc., Garden City, Long Island, New York. A committee of landowners was finally appointed to consider the matter. This committee recommended that the Department contract with the Curtiss Company for a plane and pilot at \$60.00 an hour while in the air, all expenses, losses, etc., to be borne by the Curtiss Company. The Department furnished an observer whom it paid and insured.

The plane was used for eighty hours, most of which was consumed in taking the various Chief Wardens over their districts. Its fire work was principally on three fires, and particularly on the Big Chase Stream fire, where the plane flew over the area every evening, sketching the two hundred miles of fire line and reporting on a map new fires and new hazardous points, thus giving the Chief Warden information enabling him to place his men to the best advantage.

During the summer of 1927 several planes were bought by people in the State so that for the season of 1928 it was not

necessary to make arrangements such as those of 1927. During the 1928 season the Department had on call several of the new planes in the State. Due to the wonderful season, however, these planes were not needed. The continued policy of the Department will be an agreement with a local plane owner so that he and his plane will be available when needed.

Fire Weather Stations

In cooperation with the United States Weather Bureau and the United States Forest Service, eight weather stations were established. These stations were so placed that they cover all the forested areas of the State, one at each of the following: Alfred, Gardiner, Jackman, Millinocket, Princeton, Chesuncook, Rangeley, Township 9, Range 11. Each of these stations is equipped by the Department with an anemometer, to measure the velocity of the wind, a psychrometer to take the percentage of humidity in the atmosphere, a rain gauge and a maximum and minimum thermometer. The persons in charge of each of these stations were under the supervision of the United States Weather Bureau of Boston, to which they made daily reports. In return, the Bureau furnished these stations with daily weather forecasts, two days in advance. Stations within the District were in charge of Chief Wardens who telephoned weather forecasts which they received from Boston to other Chief Wardens in their locality. Under similar arrangements an experiment station was established on the Aroostook Road, twenty miles south of Ashland, on the so-called McManus place. This was in charge of two men who were taking observations and instrument readings every two hours in both a cut-over area and spruce land area on moisture conditions of duff soil and soil directly beneath the duff. This station has been established to determine the effect of different weather conditions on the dryness of various forest fuels and consequently inflammability. As a result of these studies, it is hoped eventually to be able to say with considerable certainty that the concurrence of certain meteorological facts means a certain fire danger in

different forest types and different conditions in these types throughout the State. This station also sends in weather instrument readings to the United States Weather Bureau at Boston. In addition to these, each Chief Warden has a rain gauge so that he can make comparison of his conditions with those of the fire weather station and report each week to the Augusta office the amount of rain in his district. As a comparison of sections, tables of the 1928 precipitation follow:

1928 Rain Precipitation

Northern Section

District	Location of Raingauge	Readings Started	June	July	Aug.	Sept.	Readings Closed	Total
Madawaska	Stockholm	June 1	4.41	3.67	1.71	1.31	Sept. 16	11.10
Fish River	Hedgehog Mt.	June 1	3.69	4.08	2.80	1.87	Sept. 15	12.44
Allagash	Rocky Mt.	June 1	4.10	3.80	4.38	—	Sept. 2	12.28
Aroostook Waters	Squa Pan	June 1	2.51	3.36	2.36	—	Aug. 31	8.23
No. 9	No. 9 Mt.	June 7	1.04	5.01	4.22	3.04	Sept. 22	13.31
East Branch	Beetle Mt. Camp Colby Patten	June 1	2.74	4.26	3.21	1.79	Sept. 20	12.00
Mattawamkeag	Island Falls	June 1	2.89	4.03	5.09	3.12	Sept. 30	15.13
Katahdin	Black Cat Mt.	June 1	2.20	1.90	3.60	—	Aug. 25	7.70

Eastern Section

Pleasant River	White Cap Mt.	July 10	—	5.32	7.37	4.38	Sept. 17	17.07
Passadumkeag	Nicatous Dam	June 3	3.19	2.93	6.67	2.14	Sept. 19	14.93
Musquash	Musquash Mt.	June 10	1.68	2.63	4.96	.55	Sept. 4	9.82
St. Croix	Pocamoonshine Mt.	June 1	2.79	2.33	5.80	1.62	Sept. 13	12.54
East Machias	Cooper Mt.	June 24	2.78	3.11	4.68	1.80	Sept. 16	12.37
Machias	Bald Mt.	June 24	1.32	2.69	8.12	3.38	Sept. 30	15.51
Narraguagus and Union River	Lead Mt.	June 1	3.95	4.18	2.45	.57	Sept. 3	11.15

Central Section

Musquacook	Priestly Mt.	June 15	1.87	2.97	4.28	2.07	Sept. 15	11.19
Seven Islands	Depot Mt.	June 17	1.12	3.94	3.68	—	Sept. 1	8.74
Upper St. John	Daquam, P. Q.	June 1	5.02	4.23	5.10	3.44	Sept. 15	17.79
Seboomook	Green Mt.	June 7	2.79	4.35	3.36	.47	Sept. 4	10.97
Chamberlain	Tramway	July 1	—	3.38	3.58	3.36	Sept. 23	10.32
Chesuncook	Chesuncook Dam	June 1	4.07	5.16	3.88	.22	Sept. 8	13.32
Moosehead	Kokadjo	June 1	3.94	3.66	2.60	.78	Sept. 10	10.98

Western Section

Dead River	Bigelow Mt.	July 1	—	1.58	2.90	—	Aug. 31	4.48
Parlin Pond	Caratunk	July 1	—	1.67	3.11	4.55	Sept. 30	9.33
Moose River	Jackman	June 1	2.19	2.37	2.56	3.31	Sept. 30	10.43
Carrabassett	Kingfield	July 1	—	4.48	3.39	5.81	Sept. 30	13.68
Rangeley-Peaslee	Upton	June 21	1.76	2.68	4.92	4.00	Sept. 30	13.36
Rangeley-King	Cupsuptic	June 1	2.40	3.00	4.60	5.30	Sept. 30	15.30

Camp Sites

There are now eighty-nine camp sites established along the main highways in the forest region of the State. These sites are located near either a spring or a brook. Each area has been cleared of all rubbish and inflammable material and in the center is a substantial rock fire place with a table near by that will seat twelve people. Large metal signs along the highways indicate the location of these camp sites. It is hoped that these sites will prevent motorists from stopping and building camp fires in places of danger. The following list shows the general location of these camp grounds:

Aroostook County

- | | |
|------------------------------|------------------------|
| Twp. 16, R. 10, W.E.L.S. | Twp. 9, R. 7, W.E.L.S. |
| Twp. 16, R. 4, W.E.L.S. | Twp. 9, R. 5, W.E.L.S. |
| Twp. 15, R. 6, W.E.L.S. | Twp. 8, R. 5, W.E.L.S. |
| Twp. 15, R. 11, W.E.L.S. (2) | Twp. 7, R. 5, W.E.L.S. |
| Twp. 14, R. 12, W.E.L.S. | Twp. 1, R. 5, W.E.L.S. |
| Twp. 14, R. 8, W.E.L.S. | Twp. B, R. 2, W.E.L.S. |
| Twp. 14, R. 7, W.E.L.S. | Castle Hill |
| Twp. 14, R. 6, W.E.L.S. | Hammond Plantation |
| Twp. 13, R. 13, W.E.L.S. | Hersey |
| Twp. 13, R. 12, W.E.L.S. (2) | Island Falls |
| Twp. 12, R. 13, W.E.L.S. | Macwahoc Plantation |
| Twp. 11, R. 13, W.E.L.S. (2) | Nashville Plantation |
| Twp. 10, R. 13, W.E.L.S. | Oxbow Plantation (2) |

Franklin County

- | | |
|-------------------|-----------|
| Dallas Plantation | Jerusalem |
|-------------------|-----------|

Hancock County

- | | |
|--------------------|------------|
| Township 28, M. D. | Mariaville |
| Township 10, S. D. | |

Oxford County

- | | |
|----------------------------|------------------------|
| Twp. 5, R. 4, W.B.K.P. (6) | Twp. 4, R. 1, W.B.K.P. |
| Twp. 5, R. 3, W.B.K.P. (2) | Grafton |
| Twp. 4, R. 2, W.B.K.P. | |

Penobscot County

- | | |
|------------------------|------------------------|
| Twp. 8, R. 7, W.E.L.S. | Twp. 1, R. 7, W.E.L.S. |
| Twp. 2, R. 7, W.E.L.S. | Mount Chase |
| Twp. 2, R. 6, W.E.L.S. | |

Piscataquis County

Gore A, Range 2
 Twp. 7, R. 15, W.E.L.S.
 Twp. 5, R. 16, W.E.L.S.
 Twp. 3, R. 12, W.E.L.S.
 Twp. 3, R. 11, W.E.L.S.

Twp. 3, R. 9, W.E.L.S.
 Twp. 1, R. 9, W.E.L.S.
 Elliottsville Plantation
 Greenville
 Monson (2)

Somerset County

Twp. 8, R. 17, W.E.L.S.
 Twp. 7, R. 17, W.E.L.S.
 Twp. 6, R. 17, W.E.L.S.
 Twp. 2, R. 4, N.B.K.P.
 Twp. 1, R. 4, N.B.K.P.
 Bigelow Plantation (2)
 Dead River Plantation

Caratunk Plantation
 Harmony
 Jackman Plantation
 Moose River Plantation
 Moscow
 The Forks Plantation
 West Forks Plantation

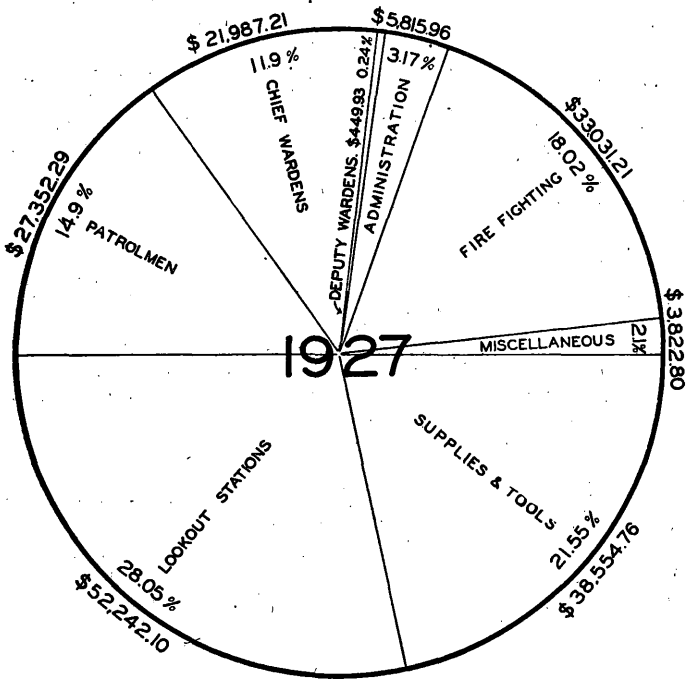
Washington County

Twp 10, R. 3, N.B.P.P.
 Twp 30, M. D.
 Twp 27, E. D. (2)
 Codyville Plantation
 Crawford

Grand Lake Stream Plantation
 Indian Township
 Lambert Lake
 Topsfield (2)

York County

York



TOTAL DISBURSEMENTS \$183,256.26

Finance—1927

RECEIPTS

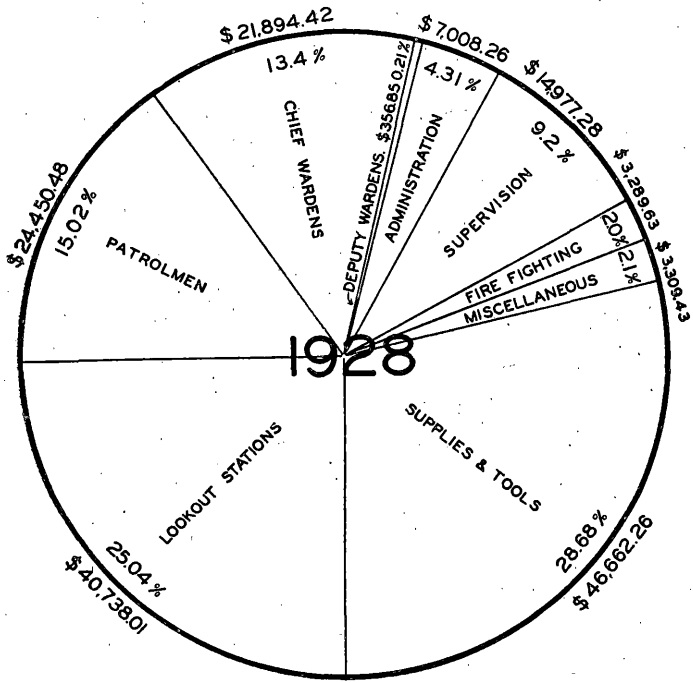
Balance January 1, 1927.....	\$61,698.65
1927 Assessment.....	167,477.17
Interest on Deposits.....	278.39
Federal Cooperation.....	33,180.37
Miscellaneous.....	4,649.75
Total Receipts.....	\$267,284.33

DISBURSEMENTS

Chief Wardens.....	\$21,987.21
Deputy Wardens.....	449.93
Patrolmen.....	27,352.29
Lookout Stations.....	52,242.10
Fire Fighting.....	33,031.21
Tools and Supplies.....	38,554.76
Administration.....	5,815.96
Miscellaneous.....	3,822.80
Total Disbursements.....	\$183,256.26
Balance January 1, 1928.....	\$84,028.07

EXPENDITURES BY WATERSHEDS

	St. John	Penobscot	Kennebec	Andros-coggin	Machias	Totals
Chief Wardens . . .	\$8,555.53	\$ 6,864.75	\$4,088.81	\$743.98	\$1,734.14	\$ 21,987.21
Deputy Wardens . . .		331.23		12.00	106.70	449.93
Lookout Stations . . .	12,428.95	17,593.12	10,851.49	4,326.91	7,041.63	52,242.10
Patrolmen	12,299.11	7,437.47	2,210.68	2,605.35	2,799.68	27,352.29
Fire Fighting	1,942.95	1,401.91	25,833.41	2,924.61	928.33	33,031.21
Tools and Supplies	8,695.87	11,917.73	7,778.49	3,784.68	6,377.99	38,554.76
Administration	1,303.42	1,259.88	1,109.68	1,002.14	1,140.84	5,815.96
Miscellaneous	959.62	1,216.58	738.47	325.70	582.43	3,822.80
Totals	\$46,185.45	\$48,022.67	\$52,611.03	\$15,725.37	\$20,711.74	\$183,256.26



