

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, 1928 - JUNE 30, 1930

STATE OF MAINE

EIGHTEENTH
BIENNIAL REPORT
OF THE
FOREST COMMISSIONER



1929-1930

STATE OF MAINE

February 19, 1931

To His Excellency, Wm. Tudor Gardiner, Governor of Maine:

I have the honor to submit herewith my biennial report for the years 1929-1930.

NEIL L. VIOLETTE,

Forest Commissioner

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PERSONNEL

NEIL L. VIOLETTE, *Forest Commissioner*
Augusta

HENRY B. PEIRSON, *State Entomologist*
Augusta

ROBLEY W. NASH, *Assistant Entomologist*
Augusta

WALTER O. FROST, *Blister Rust Agent*
Augusta

District Blister Rust Agents

H. G. BRADBURY, Belfast

D. S. CURTIS, North Bridgton

G. H. KIMBALL, Auburn

J. M. WHITE, Waterville

District Supervisors

GEORGE A. FAULKNER, Winter Harbor

GEORGE H. GRUHN, Seboomook

ROBERT G. STUBBS, Hallowell

Town Supervisor

AUSTIN H. WILKINS, Augusta

Bookkeeper

LILLIAN J. COLEMAN, Augusta

Stenographers

BLANCHE L. VIOLETTE, Augusta

NELLIE CHAISSON, Augusta

APPROPRIATIONS AND ACTIVITIES AS AUTHORIZED BY THE 1929 LEGISLATURE

Administration of Public Lands **\$500.00**

The appropriation of \$500.00 for the Administration of Public Lands is used to run, retrace and maintain the lines of school lots in 55 plantations, which the State through this Department holds in trust for these plantations until organized as towns. There are about 50,000 acres of such lands.

Control of White Pine Blister Rust **\$6,250.00**

White pine blister rust control work is conducted on a cooperative agreement between the State and the United States Department of Agriculture, cooperating with towns and white pine owners.

The State appropriation of \$6,250.00 is expended for the travelling expenses of the Federal paid agent in charge, the salaries of six to eight summer employed men who perform educational, scouting and supervisory work among the cooperating towns and pine owners, and for general office and field equipment necessary for the work.

Each year between 55 and 60 towns and cities raise and expend \$8,000.00 to \$10,000.00, and from 1,100 to 1,200 pine owners expend from \$8,000.00 to \$9,000.00 for this work.

The Federal Government allots to Maine for this work \$21,250.00 yearly. This sum is spent for the salary of the State Agent, the salary and expenses of four permanent county agents, and for eight summer employed men who perform educational, scouting and supervisory work among the cooperating towns and pine owners.

Each year over 200,000 acres of pine bearing lands are given control measures by the removal of about two million wild ribes (currant and gooseberry plants) by the above named cooperating parties.

Hence, for the \$6,250.00 of State funds, there are expended \$40,000.00 of Federal Government, town and pine owner funds.

State Forest Nursery **\$1,000.00**

The State has appropriated for the past seventeen years \$1,000.00 annually for the maintenance of a forest nursery. This nursery, of about 1½ acres located at the University of Maine, serves as a laboratory for the forestry students at the University and for the raising and distribution of trees, especially to farmers, at cost price. The money is used to hire a care-taker in the summer and for the purchase of seed and plants. This nursery is partially self-sustaining, for the reason that the proceeds from the sale of plants is returned to the State.

Purchase of Land and General Forestry Purposes **\$10,000.00**

This appropriation plus revenues is being used for two purposes, viz:

I. Entomology. In 1928 the State Legislature passed an act creating the office of State Entomologist, whose duties are "to answer calls for information on insect control and identification, to supervise necessary control work not already provided for by law, and to assist other departments in work along this line." This work is carried on by using about \$7,000.00 a year from the appropriation for the salary and expenses of the State Entomologist and his assistant.

By utilizing the Maine Forest Service fire protective force, the State is gradually building up a very efficient insect protective organization at no additional cost to the State. The wardens, patrolmen and lookout men are instructed as to the nature of the more important insects, and are furnished with blanks to report outbreaks in their territory and mailing tubes in which specimens can be sent in to the office for identification. The object of this work is to get data on insect outbreaks before they become widespread. The land owners are then advised as to control measures which should be instigated. In

this way outbreaks which otherwise might sweep over wide areas are being stopped.

Through cooperation with forest owners, the State has many control experiments under way. Methods of control are continually being worked out for those forest insects which hitherto we have known little about.

The letters of inquiry and calls for assistance are by no means confined to forest and shade tree insects. Insects affecting man, animals, grain, food, fruit, flowers, garden crops, clothing, furniture, lumber, water supplies, and health of community continually require control measures. Efforts have been made to cooperate in every way possible with those asking for assistance.

2. Fire Protection in Organized Towns Outside of the Maine Forestry District. About \$6,000.00 of this appropriation is used to maintain eight (8) lookout stations in organized towns, to investigate slash law violations, and for the printing and distribution of fire signs and bulletins, which this Department is required by law to furnish these towns free of charge.

Study and Control of the Birch Saw-Fly Leaf Miner \$8,000.00 and Birch Case Bearer

A special appropriation of \$8,000.00 a year was made by the Legislature in 1929 to be used for the study and control of two new birch insects which are threatening to destroy the white birch in the State. Laboratory quarters were furnished by the Acadia National Park, and the birch owners of the State have done everything possible to facilitate the work. Particular effort is being made to raise and distribute parasites and this gives promise of satisfactory results. Some woodland spraying has been carried on in connection with the control of one of the insects which is still localized.

In 1929-1930 the sum of \$6,385.77 was spent. Of this amount \$4,461.74 went for the services of two permanent men and one summer assistant, who were working out the life history of the birch insects, experimenting with different methods of control, rearing and distributing parasites and studying the

effects of the insects damage in different forest types. The expenses of these men while in the field carrying on the above work amounted to \$1,272.36. The cost of a Ford truck for use in collecting and distributing parasites throughout the region, and equipment for the laboratory amounted \$651.67.

Maine Forestry District**\$168,984.28**

An annual tax of $2\frac{1}{4}$ mills on the dollar is assessed upon all of the property in said District, which amounted to \$168,984.28 in 1929. This special tax is used for forest fire protection in the District, comprising 452 towns, or a total area of 10,000,000 acres. The District employs approximately 190 men in the service, and owns equipment valued at \$350,000.00 in the form of lookout towers, camps, boats, trucks, pumps and fire tools sufficient to equip 10,000 men. The State now receives from the Federal Government \$52,000.00 annually, \$42,000.00 of which is used in the District, and the balance in the organized towns.

On January 1, 1931, notwithstanding the rebate of the 1930 tax by 30%, our books show a balance of \$133,960.17.

This organization is unique in that the owners pay for the protection of their lands, and the State is not required to raise money for that purpose as the other states do.

FOREST FIRE PROTECTION

MAINE FORESTRY DISTRICT

Season 1929 and 1930

The fire season of 1929 was a very dry, yet a very successful one. The entire State was confronted with a continuous forest fire danger from April 1st until October 31st. The fire season opened in April in the southern part of the State, and in May in the northern part of the State.

Lack of precipitation following the time the snow disappeared left the barrens, and cut-over land in a very dangerous dry condition. Many surface fires occurred in the southern part of the State during this period. The northern part of the State had very little rainfall during mid-summer and consequently a serious fire menace existed there. The forests continued dry all summer and the carelessness of one individual might have meant a large expensive fire, but no such disaster occurred. The acreage burned during the season of 1929 was exceedingly small. Such a record is a significant compliment to the character of Maine people, and of its many thousands who have vacationed here in Maine. It shows that the people who love the great out-doors of Maine and love its trees and its beautiful forests, also have a regard for the property of others.

The fire season of 1930 began on the 1st of April and lasted three weeks longer than the previous season of 1929. For the second consecutive year hazardous conditions existed immediately after the snow had disappeared. The country became so dry that on May 11, 1930, the Governor saw fit to proclaim a closed season on fishing throughout the State. The ban on fishing was lifted on May 15th, following improved conditions. We had more rain than in 1929, yet the constant high winds and low humidity dried the moisture out of the forest floor. The entire State suffered a drought, but the most prolonged drought continued in parts of Washington, Hancock, and lower Penobscot Counties.

During September and October, such a serious condition

existed generally throughout the State, that the Governor deemed it advisable to close the hunting season on October 14th. Fortunately, the rains of October 16th relieved this dry condition sufficiently to allow the ban on hunting to be lifted on October 16th. The season closed with the last fire of record on November 8th.

Comparison of Burned Area 1927 to 1930:

| 1927 | 1928 | 1929 | 1930 |
|-------------|-------------|-------------|--------------|
| 9,096 acres | 1,562 acres | 1,323 acres | 11,677 acres |

District Supervisors

Carrying out the 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. Western Section, in charge of Supervisor George H. Gruhn, with headquarters at Seboomook.
- IV. Southern Section, in charge of Supervisor Robert G. Stubbs, with headquarters at Hallowell.

In 1925 the system of having tower inspectors was changed to the present system, with a supervisor directly in charge of each section. 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 charge of the Northern Section which comprises all of Aroostook County, except the Upper St. John waters and northern Penobscot County. In 1926 a third supervisor was placed in charge of the Western 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 charge of the Southern Section, which comprises all of the Andros-

coggin watershed and all of the Kennebec waters except the Moosehead District.

Rex E. Gilpatrick, supervisor in charge of the Northern Section during 1927-1928, resigned in 1929, and that section has been supervised the past year by the Forest Commissioner.

Chief Wardens

With the beginning of the 1929 fire season, the Narraguagus District was combined with the Union River District which resulted in the saving of several hundred dollars and increased the efficiency in that section.

Thomas Perrow was appointed chief warden of the Katahdin District, following the death of Thomas Griffin who had been chief warden there for twelve years. Ralph Brick was appointed chief warden of the Fish River District, with headquarters at Portage, following the resignation of Chief Warden William McConnell. Mr. Brick is a former warden of this Department who had been chief warden in the Chamberlain and Chesuncook Districts.

Deputy Wardens

Deputy Warden is the official title applied to watchmen, patrolmen and other assistants to the chief warden. For the past two years very few changes have been made in the personnel of the deputy wardens. We have been very fortunate in past years to have available the ideal type of men for watchmen, patrolmen, and assistants to the chief wardens.

Lookout Stations

Five new steel towers and one wooden lookout station have been erected, viz: A 24 foot tower for Clear Lake Mountain on Township 10, Range 11; 24 foot tower for Priestly Mountain; 73 foot tower for Whitney Hill in the town of Macwahoc; 75 foot tower for Howe Brook Mountain in Township 8, Range 3; 48 foot tower for DeBoulie Mountain; a wooden lookout on Daisey Mountain.

Several towers are to be relocated. The 48 foot tower on

Black Cat Mountain has been dismantled and moved to its new location on Trout Mountain. This tower, when erected on Trout Mountain, will be 60 feet, as 12 feet have been added to its original height. The 48 foot tower on Hunt Mountain has been torn down and moved to Lawler Hill. This tower, when erected on Lawler Hill, will be 60 feet high. The steel has been purchased for a new tower to be erected next spring on Peaked Mountain in Township 30. The new tower purchased for Peaked Mountain is galvanized. This does away with the necessity of painting towers every third year. The galvanized towers cost about one-third more than the old iron type, but over a long period of years, they prove to be cheaper, because they do not need painting.

Patrol

In the past, regular daily patrols covered roads, trails, lakes and streams, but in 1929 the number of regular patrols were reduced in favor of seasonal patrols. Under this plan, more patrols were employed during the particularly dangerous periods to watch the most dangerous areas, such as roads, streams, lakes and trails. During wet weather these men were employed on regular construction work such as cleaning telephone lines, trails and roads.

Telephone Lines

During the past two years 354 miles of new telephone lines have been constructed and 389 miles of old telephone lines have been rebuilt, the most important of which are the following:

1. Narraguagus Bridge to Deer Pond 15 miles.
2. Lambert Lake to Vanceboro, 7 miles.
3. Sebocis to Mattamiscontis Mountain, 9 miles.
4. Nicatous Lake to Poplar Tavern, 12 miles.
5. Great Pond to Alligator Stream, 9 miles.
6. Umsaskis Lake to Round Pond, 24 miles.
7. Norway Bluff to Clear Lake Mountain, 18 miles.
8. Clear Lake Mountain to Churchill Dam, 12 miles.
9. Chesuncook to Grant Farm, 15 miles.