TOTAL DISBURSEMENTS \$162,686.62

Finance—1928

RECEIPTS

Balance January 1, 1928.....	\$84,028.07
1928 Assessment.....	167,477.17
Interest on Deposits.....	234.01
Federal Cooperation.....	57,902.14
Miscellaneous.....	3,229.82

Total Receipts.....\$312,871.21

DISBURSEMENTS

Chief Wardens.....	\$21,894.42
Deputy Wardens.....	356.85
Supervision.....	14,977.28
Patrolmen.....	24,450.48
Lookout Stations.....	40,738.01
Fire Fighting 1928.....	3,289.63
Tools and Supplies.....	46,662.26
Administration.....	7,008.26
Miscellaneous.....	3,309.43

Total Disbursements.....\$162,686.62

Balance January 1, 1929.....\$150,184.59

EXPENDITURES BY WATERSHEDS

	St. John	Penobscot	Kennebec	Andros- coggin	Machias	Totals
Chief Wardens....	\$8,317.44	\$7,074.86	\$3,789.30	\$ 813.06	\$1,899.76	\$21,894.42
Deputy Wardens..		181.69			175.16	356.85
Supervision.....	3,973.60	3,861.90	1,814.05	923.95	4,403.78	14,977.28
Patrolmen.....	10,445.70	7,721.20	1,782.96	2,873.40	1,627.22	24,450.48
Lookout Stations..	10,252.59	12,974.23	9,137.93	2,512.58	5,860.68	40,738.01
Fire Fighting.....	1,027.87	28.20	732.96	.60	1,500.00	3,289.63
Tools and Supplies.	10,344.70	16,759.15	7,387.39	6,279.87	5,891.15	46,662.26
Administration....	1,594.46	1,414.58	1,426.47	1,235.70	1,337.05	7,008.26
Miscellaneous.....	1,051.98	970.00	635.65	204.80	447.00	3,309.43
Totals.....	\$47,008.34	\$50,985.81	\$26,706.71	\$14,843.96	\$23,141.80	\$162,686.62

Improvement and Additions

NORTHERN SECTION

1927
Madawaska District
 9½ townships

12 miles pole line, Stockholm to
 Cross Lake
 8 miles woods line to Three Brooks
 Mt.
 Finished camp site on T. 16, R. 4
 Storehouse at Cross Lake

Fish River District
 14 townships

Boathouse at Portage Lake
 1 18-ft. canoe
 1 doz. fire axes
 1 doz. shovels
 1 doz. mattocks

Allagash District
 29½ townships

10 miles telephone line Rocky Mt.
 to Fraser Co. camps at Cana-
 dian border
 New camp at Dickey
 Wangan for new camp
 Wangan for camp at Castonguay
 Settlement
 3 miles new telephone line on St.
 John River
 7 camp sites on Allagash River
 6 spreads
 6 pairs pliers
 1 pair binoculars
 2 telephones
 2 Johnson Motors
 2½ bbls. insulators

1928
 Fred C. Knowlen
Chief Warden

1 doz. spades
 1 doz. shovels
 1 doz. pails
 2 5-gal. hand pumps
 6 forestry axes
 1 rain gauge
 1 thermometer
 2 tire and tubes
 2 double bit axes

Wm. B. McConnell
Chief Warden

18 miles telephone line, DeBoulie
 Mt. to Carr Pond
 7 miles line from Fish River Hay-
 shed to Portage
 2 bbls. split insulators
 1 doz. shovels
 2 5-gal. hand pumps
 1 rain gauge
 1 thermometer
 1 pair binoculars
 1 20 ft. canoe
 1 Johnson Motor

Grover C. Bradford
Chief Warden

New telephone central and patrol-
 man camp T. 15, R. 13
 6 miles Copperweld line on St.
 John River
 Complete wangan for camp
 New wangan for Musquacook
 camp
 New storehouse at Allagash Pl.
 Rebuilt Glazier Lake telephone
 line
 Wangan for 10 men
 1 doz. shovels
 2 5-gal. hand pumps
 1 rain gauge
 1 thermometer
 2 telephones
 6 pairs telephone connectors
 2 20 ft. canoes

Aroostook Waters District

28½ townships

- 4 miles telephone line, Lapomkeag to Spoon Mt.
- 10 miles new line, Oxbow Flats to Aroostook Road
- 6 miles new telephone line from Masardis to Squapan
- Painted Norway Bluff, Oak Hill and Round Mt. towers
- 1 test set
- 1 20 ft. canoe
- 1 telephone
- 1 stove
- 1 pair pliers
- 1 pair connectors
- 1 bbl. split insulators

Number Nine District

11 townships

- 7 canvas pails
- 1 doz. light galvanized pails
- 1 doz. shovels
- 1 pole axe

Katahdin District

19½ townships

- Camp site at Grant Brook
- Camp site at Windy Pitch
- Woodshed at Black Cat Mt. camp
- Canvas for 2 motor boats
- 4 canvas pails
- 2 pairs pliers
- 2 doz. shovels
- 2 pairs connectors
- 6 blankets
- 1 30 ft. boat
- 1 pair binoculars

Charles L. Weeks

Chief Warden

- 18 miles new pole line on Aroostook Road from Knowles corner to mouth of Oxbow road (720 poles)
- Built new telephone central and patrolman camp at Oxbow road on T. 9, R. 5
- ¾ mile submarine cable across Squapan Lake
- 1 doz. blankets
- 1 doz. spades
- 2 5-gal. hand pumps
- 1 rain gauge
- 1 thermometer
- 1 skiff
- 1 Johnson Motor
- 1 camp site
- Camp at Norway Bluff
- 18 miles trail cut
- 11 miles slash burned

James Cassidy

Chief Warden

- Cut and cleared 32 miles of trails and tote roads
- Built camp site on T. B, R. 2
- 1 doz. shovels
- 2 5-gal. hand pumps
- 1 rain gauge
- 1 thermometer
- 1 pair binoculars

Thomas Griffin

Chief Warden

- Rebuilt 5 miles telephone line on Millinocket Lake road
- Cleared and cut trail from Basin Pond to Chimney Pond
- Repaired telephone line to Chimney Pond
- 1 bbl. split insulators
- 1 pair climbers
- 2 5-gal. hand pumps
- 1 doz. shovels
- 1 pair binoculars
- 1 flag
- 1 thermometer

East Branch District

18½ townships

5 miles new telephone line to connect with line near Lapomkeag
 1 batteau
 1 flag
 2 doz. pails
 1 pair binoculars
 1 20 ft. canoe
 4 pairs pliers
 4 bush scythes

Mattawamkeag District

15 townships

Storehouse and garage at Macwahoc for tools and patrol car
 Rebuilt Mitchell Mt. tower
 6 miles new telephone line
 1 doz. pails
 1 20 ft. canoe

Davidson District

3 townships

1 20 ft. canoe
 1 doz. galvanized pails
 1 doz. axes
 2 pairs pliers
 2 telephones
 2 canvas pails

John E. Mitchell
Chief Warden

Repaired Spoon Mt. camp
 1 new skiff
 1 Johnson Motor
 1 doz. shovels
 2 doz. axe handles
 4 cant dogs
 1½ doz. cant dog stocks
 1 grindstone
 Wangan for one camp
 2 5-gal. hand pumps
 1 rain gauge
 1 pair binoculars

Harry G. Tingley
Chief Warden

New telephone lines:

3½ miles on E. Branch Mattawamkeag
 6 miles on Silver Ridge road
 14 miles from Benedicta line to Macwahoc

Rebuilt telephone lines:

13½ miles from E. Branch Mattawamkeag to Haynesville
 4 miles on Silver Ridge road
 1½ miles Island Falls to May Mt.

2 telephones

New camp wangan

1 Chevrolet truck for patrolman
 Cut and cleared 104 miles roads and trails

Built 2 camp sites on Silver Ridge road, 1 at T. 1. R. 5, and one at Molunkus Stream in Macwahoc

2 doz. forestry axes

2 doz. canvas pails

2 pairs binoculars

2 flags

Wangan for 25 men

1 thermometer

1 doz. shovels

2 5-gal. hand pumps

Victor A. Gilpatrick
Chief Warden

2 5-gal. hand pumps

1 doz. spades

1 20 ft. canoe

1 Johnson Motor

1 pair binoculars

CENTRAL SECTION

Seven Islands District
13 townships

Storehouse
Telephone line to lookout station
1 canoe
1 Northern pump
1,500 ft. hose

Upper St. John District
18 townships

15 miles telephone line
Camp on T. 11, R. 17
1 18-ft. canoe
1 bbl. split insulators
1 telephone
2 sets climbers
1 Northern pump
1,500 ft. hose

Musquacook District
14½ townships

1 mile new telephone line
4 camp sites
Sleeping room to warden's camp
Tools for 70 men
Headquarters camp, 16 x 20
1 20-ft. canoe
1 Johnson outboard motor

Ervin L. McKenney
Chief Warden

2 patrolman camps
Equipment for 2 patrolman camps
Replacement of 7 miles of telephone line
Built 20 miles new Copperweld line
1 Ford truck
1 doz. shovels
2 5-gal. hand pumps
1 Siamese connection
1 rain gauge

William J. McRae
Chief Warden

Camp equipment for headquarters camp
1 Siamese connection
7½ miles telephone line, foot of Baker Lake to Campbell Brook
Replacement of 3 miles of wire
1 telephone
1 doz. shovels
2 5-gal. hand pumps
1 Ford truck

Maurice Bartlett
Chief Warden

Storehouse at headquarters
1 Northern fire pump
1,500 ft. hose
1 Siamese connection
Auto road patrol, Lac Frontier to Umsaskis Lake
Complete equipment for headquarters camp
Complete equipment for Priestly Mt. camp
1 Johnson outboard motor
1 18-ft. canoe
1 doz. forestry axes
1 doz. shovels
2 5-gal. hand pumps
1 mile telephone line
1 rain gauge

Moosehead District

14 townships

Tower and camp on Wadleigh Mt.
 10 miles telephone line to Wadleigh Mt.
 Complete outfit for Wadleigh camp
 1 bbl. split insulators
 3 prs. binoculars
 1 stove
 2 prs. pliers
 6 blankets

Seboomook District

32 townships

Built 4 new camp sites
 Metallic circuit on Nulhedus Mt.
 Woodshed and storehouse at headquarters
 2 pairs pliers
 1 bed, mattress and spring
 3 towers painted
 6 blankets

Chesuncook District

16 townships

Steel tower at Spencer Mt.
 3 camp sites
 1 test set
 3 doz. fire axes
 2 mattresses
 6 pails

Chamberlain District

15 townships

Storehouse at Tramway
 3 miles telephone line, Tramway to Crows Nest
 1 Northern pump
 1 flag
 2 Elto Outboard Motors
 1 telephone

Frank P. Conley

Chief Warden

1 Ford truck
 Auto road patrol, Kokadjo to Cooper Brook
 1 Northern fire pump
 1,500 ft. hose
 1 Siamese connection
 New line to Kineo Mt. tower
 2½ miles pole line
 2 5-gal. hand pumps
 1 doz. shovels
 1 lunch ground site
 1 rain gauge

William J. Hodgins

Chief Warden

10½ miles telephone line, Campbell Brook to Caucomgomoc Lake
 1 Northern fire pump
 1,500 ft. hose
 1 Siamese connection
 1 doz. shovels
 2 5-gal. hand pumps
 1 telephone
 1 Ford truck
 Auto road patrol, Seboomook to Boundary
 1 mattress
 1 rain gauge

Alex Cormier

Chief Warden

Storehouse at headquarters
 1 Northern fire pump
 1,500 ft. hose
 1 Siamese connection
 Auto road patrol, Sourdnahunk to Kokadjo
 1 doz. shovels
 2 5-gal. hand pumps
 Scraped and painted motor boat

William A. Dubay

Chief Warden

Built watchman camps at Soper and Allagash Mts.
 Scraped and painted Allagash and Soper Mt. towers
 New equipment for Soper tower
 1,500 feet hose
 1 doz. shovels
 2 5-gal. hand pumps
 Built 4½ miles telephone line
 Opened trail to Haymock Lake, 4 miles
 1 Siamese connection
 1 rain gauge

EASTERN SECTION

Pleasant River District

16½ townships

Painted Mattamiscontis tower
 1 telephone
 4 doz. axes
 2 doz. shovels
 1½ doz. pails
 1 pair binoculars

A. H. Chase

Chief Warden

Painted White Cap Mt. tower
 Painted Boarstone Mt. tower
 1 rain gauge at White Cap Mt.
 1 thermometer at White Cap Mt.
 Repaired Mattamiscontis Mt.
 tower
 Soldered all joints on telephone
 lines
 1 doz. shovels
 2 5-gal. hand pumps
 1 flag

Passadumkeag District

12 townships

15 miles telephoné line, Almanac
 Mt. to Dobsis Lake
 1 4-cyl. Northern pump
 1,500 feet hose
 1 pair climbers
 1 doz. axes
 1 doz. pails
 2 telephones
 1 flag

G. B. Lowell

Chief Warden

5 miles telephone line, Poplar
 Tavern to Pistol Lake
 3 miles telephone line, Dobsis
 Lake to Dill Ridge (Metallic)
 3 miles telephone line, Dobsis
 Lake to Dill Ridge (ground)
 Moved Almanac tower to Dill
 Ridge
 Camp at Dill Ridge 14 x 20
 Rain gauge at Nicatous Dam
 Thermometer at Passadumkeag
 tower
 1 2-cyl. Northern pump
 1 18-ft. skiff at Nicatous Dam
 1 Johnson Motor at Nicatous
 Lake
 1 doz. shovels
 4 5-gal. hand pumps
 1 pair climbers
 1 pair binoculars
 1 pair connectors
 1 telephone
 700 split insulators
 11 miles of trail cleared
 Painted Passadumkeag tower

Union River District

5½ townships

1 4-cyl. Northern pump
 1 telephone
 1,500 feet hose

A. R. Jordan

Chief Warden

1 campsite on East Branch Union
 River
 1 doz. shovels
 2 5-gal. hand pumps
 Rebuilt 3 miles telephone line to
 Passadumkeag Mt.
 7 miles of trails cleared

Narraguagus District

8½ townships

New roofing on tower at Lead Mt.
Painted cook camp roof at Lead Mt.