10. Ashland to Round Mountain and Norway Bluff, 42 miles.
11. Portage to Three Brooks Mountain, 9 miles.
12. Howe Brook to Aroostook Road, 10½ miles.
13. Ashland to Hedgehog Mountain, 24½ miles.
14. Old Spec Mountain in Grafton to Bethel, 18 miles.
15. Tumbledown Mountain to Kibby Mountain, 6 miles.
16. Moxie Bald Mountain to Blanchard, 12 miles.

Pumps

During 1929 and 1930, 15 four cylinder Northern pumps have been added to the District so that many of the chief wardens have more than one at the present time.

The 5 gallon hand pumps that the Department tried out in 1928, proved so successful that 585 have been added to the District in the past two years, and many more will be added as the necessity warrants.

Roads and Trails

The bushing out of 310 miles of roads and trails is a project which was started in 1928. The object of this project is to have these roads and trails in such shape that our supplies and fire fighting equipment 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 unfavorable in 1929 that very little fall construction work was undertaken. The largest part had to be done during the spring of 1930. The construction work planned for September and October had to be delayed until November and December, at which time all work contemplated was completed.

Airplane Patrol

Airplane patrol to be used in forest fire detection and observation, has been suggested for a number of years to be tried out by the Maine Forest Service to augment the present tower

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, N. Y. An appointed committee recommended that the Department contract with the Curtiss Company for a plane and pilot at \$60.00 an hour, only when actually flying, all expenses, losses, etc., to be borne by the Company. An observer, paid and insured, was furnished by the Department.

Under this agreement the plane was used for eighty hours, most of which was consumed in taking the various chief wardens over their districts. In this patrol work, most of the time was spent principally on three fires, and especially on the Big Chase Stream fire. The plane on this fire flew over the area every evening, sketching the two hundred miles of fire line and reported on a map new fires and very hazardous points. This information gave the chief warden sufficient information to enable him to place his men to the best advantage.

During the summer of 1927 several planes were bought by private parties in the State. An agreement was made between the Department and some of these plane owners to call them into service whenever needed. Thus for 1928 it was not necessary to make arrangements such as were made in 1927. Due to the wonderful season for 1928 there was no need to call any of these planes. The season for 1929 was equally good. But in the fall of 1930 the forests all over the State were extremely dry. So many fires were springing up during this critical period that the Department chartered for two days the Consolidated Airway plane operating between Augusta and Boston, to fly over several sections where fires were burning. Particular attention and time was spent in flying over the Milinocket, Steuben and Clifton fires. The time was divided so that flights were made over sections of the Penobscot watershed, Rangeley District, and Sebago Lake region. Another plane was chartered by Chief Warden Weeks who investigated and located the reported fire in the vicinity of Howe Brook.

Conditions in Maine do not warrant a full time chartered plane for this work. However, the policy of the Department

at present is an agreement with several local plane owners to have them available whenever needed.

Camp Sites

The Department erected 26 more camp sites during the past two years so that there are now 107 available for the use of the public. At many of our camp sites, cement fire places have been constructed which insure greater safety in the building of fires. It has been observed that more and more people are using these camp sites, and it is hoped that they will continue, so that eventually very few fires will be kindled outside of our camp sites. The following list shows the general location of our camp sites:

Aroostook County

| | |
|------------------------------|------------------------|
| Twp. 16, R. 4, W.E.L.S. (3) | Twp. 9, R. 5, W.E.L.S. |
| Twp. 16, R. 10, W.E.L.S. | Twp. 8, R. 5, W.E.L.S. |
| Twp. 15, R. 6, W.E.L.S. | Twp. 7, R. 5, W.E.L.S. |
| Twp. 15, R. 11, W.E.L.S. (2) | Twp. 1, R. 5, W.E.L.S. |
| Twp. 14, R. 6, W.E.L.S. | Castle Hill |
| Twp. 14, R. 7, W.E.L.S. | Hammond Plantation (2) |
| Twp. 14, R. 8, W.E.L.S. | Hersey |
| Twp. 14, R. 12, W.E.L.S. | Limerick |
| Twp. 13, R. 12, W.E.L.S. (3) | Macwahoc Plantation |
| Twp. 11, R. 13, W.E.L.S. | Nashville Plantation |
| Twp. 9, R. 7, W.E.L.S. | Oxbow Plantation (2) |

Franklin County

| | |
|-------------------|---------------|
| Dallas Plantation | Jerusalem (3) |
|-------------------|---------------|

Hancock County

| | |
|------------|----------------|
| Aurora | Twp. 10, S. D. |
| Mariaville | |

Oxford County

| | |
|----------------------------|----------------------------|
| Twp. 5, R. 4, W.B.K.P. (7) | Twp. 4, R. 2, W.B.K.P. (2) |
| Twp. 5, R. 3, W.B.K.P. (2) | Twp. 4, R. 1, W.B.K.P. |
| Grafton | |

Penobscot County

| | |
|------------------------|-----------------|
| Twp. 1, R. 7, W.E.L.S. | Mount Chase (2) |
| Twp. 1, R. 9, W.E.L.S. | Grand Falls |
| Twp. 2, R. 6, W.E.L.S. | Burlington |
| Twp. 2, R. 7, W.E.L.S. | Lowell |
| Twp. 3, R. 9, W.E.L.S. | Lincoln |

Piscataquis County

| | |
|-----------------------------|---------------|
| Twp. 3, R. 11, W.E.L.S. (6) | Greenville |
| Twp. 3, R. 12, W.E.L.S. | Elliottsville |
| Twp. 7, R. 15, W.E.L.S. | Monson (2) |
| Gore A, R. 2 | |

Somerset County

| | |
|----------------------------|------------------------|
| Twp. 1, R. 4, N.B.K.P. (2) | Bigelow Plantation (2) |
| Twp. 2, R. 4, N.B.K.P. (2) | Dead River Plantation |
| Twp. 5, R. 16, W.E.L.S. | Caratunk Plantation |
| Twp. 7, R. 17, W.E.L.S. | Moscow |
| Twp. 8, R. 17, W.E.L.S. | The Forks Plantation |
| Harmony | West Forks Plantation |
| Jackman Plantation (2) | Moose River Plantation |

Washington County

| | |
|-------------------------|------------------------------|
| Twp. 10, R. 3, N.B.P.P. | Whiting |
| Twp. 30, M.D. | Lambert Lake |
| Twp. 29, M.D. | Topsfield (2) |
| Twp. 27, E.D. (2) | Grand Lake Stream Plantation |
| Twp. 19, E. D. | Indian Township |
| Crawford | Codyville Plantation |

York County

York

Fire Weather Stations

In cooperation with the United States Weather Bureau and the United States Forest Service, eight weather stations have been maintained. The stations are located so as to cover the forest areas of the State. They are located at Alfred, Gardiner, Jackman, Princeton, Eagle Lake, Oquossoc, Macwahoc and T. 11, R. 17. Each of these stations is equipped by the Department with instruments for measuring wind velocity, humidity, precipitation and range of temperature. The persons in charge of each of these stations are under the supervision of the United States Weather Bureau of Boston, to which they make daily reports. In return the Weather Bureau furnishes these stations with daily weather forecasts for two days in advance. The forecasts from Boston to these cooperative stations within the Forestry District are telephoned to other chief wardens in the locality.

These forecasts are of assistance to the entire Forestry Department, especially during dry periods. Records of the

Weather Bureau show a verification percentage for its forecasts, as follows:

| | | | |
|------|-------|-----------|-------|
| June | 84.5% | August | 90.0% |
| July | 84.2% | September | 87.7% |

This shows an average of 86.8% for the entire period. The record shows that there were fewer days with a measurable amount of precipitation in August which would tend to bear out the idea that rain forecasts are more difficult of verification than fair weather forecasts.

Under similar arrangements an experiment station was established on the Aroostook Road twenty miles south of Ashland on the so-called McManus place. Instrument readings were taken every two hours in both cut-over land and spruce land 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 consequent 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 sent in weather observations to the United States Weather Bureau at Boston.

Each chief warden has a rain gauge so that he can make comparison of the conditions in his district with those of the fire weather station, and report each week to the Augusta office the amount of rain in his district. For purposes of comparison tables showing precipitation in the different districts for the two years 1929-1930, follow:

RAIN PRECIPITATION—1929-1930

Northern Section

| | Madawaska District | Fish River District | Allagash District | Aroostook Waters District | No. 9 District | Katahdin District | East Branch District | Mattawam- keag District |
|------------|-----------------------|------------------------|----------------------|------------------------------|-------------------|----------------------|-------------------------|-------------------------------|
| | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 |
| May | 2.99- 1.94 | 1.61 | .70- 1.30 | 1.80- 3.13 | 1.26- 2.84 | .50- 2.06 | .24- 3.17 | 4.00- 4.06 |
| June | 2.58- 3.94 | 3.38- 3.87 | 1.53- 2.73 | 2.88- 3.13 | 1.35- 3.12 | 1.20- 1.14 | 1.35- 1.87 | .90- 1.47 |
| July | 3.10- 7.07 | 2.89- 5.25 | .88- 4.07 | 1.79- 4.60 | 1.54- 4.86 | .31- 3.02 | 2.33- 6.09 | 2.34- 5.62 |
| Aug. | 4.71- 3.98 | 3.78- 2.81 | .47- 4.34 | 3.17- 2.72 | 2.34- 2.64 | 2.95- 1.46 | 2.67- 2.68 | 2.35- 2.02 |
| Sept. | 1.50- 2.07 | 1.63- 4.23 | .87- 3.17 | 1.12- 2.18 | .48- 2.24 | .75- 2.12 | 1.46- 2.34 | 1.48- 2.28 |
| Oct. | | 2.06- 1.12 | .24 | 1.86 | .40- 1.74 | .20- 1.14 | 1.73- 1.37 | 1.95- 2.00 |
| | 14.88-19.00 | 15.35-17.28 | 4.69-15.61 | 10.76-17.62 | 7.37-18.44 | 5.91-10.94 | 9.78-17.52 | 13.07-17.45 |

Eastern Section

| | Pleasant River District | Passadumkeag District | Musquash District | St. Croix District | East Machias District | Machias District | Union River District |
|------------|----------------------------|--------------------------|----------------------|-----------------------|--------------------------|---------------------|-------------------------|
| | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 |
| May | | 2.58- 3.00 | 1.06- 1.06 | 2.51- 2.78 | 3.49- 3.03 | 2.41- 3.63 | 2.99- 3.44 |
| June | 3.64- 6.68 | 2.44- 1.43 | 1.93- 1.34 | 2.90- 1.31 | 1.82- 1.36 | 3.31- 1.00 | 2.56- 1.50 |
| July | 6.64- 6.36 | 1.90- 3.56 | 1.42- 2.48 | 2.41- 4.31 | 2.71- 5.96 | 1.34- 5.62 | 1.43- 3.22 |
| Aug. | 4.64- 5.40 | 4.23- 2.46 | 2.35- 1.53 | 2.16- .92 | 2.58- 2.58 | 1.79- 1.65 | 2.56- 2.71 |
| Sept. | 3.04- 2.86 | 1.35- 2.78 | 1.01- 1.66 | 1.48- 4.29 | 1.77- 2.35 | 1.14- 2.16 | 1.70- 2.30 |
| Oct. | 3.06 | 2.79- 1.50 | 2.06- 1.18 | 2.54- .70 | 2.69- 2.77 | 2.18- 2.93 | 2.03- .90 |
| | 21.02-21.30 | 15.29-14.73 | 9.83- 9.25 | 14.00-14.31 | 15.05-18.05 | 12.17-16.99 | 13.27-14.07 |