F. E. Patten
Chief Warden

Painted tower house at Lead Mt.
Painted tower house at Schoodic Mt.
1 4-cyl. Northern pump at Tunk Lake
1,500 feet hose at Tunk Lake
2 5-gal. hand pumps
1 doz. shovels
1 rain gauge at Lead Mt.
1 thermometer at Lead Mt.
1 pair binoculars
1 flag

Musquash District

9 townships

1 pair pliers
1 pair binoculars
6 canvas pails

J. J. Kneeland
Chief Warden

36 ft. steel tower at Musquash Mt.
New camp at Musquash Mt. 14 x 18
3 new camp sites
New map of Pirate Hill
New map of Musquash Mt.
2 5-gal. hand pumps
1 doz. shovels
1 rain gauge at Musquash Mt.
1 thermometer at Musquash Mt.
2 flags
Painted Pirate Hill tower

St. Croix District

10¼ townships

2 camp sites and 2 closets
Painted 15 miles of fire trails
1 4-cyl. Northern pump
1,500 feet hose
2 telephones
1 pair climbers

A. P. Belmore
Chief Warden

11 miles telephone line Pocamoonshine Mt. to Little Musquash River
1 new 4-cyl. engine for power boat
2 5-gal. hand pumps
1 doz. shovels
1 pair pliers
700 split insulators
Camp at Little Tomah 10 x 12
2 telephones
14 miles of trail cleared

East Machias District

9 townships

1 4-cyl. Northern pump
1,500 feet hose

G. E. Hathaway
Chief Warden

1 doz. shovels
2 5-gal. hand pumps
1 pair binoculars
1 flag
1 18-ft. canoe
New map of Cooper Mt.
1 rain gauge at Cooper Mt.
1 thermometer at Cooper Mt.

Machias District

13½ townships

Motor boat at 3rd Lake
 Boathouse at 3rd Lake Dam
 New Chevrolet truck
 1 pair pliers
 2 doz. pails
 2 doz. shovels
 2 doz. mattocks
 2 doz. canvas pails

Harry McReavy
Chief Warden

New camp site
 Repaired camp at Bald Mt.
 Storehouse and garage at Main
 River Camp
 Re-canvassed 1 16-ft. canoe
 1 18-ft. canoe
 2 5-gal. hand pumps
 1 doz. shovels
 1 pair binoculars
 1 flag
 1 rain gauge at Bald Mt.
 1 thermometer at Bald Mt.
 5 miles of trail cleared

WESTERN SECTION

Dead River District

17½ townships

Stove at Bigelow Mt. camp
 Rebuilt telephone line to Basin
 Pond and to Shaw Pond
 4 doz. galvanized pails
 4 doz. mattocks
 4 doz. axes
 4 doz. shovels

Ralph Wing
Chief Warden

1 camp site at Hurricane Brook
 Special work—Eustis and King &
 Bartlett telephone line, 16 miles
 2 telephones
 1 doz. shovels
 Camp spreads for Bigelow station
 1 Ford truck
 1 4-cyl. Northern pump
 2 5-gal. hand pumps
 1 rain gauge
 1 thermometer

Carrabassett District

4 townships

Mt. Abram station repaired

A. R. Henderson
Chief Warden

1 rain gauge
 2 5-gal. hand pumps
 4 miles metallic circuit
 9 miles ground line
 2 telephones
 1 doz. shovels
 1 thermometer

Parlin Pond District

25 townships

12 miles of telephone lines
 2 towers painted
 1 tower repaired
 2 camp sites

Ralph Sterling
Chief Warden

1 rain gauge
 2 towers painted
 5½ miles metallic line to Moxie
 Station
 Special work on Spencer line, 21
 miles
 1 20-ft. canoe
 1 doz. shovels
 2 doz. mattocks
 2 doz. pails
 24 miles of woods roads cut
 2 5-gal. hand pumps
 5 miles brush burned on Moxie
 road

Moose River District

25 townships

New roof on Kibbie Mt. station
 5 towers painted
 Camp at Tumbledown Mt.
 2 camp sites
 1 pair binoculars
 4 pairs blankets
 2½ doz. pails
 2½ doz. shovels
 2½ doz. mattocks

Rangeley Districts

27½ townships

1 4-cyl. Northern pump
 1,500 ft. hose
 2 towers painted
 4 miles telephone line
 Changed ground line to Metallic
 circuit between Kennebago Sta-
 tion and the lookout
 1 pair binoculars
 2 pair pliers
 1 telephone
 8 camp sites on Sawyer Lake

George G. Nichols

Chief Warden

3 towers painted
 2¼ miles of telephone line
 Special work on Spencer line, 16
 miles
 2 telephone instruments
 1 doz. shovels
 1 doz. axes
 1 mile of brush burned
 2 5-gal. hand pumps
 1 thermometer

King, Peaslee & Murphy

Chief Wardens

2 4-cyl. Northern pumps
 3,000 ft. hose
 Painted Old Spec station and
 camp
 6 5-gal. hand pumps
 1 rain gauge
 Repaired base of Deer Mt.
 Camp sites on Pine Island and
 Dallas Pl.
 2 doz. shovels

Summary of Improvements

	1927	1928
Telephone lines.....	83	167 miles
Steel towers.....	2	2
Towers painted.....	12	14
Camps.....	11	12
Public camp sites.....	40	13
Autos.....	3	8
Pumps.....	10	9
Hose.....	15,000 ft.	13,500 feet
Motor boats.....	1	0
Hand pumps.....		70
Canoes.....	8	8
Motors for canoes.....	5	8
Other boats.....	1	2
Binoculars.....	9	18
Flags.....	12	24
Axes.....	13 doz.	5 doz.
Mattocks.....	7 doz.	6 doz.
Shovels.....	13 doz.	30 doz.
Pails.....	18 doz.	5 doz.
Stoves.....	2	4
Telephones.....	15	34
Test Sets.....	3	4
Bedding.....	2 doz spreads	5 doz. blankets 2 doz. spreads
Roads and trails.....		268 miles
Rain gauges.....		20
Thermometers.....		20

Lookout Stations

Station	Opened		Closed		No. Fires	
	1927	1928	1927	1928	1927	1928
Allagash Mt.	June 19	June 17	Oct. 10	Sept. 13	18	0
Almanac Mt.	May 3	May 13	Aug. 31	Sept. 11	0	0
Attean Mt.	May 3	May 13	Aug. 29	Sept. 15	0	1
Aziscoos Mt.	May 9	May 11	Sept. 22	Sept. 19	7	2
Beetle Mt.	June 1	May 24	Sept. 13	Sept. 15	10	2
Bigelow Mt.	May 4	July 2	Oct. 9	Sept. 15	4	1
Black Cat Mt.	May 1	May 18	Sept. 14	Aug. 31	6	0
Boarstone Mt.	May 1	May 24	Sept. 25	Sept. 15	3	4
Boundary Bald Mt.	May 15	May 15	Oct. 7	Sept. 15	4	1
Burnt Mt.	June 5	June 22	Sept. 15	Sept. 14	6	1
Carr Pond Mt.	June 18	June 20	Sept. 7	Sept. 13	6	0
Coburn Mt.	May 3	May 27	Sept. 24	Sept. 15	12	0
Cooper Mt.	May 9	May 10	Sept. 30	Sept. 29	2	4
Deboulie Mt.	June 5	.....	Sept. 3	.....	0	.....
Deer Mt.	.....	.....	.....	.....	.....	.....
Depot Mt.	June 4	June 15	Sept. 10	Sept. 4	12	1
Doubletop Mt.	.....	.....	.....	.....	.....	.....
Flagstaff Mt.	.....	.....	.....	.....	.....	.....
Green Mt.	June 25	May 21	Sept. 3	Sept. 6	1	11
Hardwood Mt.	May 15	May 17	Oct. 4	Sept. 15	19	3
Hedgehog Mt.	June 5	May 20	Aug. 14	Sept. 14	0	1
Horse Mt.	June 6	June 1	Aug. 31	Aug. 30	9	2
Hunt Mt.	June 13	May 20	Aug. 18	Sept. 17	2	2
Kibbie Mt.	June 5	May 30	Oct. 5	Sept. 15	3	2
Kineo Mt.	April 25	May 16	Sept. 27	Sept. 17	10	3
Lead Mt.	April 25	May 10	Sept. 22	Sept. 17	3	7
Little Russell Mt.	June 4	June 20	Sept. 29	Sept. 14	2	0
Mattamiscontis Mt.	May 12	June 20	Sept. 11	Sept. 9	6	0
Mt. Abram	May 11	May 20	Sept. 18	Sept. 13	1	0
Mt. Chase	June 1	May 12	Sept. 21	Sept. 13	21	2
Mitchell Mt.	May 1	May 31	Aug. 14	Sept. 16	8	2
Moxie Bald Mt.	May 9	May 27	Sept. 24	Sept. 15	3	1
Musquacook Mt.	June 8	May 28	Sept. 10	Sept. 12	9	0
Musquash Mt.	June 1	May 16	Sept. 21	Oct. 14	4	4
No. 4 Mt.	May 1	May 17	Sept. 5	Sept. 15	1	1
No. 9 Mt.	May 8	May 17	Sept. 25	Sept. 22	0	0
Norway Bluff Mt.	June 27	June 19	Aug. 1	Sept. 8	8	4
Nulhedus Mt.	June 19	June 24	Sept. 3	Sept. 14	0	0
Oak Hill Mt.	May 31	May 18	Sept. 20	Sept. 16	2	2
Old Spec Mt.	June 8	June 24	Sept. 24	Oct. 3	1	3
Otter Lake Mt.	May 5	May 10	Aug. 25	Sept. 1	23	13
Passadumkeag Mt.	April 20	May 16	Sept. 21	Sept. 16	4	2
Pirate Hill Mt.	June 9	May 18	Sept. 21	Oct. 16	0	0
Pleasant Pond Mt.	.....	.....	.....	.....	.....	.....
Pocamooshine Mt.	April 25	May 9	Sept. 20	Sept. 29	2	25
Priestly Mt.	May 21	May 18	Oct. 10	Sept. 15	19	2
Ragged Mt.	May 1	June 4	Sept. 19	Sept. 15	15	1
Rocky Mt.	May 25	May 17	Sept. 13	Sept. 20	55	3
Round Mt.	June 12	May 17	Sept. 6	Sept. 17	10	0
Saddleback Mt.	May 16	May 16	Sept. 17	Sept. 17	3	1
Schoodic Mt.	June 28	May 15	Sept. 4	Sept. 13	0	1
Snow Mt.	May 11	May 20	Oct. 11	Sept. 15	0	0
Soper Mt.	.....	June 24	.....	Sept. 14	.....	4
Soubunge Mt.	June 9	June 7	Sept. 18	Sept. 8	1	0
Spencer Mt.	June 19	May 19	Oct. 8	Sept. 15	19	6
Spoon Mt.	June 5	May 25	Sept. 14	Sept. 18	22	4
Squapan Mt.	June 1	May 23	Sept. 22	Aug. 31	25	10
Squaw Mt.	May 1	May 16	Oct. 7	Sept. 15	8	2
Stockholm Mt.	June 30	May 20	Aug. 20	May 26	1	2
Three Brooks Mt.	June 19	June 19	Aug. 20	Sept. 19	2	0
Tumbledown Mt.	May 16	June 3	Oct. 8	Sept. 17	2	0
Tug Mt.	.....	.....	.....	.....	.....	.....
Wadleigh Mt.	May 29	June 16	Sept. 3	Sept. 6	4	0
Washington Bald Mt.	May 29	May 14	Sept. 15	Oct. 1	3	5
Wesley Mt.	June 21	May 13	Sept. 22	Sept. 12	1	7
West Kennebago Mt.	May 17	May 14	Sept. 19	Sept. 18	3	8
Whitecap Mt.	June 15	June 20	Sept. 21	Sept. 18	15	1
Williams Mt.	May 8	May 21	Sept. 27	Sept. 13	14	2
					454	166

FIRE RECORD—1927

AROOSTOOK COUNTY

Location	Date	Area	Cause	Damage
Garfield Plantation.....	May 15.	1½	Unknown.....	\$10.00
T. 16, R. 11.....	June 19.	15	Incendiary.....	180.00
T. D, R. 2.....	June 19.	5	Fishermen.....	100.00
T. 10, R. 3.....	June 19.	¾	Fishermen.....	.....
T. 13, R. 9.....	June 22.	1	Lumbering.....	.....
Oxbow Plantation.....	June 22.	1½	Smoking.....	20.00
T. 9, R. 13.....	June 24.	400	Lumbering.....	1,620.00
T. 13, R. 5.....	June 25.	100	Fishermen.....	1,200.00
Garfield Plantation.....	June 27.	3	Fishermen.....	60.00
T. 12, R. 9.....	June 30.	¾	Lumbering.....	4.00
T. 13, R. 9.....	June 30.	1	Lumbering.....	4.00
T. 16, R. 4.....	July 1.	.....	Campfire.....	5.00
T. 17, R. 4.....	July 1.	½	Campfire.....	5.00
T. 9, R. 13, T. 10, R. 13, T. 10, R. 14.....	July 1.	2,000	Lumbering.....	73,000.00
T. 12, R. 7.....	July 13.	1	Lightning.....	5.00
T. 11, R. 7.....	July 17.	Camps	Incendiary.....	200.00
T. 3, R. 4.....	Aug. 5.	.....	Lightning.....	.....

FRANKLIN COUNTY

Letter D.....	April 9.	3	Railroad.....	.....
Lowelltown.....	April 19	5	Railroad.....	75.00
Coplin Plantation.....	May 8.	15	Smoking.....	20.00
T. 3, R. 3.....	June 21.	3	Lumbering.....	420.00
T. 1, R. 5.....	July 2.	½	Lumbering.....	5.00

HANCOCK COUNTY

Township 28, M. D.....	April 13.	10	Berry Pickers.....	100.00
Township 10, S. D.....	April 15.	40	Berry Pickers.....	.....
Township 10, S. D.....	April 16.	10	Berry Pickers.....	100.00
Township 32, M. D.....	April 17.	.....	Berry Pickers.....	.....
Township 21, M. D.....	April 19.	20	Hunters.....	200.00
Township 8, S. D.....	June 30.	.....	Campfire.....	.....

OXFORD COUNTY

T. 4, R. 1.....	June 13.	250	Unknown.....	5,319.00
T. 4, R. 1.....	July 1.	15	Lumbermen.....	.....
T. 4, R. 2.....	July 27.	.....	Lightning.....	.....
T. 5, R. 5.....	Aug. 6.	.....	Smokers.....	.....
T. 4, R. 3.....	Sept. 23.	.....	Lumbering.....	.....