RAIN PRECIPITATION—1929-1930

Western Section

| | Upper St. John District | Seboomook District | Chesuncook District | Musquacook District | Chamberlain District | Seven Islands District | Moosehead District |
|------------|----------------------------|-----------------------|------------------------|------------------------|-------------------------|---------------------------|-----------------------|
| | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 |
| May | 3.09 | 2.98 | 1.58- 3.26 | 3.63 | .56- 3.46 | .56- 2.51 | 1.00- 3.95 |
| June | 3.61- 5.74 | 2.22- 5.35 | 2.30- 5.54 | 2.33- 4.35 | 3.14- 5.57 | 2.20- 3.12 | 2.12- 2.12 |
| July | 4.58- 3.04 | 2.49- 4.65 | 2.72- 4.87 | 3.48- 5.31 | 4.49- 4.23 | 3.39- 4.98 | 2.05- 5.79 |
| Aug. | 3.86- 2.96 | 4.71- 2.38 | 2.38- 2.24 | 3.35- 2.53 | 3.47- 2.11 | 3.94- 6.39 | 3.04- 5.00 |
| Sept. | 3.42- 2.32 | .96- 2.84 | .96- 3.02 | 2.31- 3.36 | 1.66- 3.14 | 3.11- 4.05 | .98- 2.09 |
| Oct. | | | | 4.61 | 1.53- .93 | | |
| | <hr/> 15.47-17.15 | <hr/> 10.38-18.20 | <hr/> 9.94-18.93 | <hr/> 16.08-19.18 | <hr/> 14.85-19.94 | <hr/> 13.20-21.05 | <hr/> 9.19-18.95 |

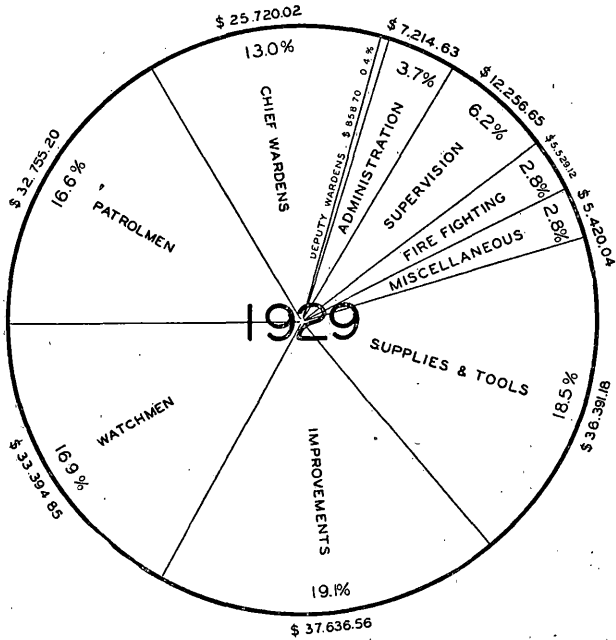
Southern Section

| | Dead River District | Parlin Pond District | Moose River District | Carrabassett District | Rangeley Upton District | Rangeley Cupsuptic District |
|------------|------------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------------------------------|
| | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 | 1929-1930 |
| May | 3.81 | 2.28- 3.92 | 3.51 | 4.55- 4.60 | 4.05- 5.59 | 6.11 |
| June | 2.82- 3.92 | 3.13- 4.91 | 2.99- 4.53 | 3.20- 4.15 | 2.47- 3.33 | 4.40- 6.41 |
| July | 1.00- 2.58 | 1.26- 3.12 | 1.82- 3.85 | 1.40- 6.20 | 2.04- 4.09 | 1.95- 3.90 |
| Aug. | 3.05- 2.67 | 4.49- 2.99 | 3.82- 2.26 | 4.40- 4.40 | 1.62- 2.94 | 3.96- 2.28 |
| Sept. | 1.96- 2.75 | 1.49- 2.19 | 1.94- 4.36 | .90- 1.60 | 1.54- 1.74 | 4.30- 2.74 |
| Oct. | 1.82- 1.12 | 3.00 | 1.03- .72 | 2.55- 3.40 | 1.06- 1.02 | 1.46- 2.24 |
| | <hr/> 10.65-16.81 | <hr/> 12.65-20.13 | <hr/> 11.60-19.23 | <hr/> 17.00-24.35 | <hr/> 12.78-18.71 | <hr/> 16.07-23.68 |

1930 season is 3 weeks longer than 1929

MAINE FORESTRY DISTRICT

MAINE FORESTRY DISTRICT.



TOTAL DISBURSEMENTS

\$ 197,176.95

FINANCE—1929

RECEIPTS

| | | |
|-----------------------------------|--------------|--------------|
| Balance on hand January 1, 1929.. | \$150,184.59 | |
| 1929 Assessment | 168,984.28 | |
| Interest on Deposits | 208.45 | |
| Federal Cooperation | 48,510.52 | |
| Miscellaneous | 2,243.78 | |
| | <hr/> | |
| Total Receipts | | \$370,131.62 |

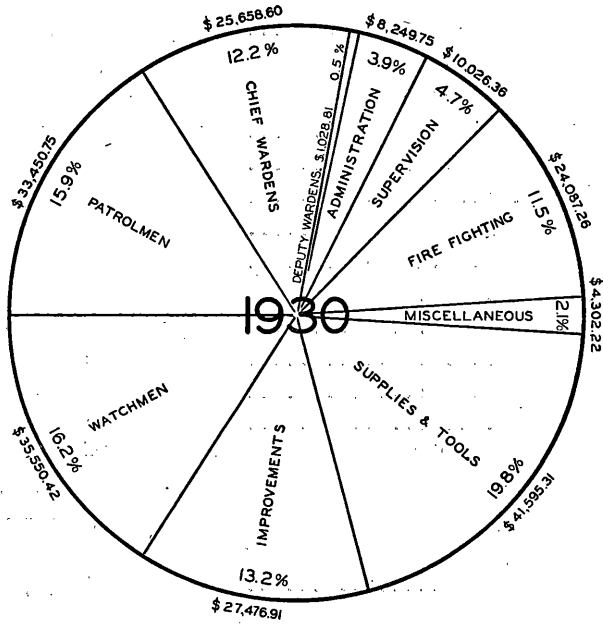
DISBURSEMENTS

| | | |
|---------------------------------------|-------------|--------------|
| Chief Wardens | \$25,720.02 | |
| Deputy Wardens | 858.70 | |
| Supervision | 12,256.65 | |
| Patrolmen | 32,755.20 | |
| Watchmen | 33,394.85 | |
| Improvements | 37,636.56 | |
| Tools and Supplies | 36,391.18 | |
| Fire Fighting | 5,529.12 | |
| Administration | 7,214.63 | |
| Miscellaneous | 5,420.04 | |
| | <hr/> | |
| | | 197,176.95 |
| | | <hr/> |
| Balance on hand January 1, 1930 | | \$172,954.67 |

Expenditures by Watersheds

| | St. John | Penobscot | Kennebec | Andros- coggin | Machias | Totals |
|-----------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Chief Wardens | \$9,987.71 | \$8,243.09 | \$4,681.20 | \$ 963.70 | \$1,844.32 | \$25,720.02 |
| Deputy Wardens | 24.00 | 259.13 | 12.00 | 12.00 | 551.57 | 858.70 |
| Supervision | 1,832.40 | 3,032.33 | 2,099.00 | 1,867.22 | 3,425.70 | 12,256.65 |
| Patrolmen | 10,419.87 | 11,910.38 | 4,907.46 | 2,997.42 | 2,520.07 | 32,755.20 |
| Watchmen | 7,436.21 | 11,091.09 | 7,737.29 | 2,062.74 | 5,067.52 | 33,394.85 |
| Improvements | 13,519.80 | 8,000.39 | 5,776.06 | 7,985.37 | 2,354.94 | 37,636.56 |
| Tools, Supplies | 8,703.05 | 12,048.33 | 7,693.22 | 2,545.18 | 5,401.40 | 36,391.18 |
| Fire Fighting | 755.49 | 410.87 | 1,504.79 | 167.97 | 2,690.00 | 5,529.12 |
| Administration | 1,560.35 | 1,475.55 | 1,383.24 | 1,352.49 | 1,443.00 | 7,214.63 |
| Miscellaneous | 1,229.85 | 1,557.30 | 1,118.15 | 601.91 | 912.83 | 5,420.04 |
| TOTALS | \$55,468.73 | \$58,028.46 | \$36,912.41 | \$20,556.00 | \$26,211.35 | \$197,176.95 |

MAINE FORESTRY DISTRICT



TOTAL DISBURSEMENTS \$ 211,426.39

FINANCE—1930

RECEIPTS

| | | |
|-----------------------------------|--------------|--------------|
| Balance on hand January 1, 1930.. | \$172,954.67 | |
| 1930 Assessment | 168,984.28 | |
| Interest on Deposits | 192.81 | |
| Federal Cooperation° | 49,649.78 | |
| Miscellaneous | 4,300.30 | |
| | <hr/> | |
| Total Receipts | \$396,081.84 | |
| Refund to Land Owners | 50,695.28 | |
| | <hr/> | \$345,386.56 |

DISBURSEMENTS

| | | |
|---------------------------------------|-------------|--------------|
| Chief Wardens | \$25,658.60 | |
| Deputy Wardens | 1,028.81 | |
| Supervision | 10,026.36 | |
| Patrolmen | 33,450.75 | |
| Watchmen | 35,550.42 | |
| Improvements | 27,476.91 | |
| Tools and Supplies | 41,595.31 | |
| Fire Fighting | 24,087.26 | |
| Administration | 8,249.75 | |
| Miscellaneous | 4,302.22 | |
| | <hr/> | 211,426.39 |
| Balance on hand January 1, 1931 | | \$133,960.17 |

Expenditures by Watersheds

| | St. John | Penobscot | Kennebec | Andros-coggin | Machias | Totals |
|-----------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Chief Wardens | \$9,119.89 | \$9,310.56 | \$4,065.46 | \$ 999.44 | \$2,163.25 | \$25,658.60 |
| Deputy Wardens | 30.25 | 537.79 | 18.75 | | 442.02 | 1,028.81 |
| Supervision | 1,317.69 | 2,179.79 | 1,491.63 | 1,338.68 | 3,698.57 | 10,026.36 |
| Patrolmen | 11,563.42 | 11,440.35 | 3,856.67 | 2,881.41 | 3,708.90 | 33,450.75 |
| Watchmen | 7,734.40 | 11,491.12 | 9,090.46 | 1,981.94 | 5,252.50 | 35,550.42 |
| Improvements | 9,015.15 | 7,804.60 | 2,719.42 | 4,089.36 | 3,848.38 | 27,476.91 |
| Tools, Supplies | 10,653.03 | 14,175.03 | 6,974.07 | 3,105.56 | 6,687.62 | 41,595.31 |
| Fire Fighting | 1,806.18 | 9,720.39 | 3,680.52 | 27.50 | 8,852.67 | 24,087.26 |
| Administration | 1,992.78 | 1,671.60 | 1,531.39 | 1,490.16 | 1,563.82 | 8,249.75 |
| Miscellaneous | 1,426.31 | 1,328.88 | 696.01 | 298.90 | 557.12 | 4,302.22 |
| TOTALS | \$54,659.10 | \$69,660.11 | \$34,124.38 | \$16,207.95 | \$36,774.85 | \$211,426.39 |

NORTHERN SECTION**Improvements and Repairs****1929****Madawaska District**

Established camp site in Twp.
16, R. 4
Burned $\frac{1}{2}$ mile slash

1930

Fred C. Knowlen
Chief Warden

Established camp site
Burned 2 miles of slash
12 road signs

New Equipment

1 Ford truck

1 fire pump
1 Ford truck

Improvements and Repairs**Fish River District**

R. L. Brick
Chief Warden

Steel tower erected on DeBoulie
Mt.
Built 10'x12' addition to watch-
man's camp
Painted tower on Hedgehog Mt.
Bushed 14 $\frac{1}{2}$ miles of trail

Built 14 $\frac{1}{2}$ miles telephone line
Portage to Hedgehog Mt.
Built 10 miles telephone line
Portage to Ashland
Burned $\frac{1}{2}$ mile of slash along
highway
12 roadside signs
Cleaned 15 miles of trail

New Equipment

3 telephones
1 Ford truck
11 5-gallon hand pumps
12 shovels
3 mattresses

1 telephone
1 canoe
12 spreads
2 blankets
6 pillows
1 mattress
8 5-gallon hand pumps

Improvements and Repairs**Allagash District**

Grover C. Bradford
Chief Warden

Built 19 miles of copper weld
telephone line
Built 6 miles of galv. telephone
line
Established telephone Central at
mouth of Big Black River
Burned 2 miles of slash

Built 3 miles of telephone line
Bushed all telephone lines
Burned $\frac{1}{2}$ mile of slash along
highway
6 roadside signs

New Equipment

1929

- 2 outboard motors
- 2 canoes
- 12 camp blankets
- 18 5-gallon hand pumps
- 1 Ford truck

1930

- 2 telephones
- 1 outboard motor
- 24 5-gallon hand pumps
- 24 forestry axes
- 24 spades
- 12 camp spreads
- 1 stove
- Sundry dishes for camps

Improvements and Repairs

Aroostook Waters District

Charles Weeks
Chief Warden

- Built 18 miles of pole line
- Built 5 concrete fireplaces at camp sites

- Placed new twin buckles on Round Mt., Oak Hill and Squa Pan Mt. towers
- Built 10 $\frac{1}{4}$ miles of telephone line from Aroostook Road to Howe Brook tower
- Built 42 miles of telephone line
- Placed 2800 ft. of submarine cable in St. Croix Lake
- Cleaned 2 $\frac{1}{2}$ miles of trail
- Burned 2 $\frac{1}{2}$ miles of slash
- 18 roadside signs

New Equipment

- 1 4-cylinder fire pump
- 50 ft. fire hose
- 1 Ford truck
- 8 5-gallon hand pumps
- 2 mattresses
- 6 camp blankets
- 4 camp spreads
- 2 telephones

- 1,450 ft. fire hose
- 1 Ford truck
- 1 stove
- 8 hand pumps
- 12 shovels
- 1 outboard motor
- 2 canoes
- 2 telephones

Improvements and Repairs

No. 9 District

James Cassidy
Chief Warden

- Built a new camp site
- Cleaned 28 miles of trail
- Built 11 miles of telephone line No. 9 Mt. Twp. 8, R. 3

- Erected Howe Brook lookout station
- Cleaned 20 miles of trail
- Built watchman's shelter at Howe Brook lookout station
- Built 2 miles of telephone line

New Equipment

- 6 chopping axes
- 8 5-gallon hand pumps
- 1 telephone

- 1 telephone
- 4 heavy spreads
- 6 knives
- 6 forks

Improvements and Repairs**1929****Katahdin District**

Painted Ragged Mt. tower
 Built 8 miles of new telephone line
 Renewed 18 miles of telephone line
 Burned $\frac{1}{2}$ mile of slash
 Built a boat house

1930**Thomas Perrow
Chief Warden**

Dismantled Black Cat Mt. tower and moved it to Trout Mt.
 Built 6 miles of telephone line to Ragged Mt.
 Built 3 miles of telephone line to Trout Mt.
 Burned $3\frac{1}{2}$ acres of slash
 18 roadside signs

New Equipment

1 Ford truck
 24 5-gallon hand pumps
 2 telephones

2 telephones
 24 shovels
 1 tent
 1 fire pump
 8 hand pumps

Improvements and Repairs**East Branch District****John E. Mitchell
Chief Warden**

Built 3 new camp sites
 Built $14\frac{1}{2}$ miles of telephone line
 Set 30 telephone poles
 Cleaned 4 miles of trail

Established one camp site
 Cut 2 miles of road to Daisey Mt.
 Assisted in construction of station on Daisey Mt.
 6 roadside signs

New Equipment

1 outboard motor
 1 pr. binoculars
 13 5-gallon hand pumps
 2 telephones

2 camp blankets
 2 stoves
 3 mattresses
 1 grindstone
 2 flags
 12 hand pumps

Improvements and Repairs**Mattawamkeag District****Harry G. Tingley
Chief Warden**

Erected new steel tower on Whitney Hill
 Built watchman's camp on Mattawamkeag Lake
 Built patrolman's camp
 Built 17 miles telephone line
 Renewed 70 miles of telephone line
 Established one camp site

Built patrolman's camp at Macwahoc
 Renewed 14 miles of pole line
 Renewed 10 miles of wood line
 Built woodshed at Macwahoc
 24 roadside signs

New Equipment

1929

- 30 shovels
- 30 forestry axes
- 30 canvas pails
- 9 5-gallon hand pumps
- 2 alidades
- 3 pr. field glasses
- 1 test box
- 5 telephones
- Camp equipment for one camp

1930

- 1 fire pump
- 900 ft. fire hose
- 18 axes
- 4 paddles
- 30 axe handles
- 18 canvas pails
- 1 pr. pliers
- 18 forestry axes
- 1 canoe
- 1 outboard motor
- 2 telephones
- 1 extension bell
- 18 shovels
- 1 stove
- Complete camp equipment for 4 persons

Improvements and Repairs

Davidson District

- Built 1 patrolman's camp
- Built 5½ miles of telephone line
- Renewed 4½ miles of telephone line

V. A. Gilpatrick
Chief Warden

- Built 2 miles of telephone line to Daisey Mt.
- Cut 16 miles of trail
- Moved 48 ft. tower from Hunt Mt. to Lawler Hill
- Added 12 ft. section making new tower 60 ft.
- Built watchman's camp
- 6 roadside signs

New Equipment

- 1 desk telephone
- 1 wall telephone
- 1 Ford truck
- Complete equipment for one camp

- 12 hand pumps
- 1 fire pump

WESTERN SECTION

Improvements and Repairs

1929

Seven Islands District

- Built 25 miles of copperweld telephone line from St. Pamphile, P. Q. to mouth of Big Black River

1930

E. L. McKenney
Chief Warden

- Rebuilt 12 miles of telephone line
- Cleaned 15 miles trail

New Equipment

| 1929 | 1930 |
|------------------------|------------------------|
| 1 desk telephone | 2 desk telephones |
| 1 18-ft. canoe (White) | 12 shovels |
| 12 shovels | 6 axes |
| 6 axes | 10 5-gallon hand pumps |
| 10 5-gallon hand pumps | 6 pails (galv.) |
| | 1 Ford truck |
| | 1 flag |
| | 2 pr. pliers |
| | 2 pr. connectors |

Improvements and Repairs

Upper St. John District

Wm. J. McRae
Chief Warden

Painted Hardwood Mt. tower
Renewed 6 miles of old line
Built $1\frac{1}{2}$ miles gravel road
Cut and peeled logs for camp
on Baker Lake

Built 2 miles of line—Daaquam
station to Boundary
Cut 7 miles of trail
Built garage and storehouse at
headquarters
Resurfaced $1\frac{1}{2}$ miles gravel road
Built new patrolman's camp at
Baker Lake

New Equipment

| | |
|-----------------------|--------------------|
| 6 5-gallon hand pumps | 3 telephones |
| 12 forestry axes | 1 Johnson motor |
| 6 shovels | 3 pr. pliers |
| | 2 flags |
| | 3 pr. connectors |
| | 6 axes |
| | 12 shovels |
| | 2 stoves |
| | 1 automobile truck |
| | 6 hand pumps |
| | 1 pr. binoculars |

Improvements and Repairs

Musquacook District

Maurice Bartlett
Chief Warden

Erected new steel tower—Clear
Lake
Erected new steel tower—Priestly
Mt.
Painted new towers
Built watchman's camp—Clear
Lake
Built 11 miles telephone line—
Churchill Dam to Clear Lake
Mt.
Cut and cleared 15 miles tote road
Cut 5 miles new trail

Built 23 miles copperweld line—
Umsaskis Lake to Round Pond
Built $1\frac{1}{2}$ miles of telephone line—
Priestly Mt.
Built telephone line connecting
Norway Bluff and Clear Lake
Mt.

New Equipment

1929

- 3 telephones
- 1 White canoe
- 6 shovels
- 1 Ford truck

1930

- 2 desk telephones
- 1 canoe
- 1 outboard motor
- 14 forestry axes
- 6 hand pumps
- 12 pails
- 6 axes
- 6 cross-cut saws
- 1 flag
- 1 pr. binoculars
- 2 pr. pliers

Improvements and Repairs

Moosehead District

F. P. Conley
Chief Warden

- Built 6 miles pole telephone line across Frenchtown
- Cleaned trails to all fire stations

- Set 5½ miles telephone poles
- Mowed and cleaned 20 miles of trail
- Burned 3 miles of slash

New Equipment

- 2 telephones
- 8 hand pumps
- 12 axes
- Camp equipment for Squaw Mt. camp

- 1 Ford truck
- 2 telephones
- 8 hand pumps
- 6 shovels
- 6 axes
- 1 flag
- 2 pr. pliers

Improvements and Repairs

Seboomook District

Wm. J. Hodgins
Chief Warden

- Rebuilt telephone line to Russell Mt.
- Painted watchman's camp at Green Mt.
- Built new porch on Green Mt. camp
- Placed 14 road signs

- New roof on chief warden's camp
- Built new porch on chief warden's camp
- Painted chief warden's camp
- Placed 27 large road signs
- Built 5 camp sites
- 25 roadside signs

New Equipment

- 1 Ford truck
- 6 hand pumps
- 12 forestry axes
- 6 shovels
- 12 chopping axes
- 12 pails (galv.)

- 1 Ford truck
- 2 telephones
- 10 chopping axes
- 12 forestry axes
- 8 hand pumps
- 12 pails (galv.)
- 1 pr. binoculars
- 2 flags
- 2 1600-ohm ringers
- 1 telephone generator
- 12 blankets

Improvements and Repairs

| 1929 | 1930 |
|--|---|
| Chesuncook District | Alex Cormier <i>Chief Warden</i> |
| Painted watchman's camp—Sou- bunge Mt. | Built 15 miles telephone line— Chesuncook to Pine Stream |
| Renewed telephone line—Grant Farm to Chesuncook | Dam and Grant Farm |
| Renewed telephone line—Spencer Mt. | Built 5 new camp site shelters Raised chief warden's camp and put new foundation under it New floor in chief warden's camp |

New Equipment

| | |
|------------------|------------------|
| 12 forestry axes | 1 motor boat |
| 6 shovels | 1 Ford truck |
| 8 hand pumps | 8 hand pumps |
| 6 pails (galv.) | 12 forestry axes |
| 2 pr. pliers | 6 shovels |
| | 1 telephone |
| | 1 flag |
| | 2 pr. pliers |
| | 2 pr. connectors |

Improvements and Repairs

| | |
|--|--|
| Chamberlain District | Wm. A. Dubay <i>Chief Warden</i> |
| Renewed 9 miles telephone line— Round Pond to Caucomgomoc Lake | Rebuilt telephone line from Cau- comgomoc Lake to Allagash Mt. |
| Cut 18 miles of road | Established fire weather station |
| Cleaned 20 miles of trail | Painted 3 canoes |
| New roof on watchman's camp at Allagash Mt. | 18 miles of road cleared |

New Equipment

| | |
|------------------|-------------------|
| 1 canoe | 7 hand pumps |
| 6 shovels | 1 desk telephone |
| 1 outboard motor | 2 repeating coils |
| | 1 cook stove |
| | 2 pr. pliers |
| | 1 canoe |
| | 1 outboard motor |
| | 6 shovels |
| | 12 axes |
| | 1 pr. binoculars |
| | 1 flag |

EASTERN SECTION**Improvements and Repairs****1929****Pleasant River District**

1½ miles of new telephone line
built
15 miles of road cleared
White Cap Mt. tower repaired
Mattamiscontis Mt. tower
painted

1930

A. H. Chase
Chief Warden

7 miles of new telephone line
built from Seboeis to Mattamis-
contis Mt.
15 miles of telephone rebuilt and
cleared out
New equipment for Mattamiscon-
tis Mt. camp
29 large road signs erected
A cement fireplace on Flint Pond
camp site

New Equipment

1 2-cylinder Northern pump
1,000 ft. fire hose
22 5-gallon hand pumps
4 pr. pliers
2 telephone boxes

1 stove for Mattamiscontis Mt.
12 shovels
12 chopping axes
12 fire axes
2 telephone boxes

Improvements and Repairs**Passadumkeag District**

G. B. Lowell
Chief Warden

4½ miles of new telephone line
built
15 miles of road cleared
3 camp sites established
Dill Ridge tower repaired and
painted
New store house at Lee 20'x24'

1 new camp site established in
town of Lowell
3 lunch grounds erected on Pas-
sadumkeag Stream
3½ miles of new telephone line
built
36 large road signs erected
7 miles of old telephone line re-
built

New Equipment

1 second-hand Ford car
18 5-gallon hand pumps
12 mattocks
12 shovels
12 forestry axes

2 telephones
12 shovels
1 stove
17 heavy spreads
Wangan for 12 men
500 ft. fire hose
10 5-gallon hand pumps
1 pr. binoculars
2 flags
12 forestry axes