PENOBSCOT COUNTY

T. A, R. 7.....	May 4.	½	Railroad.....	.....
T. 1, R. 7.....	June 9.	4	Slash burning.....	20.00
T. A, R. 7.....	June 21.	6	Steam shovel.....	.....
Indian No. 3.....	June 21.	3	Smoking.....	.....
Indian No. 3.....	June 25.	½	Fishermen.....	.....
Indian No. 3.....	June 25.	4	Fishermen.....	.....
Indian No. 3.....	June 27.	.....	Railroad.....	.....

PISCATAQUIS COUNTY

T. 2, R. 6.....	April 16.	8	Railroad.....	100.00
T. 5, R. 14.....	June 5.	40	Lightning.....	425.00
T. B, R. 11.....	June 25.	50	Lumbering.....	100.00
T. A, R. 12.....	July 1.	¾	Smokers.....	25.00
T. 1, R. 13.....	July 12.	.....	Lightning.....	.....
T. 4, R. 9.....	July 21.	1	Smokers.....	.....
T. 4, R. 10.....	July 29.	.....	Lightning.....	.....
T. 7, R. 12.....	Sept. 16.	1	Unknown.....	.....
T. 1, R. 9.....	Sept. 16.	½	Unknown.....	.....

SOMERSET COUNTY

Location	Date	Area	Cause	Damage
Dead River Plantation.....	May 8..	10	Unknown.....	100.00
Dead River Plantation.....	May 8..	$\frac{1}{2}$	Lumbering.....	10.00
Mayfield Plantation.....	June 20.	10	Fishermen.....	
Chase Stream, Moxie Gore, Indian Stream and Squaretown.....	June 23.	6,000	Fishermen.....	20,000.00
T. 2, R. 3.....	Aug. 26.		Berry Pickers.....	
Dennistown Plantation.....	Oct. 5..	Camps	Campers.....	100.00

WASHINGTON COUNTY

Township 21, E. D.....	April 22.	50	Came from Crawford.....	100.00
Township 18, E. D.....	May 30.	3	Fishermen.....	7.50
Township 19, E. D.....	June 24.	1	Fishermen.....	5.00
Township 5, N. D.....	July 14.		Lightning.....	
Township 5, N. D.....	Aug. 7..	1	Fishermen.....	5.00

FIRE RECORD—1928

AROOSTOOK COUNTY

Location	Date	Area	Cause	Damage
Silver Ridge.....	May 9..	60	Farmers.....	\$37.50
T. 7, R. 3.....	May 10.	3	Lumbermen.....	
Hammond Plantation.....	May 11.	5	Unknown.....	75.00
Hammond Plantation.....	June 17.	1	Fishermen.....	5.00
T. 14, R. 6.....	Sept. 7..	1	Berry Pickers.....	5.00

HANCOCK COUNTY

Township 22.....	May 9..	955	Incendiary.....	200.00
No. 8 Plantation.....	May 12.	50	Fishermen.....	100.00
Eastbrook.....	May 12.	100	Farmers.....	150.00

PENOBSCOT COUNTY

Drew.....	June 10.	12	Lumbering.....	60.00
Drew.....	July 1..	1	Brush burning.....	
T. 7, R. 7.....	Aug. 3..		Unknown.....	

PISCATAQUIS COUNTY

Chesuncook Plantation.....	May 10.	75	Brush burning.....	150.00
Days Academy.....	May 16.	2	Farmers.....	
T. 4, R. 9.....	Aug. 28.		Lightning.....	
T. 5, R. 10.....	Aug. 28.		Lightning.....	
T. 7, R. 12.....	Oct. 6..	1	Unknown.....	

SOMERSET COUNTY

Moxie Gore.....	May 15..	1	Unknown.....	5.00
Long Pond Plantation.....	May 17..	50	Brush burning.....	150.00
T. 2, R. 6, B. K. P., W. K. R.....	July 8..	5	Fishermen.....	15.00

WASHINGTON COUNTY

Marion.....	May 8..	100	Fishermen.....	412.50
Townships 29 and 35.....	May 9..	100	Fishermen.....	200.00
Marion.....	May 9..	16	Farmers.....	100.00
Township 19, E. D.....	May 15.	10	Incendiary.....	150.00
Marion.....	May 15.		Burning house.....	
Cooper.....	May 18.	5	Fishermen.....	50.00
Marion.....	May 19.	1	Fishermen.....	
Kossuth.....	July 13.	8	Incendiary.....	100.00

Summary of Forest Fires for 1927-1928 by Months, Counties and Causes

By Months:

	No. of Fires		Acreage		Damage	
	1927	1928	1927	1928	1927	1928
April	9	—	146	—	\$675.00	—
May	6	17	30 $\frac{1}{2}$	1,533	147.50	\$1,780.00
June	24	2	6,899 $\frac{1}{4}$	13	29,477.00	65.00
July	13	3	2,018	14	73,245.00	115.00
August	4	3	1	—	5.00	—
September	3	1	1 $\frac{1}{2}$	1	—	5.00
October	1	1	—	1	100.00	—
	60	27	9,096 $\frac{1}{4}$	1,562	\$103,649.50	\$1,965.00
By Counties:						
Aroostook	17	5	2,530 $\frac{3}{4}$	70	\$76,413.00	\$122.50
Franklin	5	—	26 $\frac{1}{4}$	—	520.00	—
Hancock	6	3	80	1,105	400.00	450.00
Oxford	5	—	265	—	5,319.00	—
Penobscot	7	3	18	13	20.00	60.00
Piscataquis	9	5	100 $\frac{3}{4}$	78	650.00	150.00
Somerset	6	3	6,020 $\frac{1}{2}$	56	20,210.00	170.00
Washington	5	8	55	240	117.50	1,012.50
	60	27	9,096 $\frac{1}{4}$	1,562	\$103,649.50	\$1,965.00
By Causes:						
Railroad	5	—	16 $\frac{1}{2}$	—	\$175.00	—
Smokers	6	—	20 $\frac{3}{4}$	—	65.00	—
Fishermen	11	7	6,128	262	21,477.50	\$782.50
Campers	4	—	$\frac{1}{2}$	—	110.00	—
Brush Burning	1	7	4	304	20.00	587.50
Unknown	5	4	263	7	5,429.00	80.00
Lumbering	11	2	2,471 $\frac{1}{2}$	15	75,063.00	60.00
Lightning	7	2	41	—	430.00	—
Incendiary	2	3	15	973	380.00	450.00
Hunters	1	—	20	—	200.00	—
Berry Pickers	5	1	60	1	200.00	5.00
Miscellaneous	2	1	56	—	100.00	—
	60	27	9,096 $\frac{1}{4}$	1,562	\$103,649.50	\$1,965.00

Organized Towns

During the past summer a new field of cooperative extension work was undertaken in order to broaden the usefulness of the Forestry Department, and make its services directly useful to individual citizens. This consisted in combining the inspection of forest lands and lookout stations outside of the Maine Forestry District with general extension work in forestry. The inspection work consisted in periodic monthly inspections of all of the seven lookout stations in the southern part of the State, and slash inspection of cuttings made along the highways in the same district. Detailed reports were made in each case and are filed in the Department. The other part of the work consisted in consultation and advisory work with private individuals, and in lectures given at summer camps, located chiefly in the southern part of the State. During the summer months particularly, many letters are received by the Department for information and advice, from both resident and non-resident owners of forest property; and it was deemed advisable to get into direct and personal communication with many of these citizens who were highly appreciative of the attention and services rendered. In most cases the information contained in such letters is not sufficient to make definite recommendations on, and a personal inspection of the premises was very advantageous both to the owners and for the good of the service.

The sending of a personal representative of the Forest Commissioner was a new thing, and met with great approval both on the part of residents and non-residents, no charges of any kind being made for this service.

Many plantations and nurseries were also visited and inspected, and as a result a much better understanding and knowledge was acquired by the Department on conditions throughout the southern part of the State. Another feature of the work was the distribution of news items and slides to moving picture theatres, where large numbers of summer residents were made familiar with the work of the Service in fire protection. After an inspection of the field, this

seemed to be the best and least expensive method of bringing the message of fire protection to this large class of citizens and summer residents and of impressing upon them the importance of the protection and care of our forest resources. Where requested, lectures were given at summer camps, and among the more important of these visited during the past summer may be mentioned:

Camp Abena, near Belgrade .
Camp Winnebago, near Fayette
Pine Camp, near Bridgton
Kingswood, near Bridgton
Cobbs' Camps, near Denmark

Arrangements have been made for continuing and extending this service for the next field season, and the large attendance showed a very great interest in the subject matter presented.

These lectures were followed in each case with individual talks and discussions with groups in the camps, and the chief difficulty experienced was the matter of getting away in time to maintain a schedule.

The matter of Town Forests was also taken up in an effort to promote this interest in the State of Maine. It was found that eight towns have already made at least a beginning on work of this kind. The matter of establishing some form of forest working-plan was also taken up with the authorities of the Western Maine Sanitarium at Hebron. Here a considerable area of woodland is available for forest management, and plans for planting and thinnings were inaugurated which will be started during the coming winter and following spring. Boy Scout Troops at Brunswick, Cumberland Center and Topsham are interested in doing planting work on the town forests and public lands in their localities, and it is hoped to interest more of these organizations in forestry work. For this work, free planting material may be obtained from the State Forest Nursery at Orono.

Throughout the entire season an effort was made to bring the objectives and aims of the Forestry Department directly to the people most interested, or likely to be most interested,

in the protection, preservation, care, renewal and utilization of forests. By so doing, it would seem that the objects of the cooperative enactments by Congress, known as the Clarke-McNary Law are being in part fulfilled. It has also become a part of the State of Maine forest policy to go further than the already well established system of forest fire protection, and the maintenance of lookouts and patrol, and the special organizations for the prevention of insect and fungus diseases. The educational work at the University of Maine provides technical training for forestry students, and also courses for agricultural students in farm forestry; but this summer work takes the work into the field, just as the agricultural work is taken into the field and the homes of the people interested, by the Extension Service. It brings the usefulness of the Forestry Department right to the people, and so reaches a much larger body of citizens and establishes more direct points of contact than is possible in any other way.

Lookout Stations

	Opened		Closed		No. of Fires	
	1927	1928	1927	1928	1927	1928
Agamenticus Mt.	April 14	May 9	Oct. 14	Sept. 28	12	7
Dedham Bald Mt.	April 17	May 6	Oct. 4	Sept. 30	23	21
*Green Mt.	April 18	April 16	Oct. 16	Oct. 20	46	18
**Kelly Mt.	April 17	May 14	Oct. 17	Sept. 13	22	6
Mt. Pleasant	April 18	May 8	Oct. 7	Sept. 23	7	9
**May Mt.						
Ossipee Mt.	April 14	May 9	Oct. 10	Sept. 27	17	10
Mt. Zircon	April 16	May 16	Oct. 8	Sept. 15	9	3
					136	74

*In New Hampshire
 **Privately Owned

Comparison of Burned Area, 1925 to 1928

1925	1926	1927	1928
3,725 acres	8,495½ acres	2,524½ acres	622 acres

FIRE RECORD—1927

CUMBERLAND COUNTY

Location	Date	Area	Cause	Damage
Westbrook	April 8	60	Railroad	
Brunswick	April 11	15	Railroad	
Brunswick	April 12	5	Railroad	25.00
Brunswick	April 14	10	Unknown	
Westbrook	April 18	6	Unknown	100.00
Scarborough	April 30	1,000	Brush burning	5,000.00
West Baldwin	April 30		Unknown	
Casco	May 4		Fishermen	

FRANKLIN COUNTY

Madrid	Oct. 1	1	Smokers	50.00
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HANCOCK COUNTY

Aurora	April 15	5	Unknown	25.00
Bar Harbor	April 16	700	Unknown	3,500.00
Brooklin	April 16	5	Brush burning	25.00
Blue Hill	April 16	5	Defective chimney	50.00
Mt. Desert	April 27	100	Unknown	200.00
Aurora	May 15		Unknown	
Blue Hill	May 16	40	Brush burning	500.00

KNOX COUNTY

Cushing	April 12	30	Brush burning	
Thomaston	April 15		Unknown	
Cushing	April 16	15	Brush burning	1,125.00

LINCOLN COUNTY

Boothbay	April 15	2	Brush burning	25.00
Southport	April 16	65 and buildings	Smokers	9,350.00
Boothbay	April 20	2	Brush burning	

OXFORD COUNTY

Batchelders Grant	April 5	1	Lumbering	
Batchelders Grant	April 8	25	Smokers	
Hiram	June 2		Unknown	

PENOBSCOT COUNTY

Hudson	April 9	146	Campers	1,310.00
Holden	April 18	25	Railroad	250.00
Lincoln	April 26		Unknown	

WASHINGTON COUNTY

Steuben	April 16	50	Unknown	150.00
Steuben	April 21	30	Unknown	150.00
Brookton	Aug. 5		Lightning	

YORK COUNTY

Sanford	April 3	8	Burning brush	40.00
Saco	April 6	3	Burning brush	
Saco	April 15	4	Unknown	
Berwick	April 15	$\frac{3}{4}$	Railroad	
Wells	April 15	2	Railroad	50.00
Buxton	April 16	80	Unknown	3,000.00
South Berwick	April 16	5	Railroad	25.00
Lebanon	April 16	2	Unknown	50.00
Wells	April 17	3	Railroad	50.00
Waterboro	April 17	20	Unknown	200.00
Kennebunk	April 18	4	Unknown	75.00
Sanford	May 3	2	Unknown	25.00
Sanford	May 4	4	Unknown	50.00
Sanford	May 4	5	Unknown	100.00
Buxton	May 4	5	Fishermen	30.00
Hollis	May 8	20	Smokers	25.00
Wells	June 9	4	Brush burning	50.00
Sanford	June 25	10	Brush burning	100.00

FIRE RECORD—1928

ANDROSCOGGIN COUNTY

Location	Date	Area	Cause	Damage
Lewiston.....	May 14.	3	Railroad.....	21.00

AROOSTOOK COUNTY

Orient.....	June 7..	6	Unknown.....	100.00
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CUMBERLAND COUNTY

Cape Elizabeth.....	May 8..	75	Brush burning.....	150.00
Baldwin.....	May 14..	2	Brush burning.....	4.00
Cape Elizabeth.....	May 14..	50	Construction crew..	100.00
Standish.....	May 16..	2	Unknown.....	4.00
Baldwin.....	May 17..	3	Brush burning.....	10.00

HANCOCK COUNTY

Eastbrook.....	May 12..	75	Lumbering.....	150.00
Lamoine.....	May 17..	25	Brush burning.....	250.00
Aurora.....	May 23..	50	Unknown.....	25.00
Brooklin.....	June 4..	10	High tension wire..	20.00

KENNEBEC COUNTY

Winslow.....	May 18..	25	Brush burning.....	375.00
Unity Plantation.....	May 17..	10	Hunting.....	50.00

KNOX COUNTY

St. George.....	May 9..	4	Unknown.....	50.00
St. George.....	May 15..	76	Unknown.....	500.00

OXFORD COUNTY

Canton.....	April 10..	1	Railroad.....	
Canton.....	April 12..	2	Brush burning.....	4.00
Canton.....	May 16..	2	Unknown.....	20.00
Canton.....	May 18..	1	Smokers.....	
Byron.....	July 6..	3	Unknown.....	60.00

PISCATAQUIS COUNTY

Monson.....	May 7..		Brush burning.....	
Monson.....	May 9..	1	Railroad.....	2.00
Monson.....	May 11..	15	Railroad.....	5.00
Monson.....	May 15..	4	Railroad.....	5.00

SOMERSET COUNTY

Hartland.....	May 18..	20	Unknown.....	700.00
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WALDO COUNTY

Palermo.....	May 17..	40	Brush burning.....	300.00
Palermo.....	May 17..	2	Incendiary.....	