Improvements and Repairs

| 1929 | 1930 |
|---------------------------------------|--|
| Union River District | Anton R. Jordan <i>Chief Warden</i> |
| 12½ miles of new telephone line built | 8 miles of new telephone line built |
| 15 miles of road cleared | 12 miles of road cleared |
| 2 camp sites painted | 25 new telephone poles set |
| 1 new camp site established | Schoodic Mt. tower painted |
| 65 new telephone poles set | 35 large road signs erected |
| Schoodic Mt. camp painted | |

New Equipment

| | |
|--------------------------|-------------------|
| 1 second-hand Ford car | New Chevrolet car |
| 27 5-gallon hand pumps | 1 pr. binoculars |
| 24 forestry axes | 1 new alidade |
| 12 axes | 1 flag |
| 6 mattocks | 2 pr. connectors |
| 1 Johnson outboard motor | 3 pr. pliers |
| 1 shed tent | 24 pails |
| 20 blankets | 3 telephones |
| 2 telephones | |

Improvements and Repairs

| | |
|--------------------------------------|--|
| Musquash District | J. J. Kneeland <i>Chief Warden</i> |
| 13½ miles of telephone line re-built | 7 miles of new line erected from Lambert Lake to Vanceboro |
| 4 camp sites painted | Pirate Hill tower painted |
| Musquash Mt. tower painted | Musquash Mt. telephone line re-built |
| Store house at Topsfield 10'x12' | 35 large road signs erected |

New Equipment

| | |
|------------------------|------------------|
| 12 5-gallon hand pumps | 2 telephones |
| 12 forestry axes | 2 pr. pliers |
| | 2 pr. connectors |
| | 1 pr. binoculars |
| | 2 flags |
| | 12 pails |

Improvements and Repairs

| | |
|--|---|
| St. Croix District | A. P. Belmore <i>Chief Warden</i> |
| 8½ miles of telephone line rebuilt | Repaired Pocomoonshine Mt. camp throughout |
| 4 camp sites painted | Rebuilt 5 miles of telephone line on Tomah line |
| New tower house on Pocomoonshine Mt. lookout built | 20 large road signs erected |

New Equipment

1929

- 1 4-cylinder Pacific pump
- 1,500 ft. fire hose
- 18 5-gallon hand pumps
- 8 blankets
- 1 telephone

1930

- 1 outboard motor
- 1 canoe 20'
- 12 axes
- 1 new Ford truck
- 1 pr. binoculars
- 2 pr. pliers

Improvements and Repairs

East Machias District

G. E. Hathaway
Chief Warden

- ½ mile new telephone line built
- Cooper Mt. tower house painted

- 7 miles of telephone cleared and rebuilt
- 2 new camp sites
- 35 large road signs erected

New Equipment

- 18 5-gallon hand pumps
- 6 mattocks

- 6 5-gallon hand pumps
- 1 second-hand Ford car
- ½ mile slash burned Twp. 18

Improvements and Repairs

Machias District

Harry McReavy
Chief Warden

- 6 miles of road cleared
- 150 telephone poles set on air line road
- 4 camp sites painted
- Lead Mt. tower house painted

- Bald Mt. tower painted
- 12 miles of trails cleared
- 130 poles set on air line road
- 6 miles of new wire replaced
- 3 lunch grounds established
- 25 large road signs erected

New Equipment

- 1 4-cylinder Pacific pump
- 1,500 ft. fire hose
- 12 forestry axes
- 25 5-gallon hand pumps
- 12 shovels

- 1 new Ford truck
- 1 canoe 20'
- 2 tents 10'x12'
- 6 heavy spreads
- 3 sinks
- 2 pr. binoculars
- 3 flags
- 2 pr. pliers
- 2 pr. connectors
- 12 axes
- 12 shovels
- 1 Johnson outboard motor

SOUTHERN SECTION**Improvements and Repairs****1929****Dead River District**

New roof for Snow Mt. tower
 Windows replaced in Flagstaff
 Mt. tower
 6 miles of new telephone line
 built
 4 miles of old line re-hung and
 cleared out

1930

Ralph Wing
Chief Warden

New watchman's cabin built on
 Mt. Bigelow
 2 miles of trail opened into the
 Notch on Mt. Bigelow where
 the new cabin is located
 23 new large road signs erected in
 the District
 1 mile of slash burned in Wyman
 along the State road

New Equipment

1 4-cylinder Pacific pump
 1,500 ft. hose
 1 Siamese connection
 4 hose spanners
 8 5-gallon hand pumps
 1 Ford $\frac{3}{4}$ -ton truck
 24 forestry axes
 1 pr. pliers
 1 desk telephone and set
 1 pr. climbing irons
 1 alidade
 1 table glass
 12 large road signs

1 stove for Mt. Bigelow cabin

Improvements and Repairs**Carrabassett District**

2 camp sites established
 8 miles of telephone line re-hung
 and cleared
 15 large road signs framed and
 set up

A. R. Henderson
Chief Warden

Re-located and brushed out 2
 miles of the trail to Mt. Abram
 Lookout
 27 road sign frames painted
 7 new road signs set up
 1 mile of slash burned along the
 State road in Crockertown

New Equipment

1 Ford $\frac{3}{4}$ -ton truck
 750 ft. hose
 1 Siamese connection
 6 spanners
 1 hose nozzle
 11 5-gallon hand pumps
 48 pails (galv.)
 24 forestry axes

1 new 4-cylinder Northern pump
 at Kingfield
 1 new 4-cylinder Northern pump
 at Stratton
 12 5-gallon hand pumps
 1 desk telephone for Mt. Abram
 lookout
 12 canvas pails

Improvements and Repairs

1929

Parlin Pond District

New cabin built on Mt. Coburn tower
 10 miles of pole telephone line built
 12 miles of telephone line rebuilt and re-hung
 18 miles of telephone line cleared
 All camp sites painted

1930

**Ralph Sterling
 Chief Warden**

4 miles of new wire strung on the Grace Pond telephone line
 18 miles of wire re-hung on new cross arms from Caratunk to mouth of Coburn road
 2 miles of telephone line relocated on the road to Pleasant Pond
 4-cylinder Northern pump overhauled and repaired
 75 large road sign frames painted
 12 miles of new road slash burned along the new Bingham-Moscow road

New Equipment

1 4-cylinder Pacific pump
 750 ft. hose
 3 Siamese connections
 8 5-gallon hand pumps
 1 Ford $\frac{3}{4}$ -ton truck
 24 forestry axes
 24 large road signs
 1 pr. climbing irons
 1 pr. connectors
 1 pr. pliers
 Complete tower equipment for Mt. Coburn

15 5-gallon hand pumps
 2 new wall telephones

Improvements and Repairs

Moose River District

4 miles new woods line built
 22 miles of woods line cleared
 1 new telephone installed
 6 miles of slash burned
 26 large road signs framed and set up
 All camp sites painted

**George G. Nichols
 Chief Warden**

1 new camp site established in Jackman Pl. at foot of Owl's Head on the State road
 2 miles of new telephone line strung between Rock Pond and Tumbledown Mt. to replace old wire
 30 miles of woods line rebushed and cleared

New Equipment

1 4-cylinder Pacific pump
 400 ft. hose
 12 5-gallon hand pumps
 24 forestry axes
 1 Ford $\frac{3}{4}$ -ton truck
 1 pr. climbing irons
 1 pr. pliers
 1 pr. connectors

1 20' canoe (White)
 1 Johnson motor
 6 5-gallon hand pumps
 24 spades
 9 canvas pails
 2 desk telephones for Lookout towers

Improvements and Repairs

1929

Rangeley District

Re-located the steel tower on Aziscoos Mt.
 Built 10'x10' additions on two watchmen's cabins
 Established two large tenting grounds, one in Upper Richardson Lake and one in Cupsuptic Lake
 Rebuilt 20 miles of pole line in cooperation with the Androscoggin Telephone Company

1930

Frank C. King
 C. C. Murphy
 S. F. Peaslee
Chief Wardens

1 new camp site and tenting ground established at the head of Aziscoos Lake
 12 miles of new metallic circuit strung from Old Spec Mt. to Newry Corner in cooperation with the Androscoggin Lakes Tel. & Tel. Co.
 6 miles of new metallic circuit strung from Newry Corner into Bethel Central on the poles of the New England Tel. Co.
 2 miles of telephone line rebuilt and re-strung around Dead River Pond
 150 new telephone poles placed along the Dallas road to Dead River Pond for 4 miles
 30 miles of woods line thoroughly bushed out and wire re-strung in cooperation with the Brown Co. from Aziscoos Dam, up the Lake to Flynt's Camp at the head of the Lake, through Parmachenee to Bowmantown farm
 8 miles of old wire renewed
 10 miles of woods line from Cupsuptic storehouse by Lincoln Pond to Aziscoos Lake thoroughly bushed out and re-strung
 7 miles of woods road bushed out and thoroughly cleared from Cupsuptic Falls by Lincoln Pond to Aziscoos Lake
 16 miles of woods road bushed out and thoroughly cleared from Kennebago to Moose Brook and Bowmantown.
 31 wooden frames for large road signs were built, painted and set up throughout the District
 12 miles of slash along the right of way of the Oquossoc Light and Power Co. were burned during the last season.
 About 1 mile of slash was burned along the State highway

1929

1930

The Department has purchased a cabin completely furnished which will be located on Little Pine Island for use of the patrolman in this section
6 miles wire bushed out and hung up from Cupsuptic road to Moose Brook camp

New Equipment

1 Ford truck
4 4-cylinder Pacific pumps
3,400 ft. hose
10 hose spanners
5 Siamese connections
47 5-gallon hand pumps
120 forestry axes
12 long handled shovels
48 pails (galv.)
1 21' Rangeley boat

1 glass top for the map table on Aziscoos Mt.
1 $\frac{1}{2}$ -ton Ford truck
18 5-gallon hand pumps
12 shovels
36 pails
12 axes

**SUMMARY OF PRINCIPAL IMPROVEMENTS AND
NEW EQUIPMENT ADDED IN YEARS 1929-1930**

| Improvements | 1929 | | 1930 | |
|-----------------------------|-------------|-------|-------------|-------|
| Telephone lines cleaned | 175 | miles | 265½ | miles |
| New telephone lines | 169½ | " | 185 | " |
| Telephone lines rebuilt | 188 | " | 201½ | " |
| Slash burned | 9 | " | 29 | " |
| Telephone poles set | 1,459 | | 465 | |
| Camp sites established | 13 | | 13 | |
| Storehouse built | | | 5 | |
| Camps built | 9 | | 5 | |
| Steel towers painted | 11 | | 3 | |
| Tower houses painted | | | 3 | |
| Towers erected | 4 | | 2 | |
| Towers repaired | 3 | | 3 | |
| Roadside signs | | | 548 | |
| Steel bought for new towers | | | 3 | |
| | | | | |
| Equipment | 1929 | | 1930 | |
| 5 gallon hand pumps | 384 | | 201 | |
| Fire pumps | 9 | | 6 | |
| Fire hose | 6,950 | ft. | 2,850 | ft. |
| Trucks | 16 | | 11 | |
| Automobiles | 3 | | 3 | |
| Forestry axes | 240 | | 104 | |
| Chopping axes | 36 | | 112 | |
| Shovels | 144 | | 186 | |
| Tents | 3 | | 3 | |
| Heavy spreads and blankets | 78 | | 51 | |
| Telephones | 44 | | 36 | |
| Canoes | 5 | | 9 | |
| Outboard motors | 6 | | 8 | |
| Stoves | 8 | | 8 | |