WASHINGTON COUNTY

Whitneyville.....	May 18..	34	Unknown.....	200.00
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YORK COUNTY

Sanford.....	April 7..	25	Unknown.....	50.00
North Alfred.....	May 14..	16	Unknown.....	500.00
Sanford.....	May 14..	5	Unknown.....	75.00
Wells.....	May 17..	30	Incendiary.....	300.00
Alfred.....	June 2..	1	Brush burning.....	
Wells.....	June 3..	1	Unknown.....	20.00
York.....	July 8..	1	Unknown.....	
North Kennebunkport.....	July 9..	1	Unknown.....	20.00
Wells.....	July 18..	1	Unknown.....	

Summary of Forest Fires for 1927-1928 by Months, Counties, and Causes

By Months:

	No. of Fires		Acreage		Damage	
	1927	1928	1927	1928	1927	1928
April.....	36	3	2,433½	28	\$24,775.00	\$54.00
May.....	8	26	76	570	730.00	3,796.00
June.....	3	4	14	18	150.00	140.00
July.....	—	4	—	6	—	80.00
August.....	1	—	—	—	—	—
October.....	1	—	1	—	50.00	—
	49	37	2,524½	622	\$25,705.00	\$4,070.00

By Counties:

Androscoggin.....	—	1	—	3	—	\$21.00
Aroostook.....	—	1	—	6	—	100.00
Cumberland.....	8	5	1,096	132	\$5,125.00	268.00
Franklin.....	1	—	1	—	50.00	—
Hancock.....	7	4	855	160	4,300.00	445.00
Kennebec.....	—	2	—	35	—	425.00
Knox.....	3	2	45	80	1,125.00	550.00
Lincoln.....	3	—	69	—	9,375.00	—
Oxford.....	3	5	26	9	—	84.00
Penobscot.....	3	—	171	—	1,560.00	—
Piscataquis.....	—	4	—	20	—	12.00
Somerset.....	—	1	—	20	—	700.00
Waldo.....	—	2	—	42	—	300.00
Washington.....	3	1	80	34	300.00	200.00
York.....	18	9	181½	81	3,870.00	965.00
	49	37	2,524½	622	\$25,705.00	\$4,070.00

By Causes:

Railroad.....	8	5	115½	24	\$400.00	\$33.00
Smokers.....	4	1	111	1	9,425.00	—
Fishermen.....	2	—	5	—	30.00	—
Campers.....	1	1	146	10	1,310.00	50.00
Brush burning.....	11	9	1,119	173	6,865.00	1,093.00
Unknown.....	20	16	1,022	247	7,625.00	2,324.00
Lumbering.....	1	1	1	75	—	150.00
Lightning.....	1	—	—	—	—	—
Burning building.....	1	—	5	—	50.00	—
Incendiary.....	—	2	—	32	—	300.00
Miscellaneous.....	—	2	—	60	—	120.00
	49	37	2,524½	622	\$25,705.00	\$4,070.00

Forest Entomology



Spruce and Fir Destroyed by Budworm

Forest Entomology

During the season of 1928 approximately fifteen hundred calls for information relative to insect pests were received, many of which were in regards to outbreaks of wide extent. Although practically all of the requests came from Maine, it is interesting to note that requests were received from thirty-two States and several foreign countries. The requests, as usual, covered a wide field emphasizing the fact that trees are subject to insect damage from the formation of the seed to the final breakdown and decay of the manufactured wood. Beetles destroying the seeds in spruce, pine and fir cones; grubs and ants in forest nurseries and plantations; sawfly larvae, caterpillars and bark beetles destroying mature trees; wood boring insects in logs, lumber, houses and furniture—all these require methods of control applicable to the particular situation in question. In many cases new methods of control had to be worked out, as the insects causing the damage were often species about which little is known. The Maine Forest Service has followed the principle of acting only in an advisory capacity to the individual or company requesting help, carrying on no control work itself except in an experimental way.

Principal Outbreaks

During the past two seasons there have been several large forest insect epidemics that have either destroyed large amounts of timber or are threatening to do so. Unfortunately these outbreaks often are not discovered or reported until they have been going for several years and have gained considerable headway.

1. **Spruce Destroying Bark Beetle** (*Dendroctonus piceaperda*). The recent outbreaks of this insect were first forcibly brought home in the winter of 1927-1928 when a check cruise of certain townships in Aroostook County showed that considerable quantities of spruce had died within the past few years. An investigation was made and the cause determined as due to the work of a bark beetle. It

was decided to make a survey of townships in other sections of northern Maine, with the result that several outbreaks were discovered in which considerable spruce had already been killed. Other companies than began to go over their holdings and reports from many sections have been received of spruce dying. The insect attacks only large spruce, preferring that which is slow growing either due to old age or weakness from past budworm outbreaks. The beetles enter through the basal part of the trunk and girdle the trees just beneath the bark. Their presence is shown by the browning of the needles and small holes from which pitch and frass exudes on the trunk. It is highly advisable that logging and pulping operations be concentrated as much as possible on areas where the beetles are working, as past experience has shown that they are apt to spread over wide areas.

2. Birch Sawfly Leaf Miner (*Phlebotrophia mathesoni*). During the seasons of 1927 and 1928, the foliage of white birch over wide areas turned brown during August. The injury was particularly noticeable in the Kennebec, Dead River and Sandy River watersheds, where birch makes up a large percentage of the forest. Heavy infestations were also reported from sections of Hancock and Washington counties. The insect causing the damage is apparently a new importation and until this past season when a study was made of the insect almost nothing was known of it. The small flies appearing in July lay their eggs in the edges of the leaves and upon hatching the larvae feed within the tissues of the leaf. By the first of September the leaves have been quite completely mined. The winter is spent by the larvae in the fallen leaves. A preliminary survey of the situation has shown that the injury is very decidedly slowing up the growth of the trees, and a continuation of the epidemic is liable to prove serious. It is estimated that the annual pay roll of the birch using industries in the State is close to one million dollars and there is a tremendous amount of capital invested in these industries. Many towns in the State depend almost entirely on a continued supply of white birch for their existence so that it seems decidedly worthwhile that some action be taken to find a means of curbing the outbreak.

3. **Spruce Web Worm** (*Epinotia nanana*). During the last two seasons a small brown worm has been seriously defoliating the spruce in many sections along the coast. In July, 1928, the moths were flying in clouds around the spruce. The life history of the insect has not as yet been worked out. Indications are that the winter is spent as young larvae, much as is the case with the spruce bud worm. The heaviest defoliation appears to take place in May and June. The larvae cut off the needles at the base webbing them together. A fairly large area around one of the summer hotels was sprayed with an arsenate of lead-soap spray and the results proved fairly satisfactory. It is possible though that a fall spray before the webs are formed would prove more satisfactory.

4. **Spruce Gall Louse** (*Adelges abietis*). Although this insect in the past has been considered a purely ornamental tree insect, it is at present in epidemic form on many of the spruce covered points along the coast and on the islands in Casco Bay and as far east as Rockland. The injury is caused by minute aphids feeding within the newly opening buds, causing them to swell and finally turn brown and die. This prevents further growth on the affected twig. Perfect results in control have been obtained by both the use of oil and lime sulphur sprays.

5. **Hemlock Looper** (*Ellopia fiscellaria*). In 1927 one hundred acres of old growth hemlock was defoliated by this insect near Bath. The area was cut and salvaged and in 1928 no further damage was reported. This insect is reported as destroying many thousand square miles of balsam in Quebec and it is going to prove an insect that the forest land owners in the State should watch carefully.

The moths of the Hemlock Looper are of a light yellowish brown to yellowish gray color with a dark wavy band across both wings. The spread of the wings is about one and one-half inches. Eggs are laid in September and early October on the bark or twigs of the trees. The eggs hatch the following June. The caterpillars feed for about six weeks and when fully grown are slightly over one inch in length. They

are a pale green color with numerous small black flecks. Their habit of looping the body when walking gives them the common name of measuring worm or looper. The insect feeds on hemlock, balsam, pine, spruce and hardwood. In Maine birch, oak, and blueberry bushes were fed upon. In New York, yellow birch, beech, maple, elm, hawthorn and linden were fed upon.

Excellent results in control have been obtained by airplane dusting. Calcium arsenate at the rate of twenty-five to thirty pounds per acre was used.

6. **White Pine Weevil** (*Pissodes strobi*). The injury to the leaders of white pine, red and Norway spruce by this small snout beetle is becoming a strong argument against the planting of these species in pure stands. The ever-increasing number of spruce and pine plantations is bringing about a great increase in the number of weevils so that in many sections they are in epidemic form. The continual killing of the leaders causes the trees to become stunted and bushy and of little value for lumber purposes. No artificial means of control other than the cutting and burning of infested leaders as soon as they begin to wilt and turn yellow have been found. When pine and spruce are planted amongst hardwoods such as open stands of gray birch very little damage occurs. If planted in open fields it is advisable to use a spacing of five by five and the trees should be set out only on the better soils where a rapid growth will take place. White spruce and red pine are immune to weevil damage.

7. **Chain-dotted Measuring Worm** (*Cingilia catenaria*). In the fall of 1928 a large area of forest growth was reported stripped by this insect, and during early October heavy flights of the moths were reported from Shapleigh to Kennebunk. The moths are of a smoky white color with two chain-like lines of black dots on each wing. Eggs are laid singly usually on under shrubs and plants such as sweet fern, blueberries, grasses, etc., and the winter is passed in this stage. The larvae are yellowish with conspicuous double black dots on the sides of each segment. They are reported as feeding on birch, oak, cherry, poplar, pine, and

juniper. There is also a long list of other food plants, totaling forty-seven different species. Bulletin 345 of the Maine Agricultural Experiment Station gives a complete account of this insect as it affects blueberries.

8. There were numerous small outbreaks of forest insects reported, some of which were of unusual occurrence.

A. **Birch Leaf Miner** (*Ferusa pumila*). This new European leaf miner attacks both gray and white birch, the injury showing up during July and August. The adult is a very small black fly-like insect. The larvae are yellowish in color with dark markings on the underside of the body near the fore part.

B. **Red Pine Gall Weevil** (*Podapion gallicola*). This interesting insect was collected by J. M. White in Belgrade and Norridgewock. The weevil lays its eggs in the current year's growth. The twigs swell and the feeding within of the larvae often causes the twigs to die. The insect apparently requires two years to mature. The adult is a black snout beetle about three-eighths of an inch in length.

C. **Pine Twig Borer** (*Pityophthorus ramiperda*). This insect was found hollowing out the lateral terminal twigs of white pine. The insect is a small bark beetle.

D. **Birch Case Bearer** (*Coleophora* sp.) A new species of *Coleophora* was found working on birch at Bar Harbor. The insect has been very abundant for two years and has been found feeding on a large number of other host plants. A brief report of the insect and its work is being prepared for publication. The eggs are laid singly by a minute moth and upon hatching the young larvae mine a small area within the leaf and then cut out a portion of the leaf forming a small cigar shaped case within which they remain, carrying the case around with them as they feed. As the larvae grow, new cases are cut out. By the middle of September the foliage has been quite completely riddled. The winter is spent in the cases, the larvae attaching them to the twigs, and larger branches.

D. **Cone beetles** (*Conophthorus coniperda*). Small beetles have been the cause of considerable damage to white pine seed in York County. In some cases practically the entire seed crop was destroyed. The beetles tunnel through the axis of the cones laying their eggs on the sides of the tunnel. The grubs hatching from the eggs mine in the seeds, destroying them.

Seeds of balsam fir and spruce that had been destroyed by insects have also been sent in but the insects had already emerged so no identification could be made.

E. **Arbor Vitae Leaf Miner** (*Recurvaria thujaella*). This insect continues to be abundant in Eastern Maine, causing the Arbor Vitae or cedar to turn brown.

F. **Larch Case Bearer** (*Coleophora laricella*). This insect which has been very abundant on larch since 1922 was not so prevalent this past season. In some sections considerable larch has already been killed by this insect, particularly in the denser stands. Slow growing roadside trees have also in some cases been killed.

G. **Larch Sawfly** (*Lygaeonematus erichsonii*). This insect in about 1895 destroyed all of the larch or hackmatack in the Northeast and is reported locally in different sections of the the State at the present time.

H. **Leconte's Sawfly** (*Neodiprion lecontei*). This insect has been reported as attacking Scotch pine in one forest nursery.

Considerable interest has been shown by many of the cities and towns in the State in the control of insect pests attacking the shade trees. Although the requests cover damage caused by a large number of insects and in many cases, fungi, mites, and physiological conditions, in general the most common pests are the sugar maple borer, elm leaf beetle, elm sawfly, satin moth, bronze birch borer, and mites on both spruce and maple.

Results of Research Work

One of the most important phases of the entomology work is the study of the life history and habits of the insects in order that methods of control can be worked out. New pests, about which we know very little, are continually assuming epidemic form and it is highly essential that a knowledge of them be obtained before the trees are killed. The need for information of this type has been so great that efforts have been made to carry on several projects each year. The most important of these are as follows:

I. Spruce Bud Worm Girdling Experiment. In 1924 a series of plots was started at Lake Moxie in which spring, summer, and fall girdling of spruce and fir was started. In each type trees were girdled in six different ways. (1) A three-inch strip of bark removed, (2) A one and one-half inch strip of bark removed, (3) A "V" shaped cut approximately one and one-half inches deep, (4) A six-inch wide band of bark removed with portions of the cambium left clinging in spots, (5) A light hack with an axe completely around tree, (6) A heavy hack with axe completely around tree. Two trees of each type for both spruce and fir were girdled. The trees have been examined each year and detailed notes on their condition taken. The plots will be maintained until all trees have fallen and decayed. A list of the insects and fungi attacking the trees is being kept. An analysis of the results to date show that (1) Balsam fir is killed much more readily than spruce. (2) Trees girdled in April and August will die before the following July. (3) Spruce girdled in the fall remained green until the second year, fir died that winter. (4) Trees girdled by the deep "V" shaped notch method and by the heavy hack died the quickest. (5) In order of effectiveness the other methods were, the six-inch belt, one-inch strip, three-inch strip, and light hack. The object of these plots was to determine whether it were possible or not to stop a bud worm outbreak by girdling the trees and thus drying up the foliage in areas where cutting is not feasible. The owner would then have several years in which to salvage the dead trees. The results show that such a procedure can be worked to advantage.

II. **White Grubs.** Through the cooperation of several State Forestry Departments and the Bates College Forest the use of crude white arsenic for white grub control was tried under different conditions. In all cases the results have shown that spruce and fir can be protected by mixing the arsenic in the soil before seeding or transplanting. In Pennsylvania black locust seedlings appeared to be injured by the arsenic.

III. **The White Pine Weevil.** Each year a small project in connection with white pine weevil control has been carried on. This past season a plantation at Alfred was treated by putting an inverted cone-shaped collar on the trees to definitely prove whether the weevils fly to the tops of the trees, or whether they climb to the top. The experiment showed that in most cases the beetles fly to the tops of the trees. Tanglefoot used for the same purpose gave similar results.

IV. **The Pales Weevil.** Plots started at Alfred and at Brunswick showed that pine should not be planted on cut-over pitch or red pine areas until the third year after cutting. Heavy damage from the Pales Weevil is sure to follow such plantings. It has been known for a number of years that cut-over white pine areas should not be planted until the third year, but there was no knowledge as to the results on pitch pine and red pine areas.

On one cut-over white pine plot the slash was hauled away and the remaining logs and stumps dusted with powdered lime sulphur. A check plot was left untreated. White pine reproduction was present on both plots. Damage from the pales weevil was very heavy amounting to approximately sixty percent on the untreated plot. On the plot treated with lime sulphur the damage was cut in half.

V. **Mound Building Ants.** Since 1922 a yearly series of control projects have been carried on in an effort to find a cheap easy method of destroying colonies of the mound building ants. Various chemicals and ant poisons were furnished the department for trial. By all means the cheapest

and most effective control is the use of carbon bisulphide which should be poured into holes punched in the mound and then tamped down. The throwing of soil around the base of the mound or the tamping of the base with a spade will aid in keeping the fumes in. "Cyanogas", calcium cyanide, proved fairly effective only when forced with a mechanical blower into the mounds. Key Brand Ant Killer proved effective and easy to apply, but it was found that two applications were necessary. Other preparations used were "Defexo", chlorine gas, and Termitocid Cartridges. None of these latter proved effective.

VI. The Bronze Birch Borer. A large number of infested white birch trees were treated with various solutions of aloes by injecting the drug into the sapwood. It was believed that if the taste of the sap could be changed, it might be possible to drive borers out of trees and prevent their reinfection. The problem proved to be quite involved and time did not permit the continuing of it. Although, the results proved very inconclusive, there still seems to be great possibilities along this line of work, and the satisfactory working out of the problem would to a great extent solve the problem of injury to shade and ornamental trees from borers.

VII. Defoliation Experiments. In order to answer the question as to how many defoliations a hardwood tree can stand, or what season of the year is the most serious for defoliation, a series of artificial defoliations was started in 1927. Six species of trees were chosen for the work: white pine, red spruce, arbor vitae, poplar (*P. tremuloides*), white birch, and red maple. Trees of each species were defoliated by hand in the late spring, mid-summer, and fall. One series was completely defoliated, one seventy-five percent, and one fifty percent. The same trees were treated in the same way in 1928 and the experiment is to be continued until the trees are killed. Although it is too early yet for definite results to show, measurements of leaves and height growth are bringing out interesting facts. The final results should show just what species of defoliating insects are the most serious—those coming in the spring, summer, or fall.

VIII. The principal project of the past two seasons has been the working out of the life history and habits of the birch sawfly leaf miner, a report of which is to be published later.

Publications

During the past two seasons several articles have been prepared dealing with forest insects and many newspaper items have been given out. The following reports were published:

1. Control of the Bronze Birch Borer by Forest Management. *Journal of Forestry*, Vol. 25, No. 1, January 1927. This article brings out the danger of thinning white birch stands.

2. Manual of Forest Insects. *Maine Forest Service Bulletin No. 5*, pp. 1-130, July, 1927. This manual was prepared as a handbook for identification of the insects most commonly found attacking forest and shade trees.

3. Spruce Bud Worm Survey of the Adirondack and Catskill Regions in New York. Published by Empire State Forest Products Association, 1927.

4. New Insect Attacks White Birch. *Maine Hardwood News*, Vol. 1, No. 6, October 1, 1928.

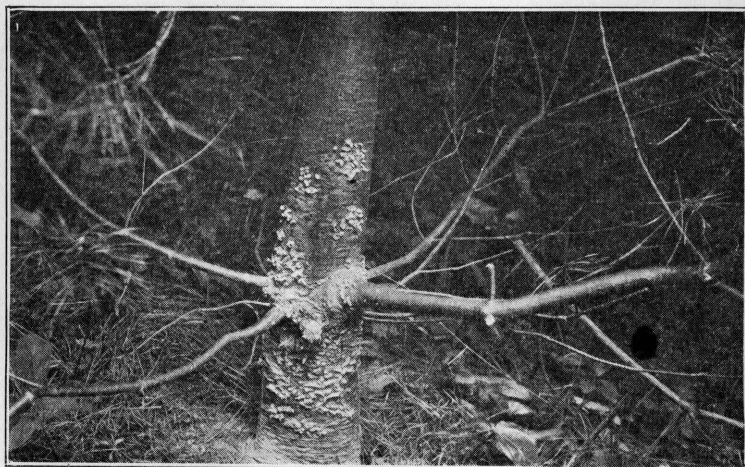
5. Further Notes on the Birch Sawfly Leaf Miner Situation. *Maine Hardwood News*, Vol. 1, No. 7, November 1, 1928.

The Future

One of the greatest drawbacks to the entomology work has been the impossibility of one man checking up on all the reports being received and of informing men in the woods what insect pests to be on the lookout for. It is hoped that this coming season this situation can be remedied and that the Department will be able to keep one man continually in the field travelling with the fire wardens, patrolmen, foresters, wood superintendents, etc., organizing them to be on the lookout for possible outbreaks so that early reports

will be received before the insects reach epidemic numbers. It is also hoped that the insect laboratory at Bar Harbor can be continued as it is essential to maintain a laboratory where specimens can be identified, reared, and their life histories studied, so that methods of control can be worked out. Such a laboratory will also serve as a center for the rearing of parasites. During the coming seasons particular trouble may be expected from the European Satin Moth, which is a dangerous pest of poplar and willow. This insect is already present as far north as Augusta and Bar Harbor. Another pest is the Felted Beech Scale which has been destroying the beech throughout New Brunswick and Nova Scotia, but has not as yet been reported in Maine. As man continues to upset the natural balance of the forest by cutting, burning, and planting, the increase of forest insect pests may be expected. Transportation of insect pests by automobile, freight shipments, etc., is also a factor that is constantly increasing our insect pests.

White Pine Blister Rust



Blister Rust in Fruiting Stage

White Pine Blister Rust

Importance and Control

The value of white and sugar pine timber in the forests of the United States is about \$500,000,000. In addition, there are several million acres of young growth which will become valuable timber in the future. Foresters advise that the maintenance of these pines in our forest is of great importance because of their rapid growth, excellent wood, high yield and adaptability to forest management. Wherever white pines grow, from Maine to California, they constitute the cream of the forest and are far more valuable than the associated species. With such an essential and valuable resource at stake, affecting national, regional and local economic welfare, it is important that Federal, State and private agencies cooperate in a united effort to accomplish control of the white pine blister rust.

In Maine, evidences of its destructiveness are being found in many new locations yearly, both in white pine plantations and natural growth. Lumbermen, farmers, and other pine owners are reporting it, and are soliciting knowledge of its control from this Department. Infection has become general throughout the State within the last ten years, being exceptionally heavy in some localities. Study plots made in many towns, covering all of the ten southern counties in the State show infection running as high as seventy-five per cent in natural reproduction and ninety-five per cent, nearly a total loss, in pine plantations. Blister rust kills mature trees also, but they die slowly and are readily salvaged before their lumber value deteriorates.

Blister rust is firmly established in this country; Maine pine owners must not take this menace lightly if our State is to continue its high rating as a white pine State. Its control is feasible, and not exorbitant in price to practice, the protection of our pine crop from this disease being assured by the removal of all wild and cultivated currant and gooseberry bushes within nine hundred feet of white pine trees.

The disease can not spread from one tree to another, but must go first to a currant or gooseberry bush and then back

to the pine. Once a tree becomes affected in the trunk, it surely dies. The removal of these bushes gives effective control because the pine-infecting spores of the disease are exceedingly delicate and short-lived, dying quickly after they are blown from currant and gooseberry bushes.

Progress in Control Measures in 1927 and 1928

As pine owners in general are not familiar with the disease, and do not recognize the many varieties of wild currant and gooseberry bushes, therefore needing help in applying control methods, it has been the State's duty to instruct them through personal contact, following the policy as outlined.

During 1927 control work was conducted in twenty-two towns in Oxford County, three towns in Androscoggin County, one town in Sagadahoc County, five towns in Kennebec County, seven towns in Lincoln County, one town in Knox County, three towns in York County, twelve towns in Cumberland County, and four towns in Somerset County, a total of fifty-eight towns in nine counties. In Somerset County, the work was performed by the S. D. Warren Company.

In 1928 control work was conducted in eighteen towns in Oxford County, three towns in Franklin County, three towns in York County, ten towns in Cumberland County, seven towns in Lincoln County, three towns in Androscoggin County, eight towns in Kennebec County, three towns in Waldo County, five towns in Somerset County, and two towns in Hancock County, a total of sixty-two towns in ten counties. Among the largest individual cooperators this year were the S. D. Warren Paper Company, which eradicated the currant and gooseberry bushes from their many white pine plantations, and around their nursery at Bingham. John D. Rockefeller, Jr., and Edsel Ford also did a large amount of work on their estates at Seal Harbor, the former destroying hundreds of infected trees and thousands of skunk currants.

All towns in which work is done are designated by the Forest Commissioner under the authorization of Chapter 178, Public Laws of 1917, as areas within which control measures against white pine blister rust are necessary.

Within these areas it becomes the duty of every landowner to remove all currant and gooseberry bushes within nine hundred feet of white pine trees, prior to the closing of the eradication season. The owner failing to do this, the Forest Commissioner is authorized to remove them and to charge the actual expense to the town, to be collected as a State tax. Due to the hearty cooperation of the public, it has been necessary to resort to this authority but four times during the past two years.

This nearly one hundred per cent cooperation by the pine owners is due to the educational factor that enters the control work—the personal contact our agents have with the owners, in which the owner is brought into direct contact with the disease.

The above educational work during 1927 and 1928 resulted in the following towns and owner cooperation: 2,462 pine owners cooperated, expending \$18,891.15; 114 town appropriations were made, expending \$18,328.08. This makes a total of \$37,219.23 of town and owner money expended for the removal of 4,147,630 wild and 18,770 cultivated currant and gooseberry bushes from 67,827 acres of pine bearing lands, at a per acre cost of \$0.55 to the towns and owners. The actual cost to the owners alone was \$0.28 per acre. In addition to this acreage, the Federal and State scouts worked and eliminated from town and owner work 396,456 acres, destroying 42,764 wild and 89 cultivated currant and gooseberry bushes, a grand total of 464,282 acres receiving control measures by the removal of 4,209,253 wild and cultivated currant and gooseberry bushes.

A summary of the work for the period 1922 to 1928 shows that 305 town appropriations have been made, expending \$49,162.14, 8,855 cooperating pine owners have expended \$61,630.36 (for the most part figured at forty cents per hour), that 12,938,741 currant and gooseberry bushes have been removed from over 1,750,000 acres of land.

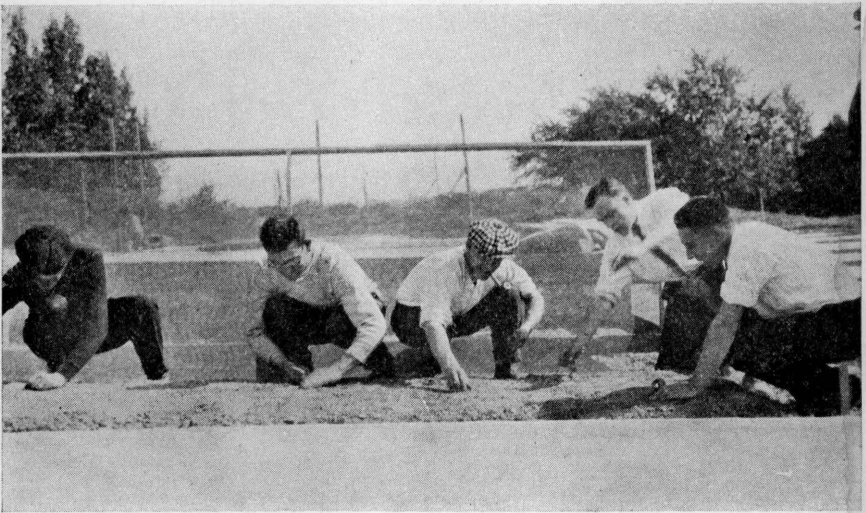
Appropriations and Expenditures Fiscal Years 1922 to 1927, and Part of 1928

	STATE			TOWNS		OWNERS		FEDERAL	
	Appro.	Exp.	No.	Appro.	Exp.	No.	Exp.	Appro.	Exp.
1922	\$5,000.00	\$4,966.03	8	\$1,300.00	\$1,300.00	464	\$4,409.32	\$20,000.00	\$15,562.01
1923	5,000.00	4,994.73	39	7,115.00	6,899.99	1,148	8,760.34	17,000.00	16,404.34
1924	5,000.00	4,984.38	49	8,154.25	8,115.55	1,701	10,619.53	20,000.00	19,910.59
1925	5,000.00	4,965.04	50	8,000.00	7,199.63	1,595	9,337.30	20,000.00	19,250.25
1926	5,000.00	4,759.47	45	7,321.28	7,318.89	1,485	9,612.67	20,000.00	19,625.75
1927	6,250.00	6,231.95	53	8,277.00	8,319.01	1,372	9,324.06	21,500.00	21,190.79
Totals	\$31,250.00	\$30,901.60	244	\$40,167.53	\$39,153.07	7,765	\$52,063.27	\$118,500.00	\$111,943.73
1928	\$6,250.00	*	61	\$10,717.00	\$10,009.07	1,090	\$9,567.09	\$21,250.00	*

*Fiscal year ends June 30, 1929.