MAINE FORESTRY DISTRICT INVENTORY

| Section | District | Deputies | Watchmen | Patrolmen | Pumps Power | No. Feet Hose | Telephone Lines, Miles | Camps | Towers | Trucks | Boats | Canoes | Motor Boats | Motors | Hand Pumps |
|---------------|------------------------------|----------|----------|-----------|-------------|---------------|------------------------|-------|--------|--------|-------|--------|-------------|--------|------------|
| NORTHERN | ALLAGASH | 7 | 2 | 6 | 2 | 2,700 | 100 | 6 | 2 | 2 | .. | 7 | .. | 4 | 50 |
| | MADAWASKA | 7 | 2 | 2 | 1 | 1,500 | 40 | 2 | 2 | 2 | 1 | 1 | .. | 2 | 10 |
| | FISH RIVER | 11 | 3 | 1 | 2 | 1,700 | 81½ | 5 | 3 | 1 | 2 | 4 | 1 | 1 | 21 |
| | AROOSTOOK WATERS | 18 | 4 | 4 | 2 | 1,450 | 120 | 7 | 4 | 3 | 2 | 5 | .. | 3 | 19 |
| | NUMBER NINE | 13 | 2 | 2 | 1 | 1,000 | 20 | 2 | 2 | 1 | .. | .. | .. | .. | 10 |
| | MATTAWAMKEAG | 9 | 4 | 1 | 1 | 1,900 | 61 | 6 | 4 | 1 | .. | 3 | .. | 1 | 17 |
| | EAST BRANCH | 11 | 5 | 6 | 1 | 1,500 | 87½ | 9 | 5 | 1 | .. | 6 | .. | 3 | 26 |
| | DAVIDSON | 5 | 2 | 1 | 1 | 950 | 32 4-5 | 3 | 2 | 1 | .. | 2 | .. | 1 | 26 |
| KATAHDIN | 9 | 2 | 3 | 2 | 2,150 | 91 | 4 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 17 |
| EASTERN | PLEASANT RIVER | 7 | 3 | 1 | 2 | 1,500 | 60 | 4 | 3 | 1 | .. | .. | .. | .. | 20 |
| | PASSADUMKEAG | 12 | 2 | 1 | 2 | 3,300 | 83 | 4 | 2 | 1 | 1 | 1 | .. | 1 | 33 |
| | MUSQUASH | 12 | 2 | .. | 1 | 1,500 | 3½ | 2 | 2 | .. | .. | .. | .. | .. | 11 |
| | ST. CROIX | 8 | 1 | 1 | 2 | 3,000 | 80¼ | 3 | 1 | 1 | .. | 3 | 1 | 1 | 20 |
| | EAST MACHIAS | 16 | 1 | 1 | 1 | 1,500 | 1 | 1 | 1 | 1 | .. | 1 | .. | .. | 11 |
| | MACHIAS | 17 | 4 | 2 | 2 | 3,000 | 76 | 7 | 4 | 1 | .. | 3 | 1 | 1 | 27 |
| | { NARRAGUAGUS UNION RIVER | 14 | 1 | .. | 3 | 4,500 | 46 | 1 | 1 | 1 | .. | 1 | .. | 1 | 29 |
| SOUTHERN | CARRABASSETT | 2 | 1 | .. | 2 | 2,200 | 27 | 1 | 1 | 1 | .. | .. | .. | .. | 25 |
| | RANGELEY | 17 | 4 | 5 | 4 | 4,500 | 93 | 8 | 5 | 1 | 1 | .. | .. | .. | 39 |
| | DEAD RIVER | 22 | 2 | 1 | 2 | 3,000 | 88 | 1 | 3 | 1 | .. | .. | .. | .. | 5 |
| | MOOSE RIVER | 16 | 5 | 1 | 2 | 1,700 | 89 | 5 | 5 | 1 | .. | 1 | .. | 1 | 13 |
| | PARLIN POND | 18 | 3 | 1 | 3 | 2,600 | 117 | 4 | 3 | 2 | 2 | 1 | .. | .. | 15 |
| WESTERN | SEVEN ISLANDS | 1 | 1 | 3 | 1 | 1,500 | 75 | 7 | 1 | 1 | .. | 4 | .. | 1 | 31 |
| | UPPER ST. JOHN | 2 | 1 | 3 | 1 | 1,500 | 72 | 6 | 1 | 1 | .. | 5 | .. | 2 | 15 |
| | MUSQUACOOK | 1 | 2 | 2 | 1 | 1,500 | 40 | 4 | 2 | 1 | .. | 5 | .. | 4 | 17 |
| | SEBOOMOOK | 6 | 2 | 1 | 1 | 1,500 | 14¼ | 4 | 3 | 2 | .. | .. | .. | .. | 17 |
| | MOOSEHEAD | 18 | 4 | .. | 1 | 1,500 | 45 | 4 | 4 | 1 | .. | .. | .. | 1 | 16 |
| | CHESUNCOOK | 1 | 2 | 2 | 1 | 1,600 | 5 | 5 | 3 | 2 | 1 | 1 | 1 | 2 | 16 |
| | CHAMBERLAIN | 5 | 2 | 2 | 1 | 1,500 | 37 | 4 | 2 | .. | 1 | 7 | .. | 4 | 18 |
| TOTALS | | 285 | 69 | 53 | 46 | 57,750 | 1,685 4-5 | 119 | 73 | 33 | 15 | 62 | 6 | 35 | 574 |

FOR SEASON OF 1930

| Axes | Forestry Axes | Mattocks | Pails | Shovels | Tents | Boat Houses | Garages | Store Houses | Camp Sites | Tele-phones | Townships Number of |
|-------|---------------|----------|-------|---------|-------|-------------|---------|--------------|------------|-------------|---------------------|
| 11 | 72 | 7 | 95 | 111 | 3 | .. | 1 | 1 | 6 | 14 | 29½ |
| 18 | 20 | 7 | 51 | 51 | .. | 1 | 1 | .. | 4 | 10 | 9½ |
| 3 | 49 | 67 | 104 | 102 | .. | 1 | 1 | 1 | 5 | 11 | 14 |
| 27 | 45 | 128 | 166 | 151 | 5 | 1 | 2 | 2 | 7 | 21 | 28½ |
| 11 | 39 | 38 | 80 | 79 | 1 | .. | .. | .. | 3 | 5 | 11 |
| 46 | 97 | 40 | 62 | 122 | 2 | .. | 1 | 1 | 3 | 12 | 15 |
| 242 | 18 | 234 | 269 | 244 | 2 | 2 | .. | 3 | 6 | 21 | 18½ |
| 10 | 7 | 3 | 28 | 21 | .. | .. | 1 | .. | 3 | 7 | 3 |
| 8 | 5 | 9 | 23 | 63 | .. | 2 | .. | .. | 2 | 16 | 19½ |
| 16 | 24 | 8 | 84 | 56 | 1 | .. | .. | .. | 1 | 10 | 16½ |
| 24 | 19 | 175 | 93 | 158 | 1 | 1 | 1 | 1 | 4 | 15 | 12 |
| 8 | 11 | 10 | 17 | 30 | .. | .. | .. | .. | 3 | 3 | 9 |
| 37 | 28 | 14 | 76 | 92 | 4 | .. | .. | .. | 4 | 19 | 10½ |
| 29 | 6 | 109 | 114 | 222 | 1 | .. | .. | .. | 3 | 3 | 9 |
| 12 | 12 | 73 | 73 | 122 | 2 | 1 | 1 | 2 | 3 | 11 | 13½ |
| 19 | 26 | 47 | 76 | 121 | .. | .. | .. | .. | 3 | 7 | 14 |
| 19 | 30 | 65 | 112 | 99 | .. | .. | .. | .. | 3 | 7 | 4 |
| 164 | 69 | 51 | 645 | 159 | .. | .. | .. | .. | 39 | 15 | 27½ |
| 63 | 3 | 66 | 187 | 155 | .. | .. | .. | .. | 2 | 7 | 17½ |
| 119 | 24 | 160 | 262 | 248 | 1 | .. | .. | 1 | 3 | 18 | 25 |
| 66 | 27 | 146 | 264 | 245 | .. | .. | .. | .. | 2 | 35 | 25 |
| 6 | 13 | 13 | 40 | 75 | 1 | .. | .. | 3 | .. | 7 | 13 |
| 44 | 22 | 12 | 69 | 64 | 4 | .. | 1 | 1 | .. | 16 | 18 |
| 7 | 41 | 16 | 35 | 43 | 2 | .. | .. | 1 | 1 | 9 | 14½ |
| 27 | 18 | 25 | 44 | 38 | 4 | .. | 1 | 2 | 4 | 4 | 32 |
| 190 | 42 | 194 | 278 | 226 | .. | .. | .. | .. | 2 | 13 | 14 |
| 60 | 20 | 12 | 80 | 75 | .. | 1 | 1 | 1 | 8 | 7 | 16 |
| 42 | 17 | 32 | 75 | 72 | 2 | 1 | .. | 1 | .. | 9 | 15 |
| 1,328 | 804 | 1,761 | 3,502 | 3,244 | 40 | 11 | 12 | 20 | 124 | 329 | 454½ |

LOOKOUT STATIONS

| STATION | OPENED | | CLOSED | | NO. FIRES | |
|------------------------|---------|---------|----------|----------|-----------|------|
| | 1929 | 1930 | 1929 | 1930 | 1929 | 1930 |
| Allagash Mt..... | June 10 | May 18 | Sept. 21 | Sept. 25 | 0 | 1 |
| Azisocos Mt..... | May 16 | May 11 | Sept. 23 | Oct. 19 | 2 | 3 |
| Beetle Mt..... | June 2 | May 11 | Oct. 5 | Sept. 30 | 6 | 4 |
| Bigelow Mt..... | May 27 | May 13 | Oct. 18 | Oct. 22 | 4 | 10 |
| Black Cat Mt..... | May 29 | May 10 | Sept. 28 | Sept. 18 | 1 | 3 |
| Boarstone Mt..... | May 14 | May 10 | Oct. 12 | Oct. 23 | 11 | 15 |
| Boundary Bald Mt..... | May 28 | May 7 | Oct. 3 | Oct. 21 | 5 | 1 |
| Burnt Mt..... | May 26 | May 11 | Oct. 4 | Sept. 30 | 2 | 2 |
| Carr Pond Mt..... | June 12 | May 25 | Sept. 30 | Sept. 14 | 0 | 1 |
| Clear Lake Mt..... | July 15 | May 12 | Oct. 3 | Sept. 23 | 0 | 0 |
| Coburn Mt..... | May 28 | May 13 | Oct. 13 | Oct. 27 | 0 | 2 |
| Cooper Mt..... | May 13 | May 1 | Oct. 22 | Oct. 24 | 14 | 15 |
| Deboulie Mt..... | June 3 | May 11 | Sept. 11 | Sept. 22 | 0 | 10 |
| *Deer Mt..... | | | | | | |
| Depot Mt..... | May 26 | May 12 | Sept. 28 | Sept. 2 | 0 | 0 |
| Dill Ridge Mt..... | May 20 | May 1 | Oct. 12 | Oct. 21 | 0 | 0 |
| **Flagstaff Mt..... | | | | | | |
| Green Mt..... | May 1 | May 15 | Oct. 31 | Sept. 6 | 18 | 2 |
| Hardwood Mt..... | June 16 | June 8 | Oct. 4 | Sept. 28 | 5 | 2 |
| Hedgehog Mt..... | May 18 | May 12 | Sept. 30 | Sept. 15 | 2 | 7 |
| Horse Mt..... | May 27 | May 10 | Oct. 4 | Sept. 21 | 6 | 4 |
| Hunt Mt..... | May 1 | May 10 | Oct. 4 | Oct. 17 | 14 | 16 |
| Kibbie Mt..... | June 3 | May 26 | Oct. 5 | Oct. 17 | 5 | 1 |
| Kineo Mt..... | May 2 | May 9 | Oct. 4 | Sept. 30 | 6 | 4 |
| Lead Mt..... | May 12 | May 4 | Oct. 18 | Oct. 24 | 13 | 39 |
| Little Russell Mt..... | June 21 | May 11 | Sept. 28 | Oct. 15 | 1 | 0 |
| Mattamiscontis Mt..... | June 10 | May 10 | Oct. 14 | Oct. 20 | 4 | 8 |
| *May Mt..... | | | | | | |
| Mt. Abram..... | May 27 | May 12 | Oct. 5 | Oct. 19 | 4 | 4 |
| Mt. Chase..... | May 26 | May 11 | Sept. 21 | Oct. 1 | 4 | 2 |
| Mitchell Mt..... | May 15 | May 8 | Sept. 29 | Oct. 16 | 5 | 4 |
| Moxie Bald Mt..... | May 29 | May 5 | Oct. 13 | Oct. 27 | 0 | 7 |
| Musquacook Mt..... | May 27 | May 13 | Oct. 5 | Sept. 15 | 1 | 3 |
| Musquash Mt..... | May 15 | May 1 | Oct. 18 | Oct. 25 | 6 | 11 |
| No. 4 Mt..... | May 28 | May 9 | Oct. 3 | Sept. 20 | 5 | 5 |
| No. 9 Mt..... | May 13 | May 11 | Oct. 12 | Sept. 26 | 0 | 0 |
| Norway Bluff Mt..... | June 16 | June 8 | Oct. 7 | Sept. 15 | 0 | 7 |
| **Nulhedus Mt..... | | | | | | |
| Oak Hill Mt..... | May 28 | May 18 | Oct. 3 | Sept. 19 | 5 | 0 |
| Old Spec Mt..... | May 27 | June 14 | Sept. 18 | Oct. 19 | 3 | 0 |
| Otter Lake Mt..... | May 24 | May 10 | Oct. 3 | Oct. 3 | 10 | 17 |
| Passadumkeag Mt..... | May 13 | May 1 | Oct. 21 | Oct. 21 | 4 | 7 |
| Pirate Hill Mt..... | May 15 | May 4 | Oct. 18 | Oct. 24 | 2 | 5 |
| *Pleasant Pond Mt..... | | | | | | |
| Pocomoonshine Mt..... | May 11 | Apr. 30 | Oct. 18 | Oct. 24 | 6 | 20 |
| Priestly Mt..... | June 14 | May 12 | Oct. 5 | Sept. 21 | 0 | 4 |
| Ragged Mt..... | May 21 | May 9 | Oct. 5 | Sept. 18 | 8 | 6 |
| Rocky Mt..... | May 28 | May 13 | Oct. 5 | Sept. 30 | 12 | 13 |
| Round Mt..... | May 24 | May 11 | Oct. 5 | Oct. 23 | 2 | 1 |
| Saddleback Mt..... | May 18 | May 13 | Oct. 6 | Sept. 20 | 8 | 1 |
| Sally Mt..... | May 28 | May 4 | Sept. 28 | Oct. 18 | 0 | 9 |
| Schoodie Mt..... | May 14 | May 1 | Oct. 12 | Oct. 18 | 0 | 14 |
| Snow Mt..... | June 2 | Aug. 10 | Sept. 28 | Oct. 20 | 8 | 8 |
| Soper Mt..... | June 3 | May 18 | Oct. 5 | Sept. 2 | 2 | 3 |
| Soubunge Mt..... | June 10 | June 9 | Sept. 7 | Sept. 30 | 2 | 1 |
| Spencer Mt..... | May 16 | May 9 | Oct. 6 | Oct. 28 | 18 | 9 |
| Spoon Mt..... | May 30 | May 18 | Oct. 5 | Sept. 22 | 2 | 0 |
| Squanan Mt..... | May 29 | May 10 | Oct. 5 | Sept. 19 | 3 | 0 |
| Squan Mt..... | May 28 | May 9 | Oct. 3 | Oct. 16 | 5 | 4 |
| *Stockholm Mt..... | May 29 | | Sept. 28 | | 4 | 0 |