By the State appropriating \$37,500.00, it was possible to receive \$139,750.00 of Federal Aid during this period.

**Forestry Department
and State Forest Nursery
at the University of Maine**



Students Transplanting

Forestry Department and State Forest Nursery at the University of Maine

The year 1928 marks the quarter-century milestone in the history of the Forestry Department at the University of Maine, established and maintained by special appropriation for Public Instruction in Forestry, as described in detail in the organization of the Department. The fall registration for 1928 shows the following major students taking the regular four years undergraduate curriculum in forestry:

Seniors	30
Juniors	17
Sophomores	26
Freshmen	40
Special	5
<hr/>	
Total	118

This is more than one-half of the 216 male students now registered in the College of Agriculture. The other 98 students are divided between seven other departments. The Forestry Department is now the third largest department in the University of Maine, in point of number of students in attendance. No changes have been made during the past two years in the personnel of the teaching faculty. An elective course for Seniors in Forest Management was added to the curriculum in 1927, and a new course in Forest Mapping will be offered for the first time in the spring of 1929. The curriculum has been maintained, both as to required hours and subject matter, in accordance with the standard for under-graduate schools of forestry as outlined by the Conference of Forest Schools on Standardization of Instruction in Forestry. The U. S. Forest Service has introduced a course in cooperation with the various schools and we have been fortunate in having their representative with us for a week each year. In 1927 Supervisor Hamel of the Superior National Forest was in charge of this work, and in 1928,

Supervisor David N. Rogers (Maine '06) of the Plumas National Forest, was the representative of the Forest Service. The camp course in 1927 was held at the camps of the Great Northern Paper Company in Township B, Range 11, and this year through the cooperation of the American Thread Company is being held in Lakeview Plantation. It has been suggested that we offer a short Ranger Course, but at present we have neither the staff nor the equipment for carrying on this work, which may best be accomplished entirely separated from University work and courses, in the woods.

In 1927, the largest class in the history of the Forestry Department was graduated, there being 26 men who received the degree of Bachelor of Science in Forestry. The graduating class of 1928 numbered 20 men, and the present Senior class 30. Of the 186 living Alumni to date, 28 have since graduation received Master Degrees at post-graduate schools of forestry such as Cornell, Harvard, Syracuse and Yale Universities. These men have been able to complete the two years post-graduate course in one year after their training and preparation at Maine. Seventy per cent of our graduates are engaged in forestry or closely allied branches, and they are now scattered from the Pacific Coast to the West Coast of Africa (Liberia). Two members of the class of 1928 were awarded Phi Kappa Phi, the highest honor in the University, and eight men in the two upper classes were elected to Xi Sigma Pi National, the Honorary Forestry Society, Gamma Chapter, which was established at the University of Maine in 1917.

A dry-kiln, timber-testing laboratory, and seed-testing laboratory would be valuable additions to our equipment. None of these are possible in our present quarters, nor are the present quarters for class rooms and laboratory space adequate for the growing work of the department. A separate forestry building is now needed for the greater efficiency of the forestry work. Further curricula changes are also necessary in order to keep the department abreast of the times. A tract of land, located not too far from the University, is needed for use as a permanent winter camp site, and for demonstration and experimental work in forestry. At present we have no funds and no time allowed for either

investigation or research, since every particle of time and money is exhausted in the effort to meet our present obligations and duties. In short, is it not time now to consider seriously the recommendation made by Forest Commissioner S. T. Dana in his report for 1921-1922, when he says (p. 54): "Eventually it may well be that a distinct College of Forestry should be established at the University." This has been the usual and natural course of development in all of the institutions where the forestry work has prospered and succeeded.

Within the next decade it is quite possible that only such schools of forestry will survive. There will certainly be less rather than more of them from now on; and those that are not properly supported will, and should, give way to those that are, in fairness to the prospective students and to the profession of forestry. We have now a sufficient number of students; a substantial body of alumni, and the necessary experience to maintain its prestige as one of the leading schools of forestry in the country. The present tendency is along the lines of regional specialization in forestry. We have already established the foundations for such a school, and all that we need is the material for the super-structure. Will Maine, with the largest forest area of any of the Eastern States, and the logical location for such a school, take advantage of this opportunity for public service, not alone for its educational value, but also for the possibilities that it offers in the way of industrial prosperity and economic development?

State Forest Nursery

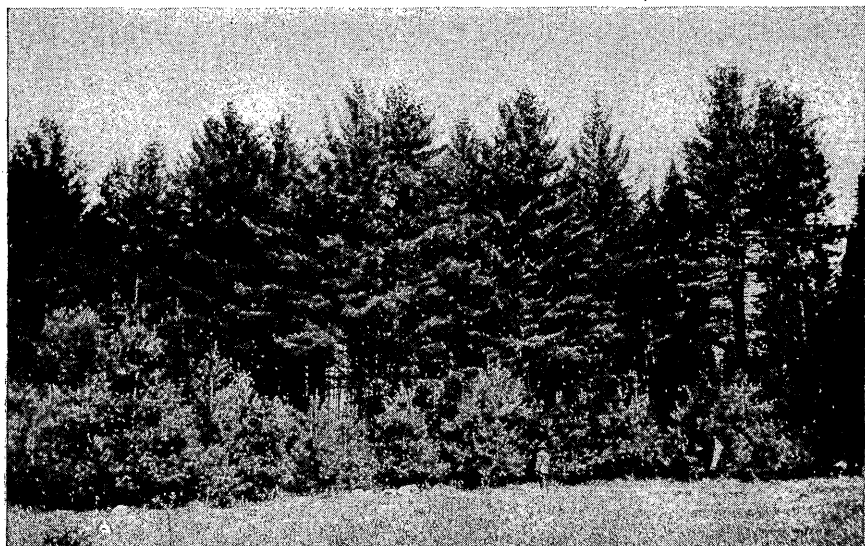
The net receipts for the sale of trees in 1927 was \$1,108.15, and \$993.18 for 1928, and this money has been turned over to the State Treasurer. Due to the \$1,500.00 received from the Forest Service under the Clarke-McNary law, the price of trees was reduced from \$10.00 to \$8.00 a thousand. Most of the trees taken from the nursery were sold to farmers, and the big landowners that have no nurseries of their own bought trees from private nurseries. A list of private nurseries can be found under the tree planting chapter. It is

safe to say that the success of this nursery has aroused interest in the growing of planting stock to such an extent that farmers and landowners are establishing nurseries to plant their waste and burned lands.

List of Trees Sold

	1927	1928
White Pine	79,250	66,150
Red Pine	18,400	16,850
Norway Spruce	7,600	12,460
White Spruce	8,750	28,850
Miscellaneous	24,350	5,360
	<hr/>	<hr/>
	138,350	129,670

General Forestry



Natural Seeding

Education

Publicity

During February, 1927, the Department, in cooperation with the Great Northern Paper Company, had a fire protection exhibit at the New England Sportmen's Show, Boston, Massachusetts, which was attended by thousands of people who visit Maine each year.

A large exhibit in charge of attendants was shown in the State of Maine Building, Eastern States Exposition, Springfield, Massachusetts and another during American Legion Week at the Exposition Building, Portland, Maine, during 1927.

Newspaper publicity is started early each season with special releases appearing in all of the dailies and weeklies of the State. This publicity is continued throughout the fire season. It is felt that in keeping the Department continually before the reading public that the direct educational benefit for fire protection and forestry can not help but be tremendous. Speakers from the Department are continually speaking before schools, boys and girls camps, women's clubs and other organizations, preaching conservation; the radio station WCSH in Portland has also been used as a means of broadcasting to the public.

American Forest Week

Each year in April the President of the United States proclaims a certain week as American Forest Week. In 1927, the Department sent a pamphlet on American Forest Week and the forests of Maine to every teacher, service club and women's club in the State, and in 1928 followed this up by supplying or arranging for some thirty talks before service clubs, women's clubs and schools. It is the feeling that through these organizations and in the schools our lessons of fire protection can be given to the greatest advantage. A program of this sort covers the teachers and the children in the schools, the fathers in the service clubs, and the mothers in the women's clubs.

Publication and Distribution

15,000 pamphlets on fire protection were distributed to all the teachers and service clubs of the State during American Forest Week; 4,000 copies of the Forest Manual, 30,000 cards telling in a nutshell our resident and non-resident laws relative to fires, and 15,000 postcards for distribution at lookout stations showing in colors a forest fire, were also prepared and distributed as educational work. About 15,000 of the black and yellow fire signs were placed along highways, roads, streams, etc., warning all to be careful with fire. 100,000 book covers showing in colors the horrors of forest fires have been distributed to the school children of the State. The idea of this distribution is to have each child in Maine have one book covered with the Department's book cover, and to always have before them a reminder of the dangers from forest fires.

"A Manual of Forest Insects" is the title of the latest Maine Forest Service Bulletin, No. 5, by Henry B. Peirson, Forest Entomologist of the Department. This publication very completely covers the field of Forest Entomology, and is well illustrated in plates pertaining to the subject, the originals of which were pen and ink drawings by the author.

This is probably the first time in the history of entomological publications that the trees and the insects attacking them have been published under as complete form as found in this bulletin. The work is complete and thorough as is all of Mr. Peirson's work and is well deserving of the place which it will take among other publications of the Department and State.

A small pamphlet "Trees for Profit" has been prepared and distributed as an aid to reforestation of waste lands. This pamphlet discusses the trees that should be used, the possibility of mixing these trees in a plantation, the age of trees to use and points to be watched in making a forest plantation.

"Forest Trees of Maine" and old-time and ever popular Department publication has been revised and an edition of 10,000 will be off the press very shortly. This pamphlet contains plates showing leaves, fruit, buds, etc., of all the

trees found in Maine with a full description of their habits, location, size, etc., and is of the greatest interest to students, teachers and nature lovers.

The joint publication by the Department and the Maine Hardwood Association, "Maine Hardwoods", is to be re-issued with a revised list of manufacturers. This publication is of the greatest benefit to the Department in answering questions on our hardwoods of Maine and our hardwood manufacturers.

FOREST PLANTING

On March 1, 1928, a meeting of the growers of forest nursery stock was held at the office of the State Forest Commissioner in Augusta. The purpose of the meeting was to consider the possibilities of stabilizing and advertising the sale of stock. All of the forest nurseries in the State had representatives present. Representatives were also present from the State and Federal Forest Service.

Professor John M. Briscoe stated that the State Forest Nursery was started in 1913 and that previous to that time no forest nursery stock could be obtained in Maine. Since 1913 approximately 2,000,000 trees have been shipped out from the State Nursery. The original cost of transplants was placed at \$5.00 per thousand and was raised to \$10.00 during the World War due to the greatly increased cost of raising nursery stock. At the present time approximately 250,000 trees per year are being shipped out from the State Nursery. As demand for nursery stock increased, private nurseries were started. Professor Briscoe spoke of the need of publicity at the present time to get the idea of planting before the public. There are roughly 1,000,000 acres outside of the Maine Forestry District that are at present bringing in no revenue and should be planted. Mention was made of the larger amount of planting being done in other States.

Mr. Ralph M. Hutchinson, Extension Forester of the University of Maine, told of the large number of demonstration plantings being held in various parts of the State by the Extension Service. From thirteen held four years ago, there has been an increase to seventy-two held last year.

He spoke of the unlimited possibilities for tree planting amongst the 50,000 farmers of the State. Questionnaires sent out and returned by eight hundred farmers showed that there was an average of twenty-five acres of waste land on each farm that should be growing trees. This idle land is pretty well distributed through the agricultural sections of the State. Mention was made of the need of giving publicity to the older plantations in the State so that the public would know something of what they could expect from plantations.

Professor Briscoe spoke of the need of paying more attention to type of soil in recommending species to be planted. He spoke of the fact that too much emphasis was placed on the planting of white pine. Mrs. Dean, representing Mr. J. L. Dean of Waterville, read a very interesting letter from him setting forth the need of planting our waste lands and the value of demonstration areas in giving concrete examples of what can be done. These plantations should be placed along the main highways where they can easily be seen. He believes that plantations well taken care of should net from six to ten per cent. In 1927 Mr. Dean planted forty acres and this year expects to plant one hundred acres.

Mr. Lockyer, representing the Brown Company, related how their nursery was started in 1919 to plant their waste lands. It was later enlarged so that enough plants could be sold to cover the overhead charges and meet a demand for plants that had grown up. In 1927 trees were shipped to twenty-two States. The Brown Company has found that people are interested in forest planting but are anxious to be shown results such as demonstration plantings would set forth.

Professor Briscoe spoke of the possibility of planting on State Parks such as was done at Fort Knox.

Mr. H. J. Craig, representing the S. D. Warren Company, gave some very interesting figures showing what might be expected in the way of yield from plantations. Mr. Lockyer then brought out the fact that the farmers could plant at times when work was slack.

Mr. R. D. Stephens, representing the Eastern Manufacturing Company, gave a brief interesting history of the large nursery owned by his company. The nursery was

started in 1916 with the idea in view of planting all of their burned land. Approximately 500,000 trees per year are being set out. In 1925 one million trees were set out. Up to the present time over three thousand acres have been planted. Plantations set out in 1917 are now from ten to twelve feet high whereas one set out in 1918 on particularly good soil is from eighteen to twenty feet high.

Mr. T. C. Eastman of Fryeburg, owner of the Western Maine Forest Nursery, told of the rather discouraging results obtained from advertising. He suggested the starting of town forests. Mr. Lockyer spoke of the difference in forest seeds and of the Brown Company's effort to collect seed from thrifty trees. His company has erected a seed extracting plant and will endeavor to supply the New England demand for forest seeds. This last year between four and five hundred bushels of cones were collected.