FOREST COMMISSIONER'S REPORT

| | | | | | | |
|------------------------------------|---------|--------|----------|----------|-----|-----|
| Three Brooks Mt..... | May 19 | May 11 | Oct. 4 | Sept. 28 | 3 | 3 |
| Tumbledown Mt..... | June 11 | May 15 | Oct. 5 | Oct. 16 | 1 | 2 |
| Wadleigh Mt..... | June 2 | May 14 | Aug. 3 | Aug. 30 | 0 | 1 |
| Washington Bald Mt..... | May 12 | May 1 | Oct. 19 | Oct. 24 | 12 | 13 |
| Wesley Mt..... | May 12 | May 7 | Oct. 17 | Oct. 18 | 4 | 9 |
| Whitney Hill Mt..... | June 18 | May 10 | Sept. 29 | Oct. 21 | 5 | 9 |
| West Kennebago Mt..... | May 15 | May 17 | Sept. 23 | Oct. 19 | 8 | 8 |
| Whitecap Mt..... | June 9 | June 1 | Oct. 14 | Sept. 30 | 5 | 7 |
| Williams Mt..... | May 29 | May 10 | Oct. 3 | Oct. 19 | 5 | 8 |
| | | | | | 291 | 382 |
| Fires discovered by patrolmen..... | | | | | | 55 |
| | | | | | | 437 |

*Emergency stations opened for a few days.

**Emergency stations not opened.

FIRE RECORD — 1929

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|---------------------------|----------|-----------------|---------------|----------|
| AROOSTOOK COUNTY | | | | |
| T. 12, R. 13, W.E.L.S. | May 11 | 3 | Lumbermen | |
| T. A, R. 2, W.E.L.S. | May 22 | 1 | Railroad | \$10.00 |
| T. 7, R. 5, W.E.L.S. | May 26 | 10 | Fishermen | |
| Winterville Pl. | May 28 | 100 | Unknown | 740.00 |
| T. 17, R. 5, W.E.L.S. | May 30 | 100 | Brush burning | 40.00 |
| Reed Pl. | June 12 | | Brush burning | |
| T. 8, R. 4, W.E.L.S. | June 21 | | old wharf | Unknown |
| T. 1, R. 5, W.E.L.S. | July 13 | | Tourists | |
| T. 10, R. 6, W.E.L.S. | July 14 | 6 sq. rods | Fishermen | |
| T. 4, R. 3, W.E.L.S. | July 17 | 1 | Fishermen | 10.00 |
| T. 11, R. 8, W.E.L.S. | July 25 | 1 | Lightning | |
| T. 7, R. 4, W.E.L.S. | Aug. 20 | 1 | Berry Pickers | |
| T. 10, R. 6, W.E.L.S. | Aug. 21 | 1 | Berry Pickers | |
| Silver Ridge | Aug. 31 | 1 | Brush burning | |
| T. 15, R. 5, W.E.L.S. | Sept. 8 | Camp yard | Hunters | |
| T. D, R. 2, W.E.L.S. | Sept. 23 | 1 | Brush burning | |
| FRANKLIN COUNTY | | | | |
| T. 3, R. 4, W.B.K.P. | June 8 | saw mill | Lumbering | |
| Redington | June 12 | 250 | Smokers | 1,175.00 |
| T. 3, R. 3, W.B.K.P. | Aug. 11 | 1 sq. rod | Lightning | |
| T. 3, R. 3, W.B.K.P. | Sept. 2 | $\frac{1}{2}$ | Smokers | 10.00 |
| HANCOCK COUNTY | | | | |
| T. 10, S. D. | May 12 | 250 | Incendiary | 700.00 |
| T. 7, S. D. | May 26 | 20 | Incendiary | 20.00 |
| T. 22, M. D. | June 18 | $\frac{1}{2}$ | Smokers | |
| Osborn Pl. | July 17 | $\frac{1}{2}$ | Incendiary | 25.00 |
| T. 7, S. D. | July 31 | 5 | Smokers | 25.00 |
| T. 34, M. D. | Aug. 1 | $\frac{1}{2}$ | Lightning | 5.00 |
| T. 32, M. D. | Aug. 2 | $\frac{1}{2}$ | Unknown | |
| PENOBSCOT COUNTY | | | | |
| Indian No. 3. | May 15 | 40 | Fishermen | 400.00 |
| T. 6, R. 7, W.E.L.S. | May 26 | 10 | Fishermen | 8.00 |
| Indian No. 3. | June 11 | $\frac{1}{2}$ | Campers | 155.00 |
| T. 1, R. 7, W.E.L.S. | June 18 | 2 | Smokers | 30.00 |
| T. 3, N. D. | July 12 | 21 | Fishermen | 150.00 |
| T. 5, R. 7, W.E.L.S. | Aug. 1 | | Lightning | |
| T. 4, R. 14, W.E.L.S. | Aug. 3 | 1 $\frac{1}{2}$ | Campers | 15.00 |
| T. 5, R. 13, W.E.L.S. | Aug. 11 | | Lightning | |
| Indian No. 3. | Aug. 22 | $\frac{1}{2}$ | Blasting | |
| T. 1, R. 9, W.E.L.S. | Sept. 2 | | Campers | |
| T. 6, R. 7, W.E.L.S. | Sept. 3 | | Smokers | |
| T. A, R. 7, W.E.L.S. | Sept. 6 | | Campers | |
| T. A, R. 7, W.E.L.S. | Oct. 1 | $\frac{1}{2}$ | Hunters | |
| Indian No. 3. | Oct. 13 | $\frac{1}{2}$ | Hunters | |
| Indian No. 3. | Oct. 26 | $\frac{1}{2}$ | Hunters | 5.00 |
| PISCATAQUIS COUNTY | | | | |
| Squaw Island | June 18 | $\frac{1}{2}$ | Campers | 24.00 |
| T. 6, R. 10, W.E.L.S. | July 6 | $\frac{1}{2}$ | Campers | 4.00 |
| Gore, A, R. 2, W.E.L.S. | July 7 | $\frac{1}{2}$ | Lightning | 20.00 |
| T. A, R. 12, W.E.L.S. | July 7 | $\frac{1}{2}$ | Lightning | 10.00 |
| T. 7, R. 9, W.E.L.S. | July 7 | $\frac{1}{2}$ | Lightning | 5.00 |
| T. B, R. 10, W.E.L.S. | July 7 | $\frac{1}{2}$ | Hunters | 5.00 |
| T. A, R. 10, W.E.L.S. | July 10 | $\frac{1}{2}$ | Lightning | |
| T. 1, R. 11, W.E.L.S. | July 18 | 1 $\frac{1}{2}$ | Lightning | 40.00 |
| T. 5, R. 10, W.E.L.S. | July 29 | | Lightning | |
| T. 5, R. 10, W.E.L.S. | Aug. 12 | | Lightning | |
| T. 3, R. 13, W.E.L.S. | Aug. 14 | ro | Fishermen | |
| T. 3, R. 9, W.E.L.S. | Aug. 20 | | Lightning | |
| T. A, R. 13, W.E.L.S. | Sept. 8 | 1 | Berry pickers | 10.00 |
| Gore, A, R. 2, W.E.L.S. | Sept. 29 | 1 $\frac{1}{2}$ | Campers | 40.00 |
| T. 1, R. 10, W.E.L.S. | Oct. 20 | $\frac{1}{2}$ | Campers | 5.00 |

FOREST COMMISSIONER'S REPORT

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|--|---------|---------|-----------------------|----------|
| SOMERSET COUNTY | | | | |
| Moscow | May 14 | 10 | Surveyors | |
| Moscow | May 26 | 10 | Fishermen | \$200.00 |
| Jackman, Moose River, Long Pond and Thorndike | May 26 | 108 | Fishermen | 1,080.00 |
| Lexington | May 26 | 15 | Fishermen | |
| Rockwood Strip | June 11 | 1½ | Lumbermen | 52.00 |
| West Moxie | July 12 | 1 | Fishermen | 25.00 |
| Moscow | Aug. 1 | ½ | Smokers | 3,000.00 |
| Kingsbury Pl. | Aug. 1 | 1 | Smokers | |
| Moscow | Aug. 15 | ½ | Burning rubbish | |
| Bigelow Pl. | Aug. 22 | ½ | Lumbering | |
| East Rockwood Strip | Oct. 1 | 1 | Hunters | 30.00 |
| West Moxie | Oct. 6 | 1 | Smokers | 5.00 |
| Moscow | Oct. 11 | | Hunters | |
| Moxie Gore | Oct. 12 | 5 | Lumbermen | 25.00 |
| WASHINGTON COUNTY | | | | |
| Plantation No. 14 | May 10 | 3 | Brush burning | 100.00 |
| T. 24, M. D. and 30, M. D. | May 11 | 150 | Brush burning | 200.00 |
| Indian Township | May 11 | 1½ | Unknown | 20.00 |
| Deblois | May 13 | 40 | Fishermen | 880.00 |
| Marion | May 14 | | Brush burning | |
| Marion | May 14 | 6 | Unknown | |
| T. 18, M. D. | May 14 | 10 | Fishermen | |
| Marion | June 16 | 100 | Hunters | 650.00 |
| Codyville | June 19 | 3 | Smokers | 10.00 |
| Northfield | June 20 | 5 | Unknown | 350.00 |
| Codyville | June 20 | 5 | Smokers | 10.00 |
| Hinckley Township | July 21 | 2 | Incendiary | 25.00 |
| Hinckley Township | July 26 | ½ | Incendiary | 15.00 |
| Beddington | Aug. 3 | ½ | Smokers | |
| T. 36 M. D. | Aug. 3 | 2 | Lightning | |
| T. 42, M. D. | Aug. 9 | 1 | Campers | |
| Marion | Aug. 27 | ½ | Railroad | |
| T. 36 M. D. | Aug. 31 | 5 | Lightning | 1,000.00 |
| Whiting | Sept. 1 | 2 | Lumbering | |