Mr. Francis Friend of Skowhegan, owner of a nursery located at Skowhegan, told of two acres of land in North Anson planted to pine about forty-five years ago. In 1926 it was cut and yielded 100,000 board feet for which the owner received \$2,200.00.

Mr. R. E. Rendall of Alfred told of the planting being done on the Bates College Forest. Their nursery has a capacity of about 30,000 and only surplus stock is sold.

Mr. C. R. Tillotson of the U. S. Forest Service believes that Maine is well fortified to supply the demand for nursery stock. He spoke of the confidence that the public naturally has in State nurseries. The demand for stock could be increased by more newspaper publicity. The need for a popular bulletin on planting was discussed. Mr. Tillotson told of the great possibilities of planting on brush land. In the general discussion that followed there seemed to be an unanimous feeling that 2-1 or 2-2 stock only should be raised. The use of seedlings was condemned. The need of impressing upon the public the extreme simplicity of planting was also discussed. The two points to be careful about being (1) keeping roots from drying out and (2) placing of roots properly in holes, so that they would not be bunched. Questionnaires brought out the fact that there would be five million trees available for planting stock this year in Maine. Continued publicity was urged.

It was decided to publish a four-page circular on forest planting that would briefly show the kinds of trees to be planted according to zone, soil and ground cover, spacing and methods to be followed in planting, with a brief description of the characteristics of red pine, white pine, Norway spruce and white spruce.

A committee consisting of Messrs. Briscoe, Rendall and Peirson was named to consider changing the rule governing the Jordan prize for forest plantations.

Mr. Tillotson suggested that the Forest Commissioner write the selectmen in the various towns, urging the appointment of town committees to look into the possibilities of starting town forests.

Forest Nurseries in the State

Name	Location	Acreage	Approximate Output
S. D. Warren Co.	Bingham	2	150,000
J. L. Dean	Winslow	3	200,000
Bates College	Alfred	3	50,000
Eastern Manufacturing Co.	Mattagamon	5	500,000
Francis H. Friend	Skowhegan	2	250,000
Western Maine Forest Nursery	Fryeburg	22	1,300,000
Brown Company	Oquossoc	15	3,000,000
Oxford Paper Company	Roxbury	25	150,000
State Forest Nursery	Orono	2	250,000

Trees Planted in the State

	1927	1928
White Pine	596,780	1,003,682
Red Pine	28,953	53,800
Scotch Pine	36,750	4,925
Austrian Pine	3,500	2,510
White Spruce	539,168	779,592
Norway Spruce	33,600	94,560
Red Spruce		600

Blue Spruce	1,100	5,500
Balsam Fir	2,100	500
Douglas Fir	1,000	800
Miscellaneous	72,675	102,300
	<hr/>	<hr/>
	1,315,626	2,048,769

TOWN FORESTS

The Legislature of 1927 passed the following law:

“Public Laws 1927, Chapter 33

AN ACT Relating to the Establishment of Town Forests.

“Sec. 1. Cities and towns may acquire by purchase, gift or bequest lands for the purpose of forestation, and may reclaim and plant such lands. The forest commissioner shall, upon application in such form as he may prescribe, furnish said cities and towns, at cost, with seedlings or transplants for the planting of town forest lands, and shall be ready to offer advice as to the planting, management, and protection of said forest lands.

“Sec. 2. A town, by a two-thirds vote at any annual town meeting, or a city, by a two-thirds vote of the city government, may determine to purchase lands which shall be known as the town or city forest, and may appropriate money and accept gifts of money and land therefor. Such forest shall be devoted to the culture of forest trees, or to the preservation of the water supply of such city or town.

“Sec. 3. In each city or town which has a town forest as defined hereinbefore, the town or city manager in such towns or cities as are under the manager system, or elsewhere the mayor or selectmen, may appoint a forester whose duty it shall be to make and enforce all necessary regulations, and to perform such labor therein as may be necessary for the proper care and maintenance of such land as a forest producing area. Said forester need not be a resident of the town or city in which he is appointed, but he and such deputies as he may appoint shall have the powers of constables and police officers while in said forest.

"Sec. 4. Any city or town owning such forest area may lease any building thereon, and may erect thereon any building for public instruction and recreation.

"Sec. 5. No expenditures shall be made or bills incurred above the amounts appropriated for said specific items, and all expenditures must have the approval of city or town officers appointing said forester. All receipts from said forest or buildings thereon shall go into the general revenue of town or city owning said forest.

"Sec. 6. When in the judgment of the forester, and with the approval of the city council, or by vote of town meeting, land acquired under this act may be sold or exchanged and in like manner, rights of way for public highways granted, if it shall be deemed of advantage to the town. Provided, that the power of sale or exchange herein granted shall not apply to lands given for memorial purposes."

Under this law the following towns have already established town forests, which is an excellent way of adding substantial resource to the towns interested, and in providing demonstration areas for forest practice within reach and easy access of all:

	Location	Acreage
1.	Bangor	40
2.	Brunswick	528
3.	Fryeburg	80
4.	Kennebunk	2
5.	Old Town	247
6.	Skowhegan	332
7.	Waterford	5
8.	Cumberland Center	50

AUXILIARY STATE FORESTS

The purpose of the auxiliary state forest law, passed by the 1921 Legislature, is to encourage forest production by granting certain exemption from taxation to those who agree to handle their lands in accordance with the methods specified therein. The list below shows the owners that have

applied under this law, with the location and acreage of their lands, and whose applications have been approved by this Department.

Name	Town	Location	County	Acreage
Fred Cyr	Greene		Androscoggin	40
Eugene H. Sewall, et al.	East Livermore		Androscoggin	25
R. A. Wing	Livermore		Androscoggin	35
R. A. Hinds, et als.	Livermore		Androscoggin	12
Earle H. Beckler	Livermore		Androscoggin	65
R. F. Chase Estate	Baldwin		Cumberland	55
R. F. Chase Estate	Baldwin		Cumberland	185
Eugene H. Sewall, et al.	Jay		Franklin	15
Eugene H. Sewall, et al.	Jay		Franklin	80
Philip H. Pope	Manchester		Kennebec	2½
R. F. Chase Estate	Denmark		Oxford	50
R. F. Chase Estate	Hiram		Oxford	725
W. C. Wheeler	Glenburn		Penobscot	444.93
Nellie Hill Ames, et al.	Waite		Washington	2,200
W. A. Shepard	Buxton		York	52
W. C. Webster Estate	Buxton		York	80
H. A. G. Milliken	Old Orchard		York	50
H. A. G. Milliken	Old Orchard		York	40
H. A. G. Milliken	Old Orchard		York	22
H. A. G. Milliken	Old Orchard		York	122

BENJAMIN C. JORDAN FUND

In 1909, the late Benjamin C. Jordan of Alfred gave to the State, \$1,000, on condition that the State shall, once in 18 years, offer five prizes to be called the Jordan Forestry Prizes, as follows: First, \$500; second, \$250; third, \$125; fourth, \$100; fifth, \$25. The prizes were offered by the State for the best lots of young forest growth in the State for 1927. Early that year a committee, consisting of the Forest Commissioner, John M. Briscoe, professor of forestry at the University of Maine, and Raymond E. Rendall, manager of the Bates Forest at Alfred, was appointed to judge this contest, and the awards were, as follows:

First Prize, Samuel C. Manley, Augusta, \$500

Second Prize, Howard Gilpatrick, Biddeford, \$250

Third Prize, Gardiner Forestry Company, Gardiner, \$125

There being only three contestants, the fourth and fifth prizes remain to enlarge the present fund.

A discussion of the lots which won the prizes, with a brief description, is as follows:

1. Manley Lot, Augusta. This lot is a combination of plantation and natural reproduction. The planted stock has been well cared for, in that when the original plantation was made, the spacing was three by three feet, which is and was too close for any plantation work. The owner has had every other row of trees cut out and every other tree in the rows removed, making a six by six spacing. In addition to this, he has had all the remaining trees limbed up to a height of seven or eight feet. The care, healthiness and general appearance of this pine lot is of the best.

2. The Gilpatrick Lot, Biddeford. This lot is entirely natural reproduction. The owner has made partial thinnings and done some limbing up. What he has done makes an excellent appearance and the trees that have been cared for show the results in a most remarkable manner.

3. Gardiner Forestry Company Lot, Gardiner. This lot is a straight plantation proposition and although it was planted with the proper spacing, it apparently has received no care since it was planted. There has been no thinning out of weevil damage. It seems that this plantation is of sufficient size and quality to warrant pruning and trimming.

Of Historic Interest

The pine lot to which was awarded first place for the Jordan Forestry Prizes is part of the estate of the late Joseph H. Manley on the East side of the Kennebec River. In addition to its interest in connection with the encouragement of the competition to landowners in enhancing the value of their property, this lot has an interest peculiar to Augusta. Originally part of what older residents remember as Williams pasture, this land now in young pines lies due west of Greenwood Church, which, for the last century, has been a landmark in Augusta. Mr. Manley, in fact, planted the lot with selected seedlings in order eventually to replace the stately pines of this historic grove.

Known to this day in Augusta, as Greenwood Church, the grove of virgin pines received its name in 1842 when the

Rev. Sylvester Judd, first Baptist minister in Augusta, led his flock to religious worship in the vaulted aisles of this natural cathedral. His congregation lacked a church at the time temporarily and received permission to use the grove until they could erect a building. The late Mr. Manley, who prized his possession of these pines more highly than any other part of the property in the ownership of his family since 1794, never spared any care to prolong the life of the giant trees. His son found that they were inevitably approaching their end twenty years ago and planted the prize lot in time to replace them when they will have to be removed.

Land Office



Corner Post of Public Lot

Land Office

The Legislature of 1927 appropriated \$500 for 1927 and \$500 for 1928 to retrace and define lines of the school lots. During 1927 the lines of the school lots in Sandy River Plantation were retraced and painted, and the lines of the school lots in Township 6, north of Weld, are now being retraced, and will be paid out of the 1928 appropriation.

The tabulation on the next page shows the revenue received from the sale of stumpage, from the leasing of camp sites, for trespasses on school lots and the leasing of islands on the coast.

Leases on School Lots

Township	Portion of Lot	Purpose	Lessee	Term
Oxbow Plantation	$\frac{1}{2}$ acre	Camp	Libby Bros.	1 year
A, R. 5	1 "	"	L. R. Shannon	2 "
10, R. 4	$\frac{3}{4}$ "	"	W. R. Roix	2 "
3, R. 4, W.B.K.P. Letter E	$\frac{1}{4}$ " Part	"	Ed. Grant & Son Co. Four Ponds Camp Association	10 " 1 " 10 "
3, R. 3, W.B.K.P.	$\frac{1}{2}$ "	"	Kennebago Hotel Co.	10 "
3, R. 4, W.B.K.P.	$\frac{1}{2}$ "	"	Kennebago Hotel Co.	10 "
10, R. 9, W.E.L.S.	1 "	"	William Prest	3 "
2, R. 11, W.E.L.S.	2 $\frac{1}{2}$ "	"	E. A. Upton	1 "
5, R. 8, W.E.L.S.	1 "	"	Chas. E. McDonald	1 "
4, R. 2, W.B.K.P.	1 "	"	E. Lester Barnes	1 "
4, R. 2, W.B.K.P.	$\frac{1}{2}$ "	"	A. B. Calkins	1 "
5, R. 4, W.B.K.P.	1 "	"	Brown Company	1 "
5, R. 4, W.B.K.P.	1 "	"	J. W. Bucknam	1 "
5, R. 4, W.B.K.P.	1 "	"	F. P. Flynt	1 "
5, R. 4, W.B.K.P.	5 "	"	G. E. Nason	1 "
5, R. 4, W.B.K.P. } 5, R. 5, W.B.K.P. }	Part	"	Parmachenee Club	1 "
4, R. 2, W.B.K.P.	1 "	"	Phebe Downs	1 "

Leases of Islands

Name of Island	Lessee	Term
Wreck Island	David Page, Jr.	1 year
Pond Island	George A. Faulkner	1 "
Parker Island	F. J. W. Diller	1 "
Mink Island	W. O. Wallace	1 "
Ledges 9 and 15	L. W. Coombs	1 "

School Funds

Township	County	1927	1928
Glenwood Pl.	Aroostook		74.20
Hamlin Pl.	"	69.00	78.16
New Canada Pl.	"	25.00	
Molunkus Pl.	"		789.00
Moro Pl.	"		209.60
Oxbow Pl.	"	110.00	5.00
Reed Pl.	"	1,150.31	717.85
T. 10, R. 4, WELS	"	2.00	16.00
T. 14, R. 6, WELS	"		192.45
T. 16, R. 10, WELS	"		4.52
T. 17, R. 10, WELS	"	2.87	21.60
T. 16, R. 11, WELS	"		5.30
T. 17, R. 11, WELS	"	43.90	149.34
Lang Pl.	Franklin	105.00	
Letter E	"	25.00	25.00
Sandy River Pl.	"	21.76	26,103.56
T. 3, R. 3, WBKP	"	100.00	100.00
T. 3, R. 4, WBKP	"	100.00	100.00
Andover North Surplus	Oxford	87.00	
T. 4, R. 2, WBKP	"	80.00	90.00
T. 5, R. 4, WBKP	"	126.00	126.00
T. 5, R. 5, WBKP	"	50.00	50.00
Lakeville Pl.	Penobscot		4,340.00
Stacyville Pl.	"		67.85
Webster Pl.	"		353.00
T. 5, R. 8, WELS	"	10.00	10.00
T. 2, R. 11, WELS	Piscataquis	25.00	25.00
T. 10, R. 9, WELS	"	12.50	12.50
Bigelow Pl.	Somerset	12.38	
Dead River Pl.	"		5,124.42
Dennistown Pl.	"	50.00	
Highland Pl.	"	538.10	586.80
Jackman Pl.	"	300.00	
Long Pond Pl.	"	3,926.74	
Moose River Pl.	"	1,010.12	244.00
Pleasant Ridge Pl.	"	1,526.85	
The Forks Pl.	"		441.00
West Forks Pl.	"	2,247.14	2,404.22
1, R. 3, BKP, WKR	"	1,614.54	
Grand Lake Stream Pl.	Washington	1,918.45	
		<u>\$15,289.66</u>	<u>\$42,466.37</u>
Passamaquoddy Indian Fund Indian Township	Washington	265.32	321.25
Interest on Deposits		110.59	230.28
Office Fees		34.00	36.00
Islands		100.00	70.00
SALE OF LAND Frenchville	Aroostook		11.00
		<u>\$15,799.57</u>	<u>\$43,134.90</u>