FIRE RECORD—1930

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|-------------------------------|----------|--------------|----------------|----------|
| AROOSTOOK COUNTY | | | | |
| Macwahoc Pl. | May 5 | 3 | Children | |
| Hammond Pl. | May 11 | 1 | Fishermen | |
| Garfield Pl. | May 11 | 4 | Unknown | |
| T. E. R. 2 W.E.L.S. | May 11 | 30 | Farmers | \$75.00 |
| T. S. R. 4 W.E.L.S. | May 11 | 7 | Unknown | |
| T. 17, R. 11 W.E.L.S. | May 11 | 10 | Farmers | 20.00 |
| T. C. R. 2 W.E.L.S. | May 11 | | Farmers | |
| T. 20, R's 11 and 12 W.E.L.S. | May 12 | 40 | Fishermen | 100.00 |
| T. 15, R. 6 W.E.L.S. | May 14 | 2 | Lumbermen | 20.00 |
| T. 15, R. 6 W.E.L.S. | May 15 | 2 | Lumbermen | 20.00 |
| Winterville Pl. W.E.L.S. | May 17 | 2 | Farmers | |
| T. D. R. 2 W.E.L.S. | May 19 | 4 | Fishermen | |
| T. 12, R. 13 W.E.L.S. | May 24 | 30 | River Drivers | 500.00 |
| T. 12, R. 13 W.E.L.S. | June 6 | | Lightning | |
| Silver Ridge Pl. W.E.L.S. | July 23 | 2 | Farmers | |
| T. 7, R. 4 W.E.L.S. | Oct. 13 | 30 | Hunters | 50.00 |
| T. 17, R. 4 W.E.L.S. | Nov. 23 | 20 | Hunters | |
| FRANKLIN COUNTY | | | | |
| Jerusalem Twp. | May 10 | 1 | Railroad | |
| Rangeley Pl. | Sept. 21 | 2 sq. rods | Fishermen | |
| T. 3, R. 3 (Davis) | Sept. 27 | | Lightning | |
| T. 4, R. 3 (Wymen) | Oct. 11 | 1 | Hunters | |
| HANCOCK COUNTY | | | | |
| T. S. S. D. | Apr. 15 | 16 | Incendiary | 50.00 |
| T. 9, S. D. | Apr. 28 | 50 | Blueberry fire | |
| T. 22, M. D. | Apr. 28 | 35 | Blueberry fire | |
| T. 16, M. D. | May 4 | 10 | Fishermen | 50.00 |
| T. S. S. D. | May 12 | | Railroad | |
| T. 16 and 22, M. D. | May 13 | 300 | Incendiary | 600.00 |
| T. 3, N. D. | July 10 | 2 | Lightning | 40.00 |
| T. 41, M. D. | July 24 | 3 | Lightning | 30.00 |
| T. 22, M. D. | July 25 | 3 | Smoking | |
| T. 32, M. D. | Aug. 3 | 3 | Smoking | |
| T. 3, N. D. | Aug. 5 | 3 | Smoking | |
| Oshorn Pl. | Sept. 5 | 35 | Berry pickers | 35.00 |
| T. 28, M. D. | Sept. 6 | 3 | Lightning | 10.00 |
| T. 39, M. D. | Oct. 4 | 1 | Campfire | |
| T. S. S. D. | Oct. 12 | 6 | Hunters | 110.00 |
| T. 10, S. D. | Oct. 13 | 4 | Hunters | 10.00 |
| OXFORD COUNTY | | | | |
| Grafton | May 13 | 20 | Lightning | 0.75 |
| PENOBSCOT COUNTY | | | | |
| Lakeville Pl. | Apr. 13 | 25 | Smoking | 50.00 |
| Indian No. 3 | Apr. 21 | 6 | Fishermen | |
| T. A. R. 7 W.E.L.S. | Apr. 29 | 225 | Fishermen | |
| Drew | Apr. 30 | 50 | Brush burning | |
| Drew | May 5 | 20 | Sawmill fire | 20.00 |
| T. 2, R. 6 W.E.L.S. | May 7 | 30 | Fishermen | |
| T. 1, R. 7 W.E.L.S. | May 9 | 5 | Fishermen | |
| T. A. R. 7 W.E.L.S. | May 9 | 20 | Railroad | |
| T. A. R. 7 W.E.L.S. | May 9 | 4,500 | Lumbering | 6,000.00 |
| Indian No. 3 | May 9 | 1,510 | Railroad | 800.00 |
| T. 3, R. 9 W.E.L.S. | May 11 | 20 | Smoking | 40.00 |
| Indian No. 3 | May 11 | 14 | Fishermen | 100.00 |
| T. 6, R. 7 W.E.L.S. | May 11 | 30 | Fishermen | 150.00 |
| Staceyville Pl. | May 12 | 5 | Brush burning | |
| Drew | May 25 | 3 | Fishermen | 15.00 |
| T. A. R. 7 W.E.L.S. | June 16 | 2 | Burning stump | |
| T. A. R. 7 W.E.L.S. | July 22 | 1 | Berry pickers | |
| T. A. R. 7 W.E.L.S. | July 23 | 1 | Berry pickers | |
| T. A. R. 7 W.E.L.S. | July 26 | 20 sq. ft. | Berry pickers | |
| T. 1, R. 8 W.E.L.S. | July 26 | 15 sq. ft. | Berry pickers | |
| Webster Pl. | Aug. 1 | 4 | Lightning | 35.00 |
| Drew | Aug. 25 | 400 sq. ft. | Fishermen | |
| Drew | Aug. 29 | 1 | Fishermen | |
| Indian No. 3 | Oct. 12 | 25 | Lumbermen | 250.00 |
| T. 3, R. 9 W.E.L.S. | Oct. 12 | 1 | Hunters | |
| Drew | Oct. 13 | 600 | Hunters | 1,600.00 |
| East Hopkins | Oct. 13 | 1 | Hunters | |
| Indian No. 3 | Oct. 13 | 80 | Unknown | 1,000.00 |
| T. A. R. 7 W.E.L.S. | Oct. 14 | 120 | Hunters | 600.00 |
| T. A. R. 7 W.E.L.S. | Oct. 14 | 120 | Hunters | 600.00 |
| T. 6, R. 6 W.E.L.S. | Nov. 15 | File of logs | Hunters | |

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|---------------------------|----------|------------|---------------|-----------|
| PISCATAQUIS COUNTY | | | | |
| T. 2, R. 13 W.E.L.S. | May 9 | 8 | Lightning | |
| Elliottsville Pl. | May 10 | | Fishermen | \$220.00 |
| Little Squaw Mt. | May 11 | | Railroad | |
| T. 6, R. 9 W.E.L.S. | May 11 | 5 | Lumbermen | 10.00 |
| Blake Town | June 4 | 6 | Lumbermen | 90.00 |
| T. 5, R. 10 W.E.L.S. | June 17 | | Lightning | |
| Kingsbury Pl. | July 23 | 15' x 50' | Lumbermen | |
| T. A. R. 12 W.E.L.S. | July 23 | 144 | Lumbermen | 8,000.00 |
| T. A. R. 12 W.E.L.S. | July 23 | 2 sq. rods | Lumbermen | |
| T. 7, R. 13 W.E.L.S. | Sept. 3 | 150' x 75' | Lightning | |
| T. 5, R. 10 W.E.L.S. | Sept. 16 | | Lightning | |
| T. 8, R. 14 W.E.L.S. | Oct. 5 | 75 sq. ft. | Lightning | |
| Squaw Mt. | Oct. 20 | | Camp fire | |
| SOMERSET COUNTY | | | | |
| Moxie Gore | May 7 | 8 | Railroad | 30.00 |
| Pierce Pond Town | May 19 | 8 | Lumbering | 80.00 |
| Dead River Pl. | Aug. 18 | | Lightning | |
| Farlin Pond | Aug. 30 | | Lightning | |
| Dead River Pl. | Oct. 4 | | Lumbermen | |
| WASHINGTON COUNTY | | | | |
| Edmunds | Apr. 14 | 2 | Brush burning | |
| Marion | Apr. 17 | 5 | Unknown | |
| No. 21 Pl. | Apr. 20 | 1 | Farmers | |
| Marion | Apr. 28 | | Unknown | |
| Grand Lake Stream Pl | Apr. 29 | | Fishermen | |
| Edmunds | Apr. 30 | 20 | Tourists | 60.00 |
| T. 27 E. D. | Apr. 30 | 1 | Lumbermen | 25.00 |
| T. 43, M. D. | May 3 | 50 | Fishermen | 250.00 |
| Whiting | May 4 | 1 | Brush burning | |
| T. 18, E. D. | May 5 | 60 | Unknown | 800.00 |
| Kossuth (T. 7, R. 2) | May 5 | 10 | Lumbermen | |
| Lambert Lake | May 7 | | Fishermen | |
| T. 10, R. 3 N.B.P.P. | May 9 | | Fishermen | |
| T. 24, M. D. | May 10 | 10 | Fishermen | |
| Lambert Lake | May 11 | 1 | Smoking | 10.00 |
| T. 31, M. D. | May 12 | 1 | Smoking | 40.00 |
| Indian Township | May 12 | 8 | Smoking | 40.00 |
| Wesley | May 13 | 1,000 | Unknown | 3,000.00 |
| Lambert Lake | May 13 | | Unknown | |
| Lambert Lake | May 14 | | Unknown | |
| No. 21 Pl. | May 14 | | Fishermen | |
| Topsfield | May 25 | 1 | Tourists | 10.00 |
| Lambert Lake | June 5 | | Unknown | |
| T. 8, R. 3 N.B.P.P. | July 5 | | Lightning | |
| Wesley | July 9 | | Lightning | |
| No. 21 Pl. | July 9 | | Lumbering | 10.00 |
| T. 43, M. D. | July 22 | | Lightning | |
| No. 21 Pl. | July 25 | | Lightning | |
| Hinckley Town | Aug. 1 | | Incendiary | |
| Topsfield | Aug. 2 | | Lumbermen | 55.00 |
| T. 38 and 42, M. D. | Aug. 2 | 2,300 | Fishermen | 13,700.00 |
| T. 24, M. D. | Aug. 3 | | Berry pickers | |
| Whiting | Aug. 7 | | Brush burning | |
| No. 21 Pl. | Aug. 14 | | Camp fire | |
| Hinckley Town | Aug. 29 | | Fishermen | |
| T. 24, M. D. | Aug. 31 | | Berry pickers | |
| Deblois | Sept. 12 | | Berry pickers | |
| Whiting | Sept. 14 | | Incendiary | |
| Indian Township | Oct. 11 | | Hunters | |
| Topsfield | Oct. 13 | 1 | Farmers | 5.00 |
| Deblois | Nov. 11 | 75 | Hunters | 500.00 |
| Topsfield | Nov. 15 | | Hunters | |
| Topsfield | Nov. 17 | | Hunters | |

Summary of Forest Fires for 1929-1930 by
Months, Counties and Causes

| | No. of Fires | | Acreage | | Damage | |
|---------------------|--------------|------|---------|---------|-------------|-------------|
| | 1929 | 1930 | 1929 | 1930 | 1929 | 1930 |
| By Months: | | | | | | |
| April..... | | 14 | | 434½ | | \$185.00 |
| May..... | 20 | 50 | 887½ | 7,772½ | \$4,398.00 | 13,000 75 |
| June..... | 13 | 5 | 368 | 8½ | 2,456.00 | 90.00 |
| July..... | 18 | 16 | 36½ | 152½ | 359.00 | 8,080.00 |
| August..... | 22 | 15 | 17½ | 2,309½ | 4,020.00 | 13,790.00 |
| September..... | 9 | 8 | 6 | 36 | 60.00 | 45.00 |
| October..... | 8 | 16 | 8½ | 870 | 70.00 | 3,625.00 |
| November..... | | 5 | | 95½ | | 500.00 |
| | 90 | 129 | 1,323½ | 11,677½ | \$11,363.00 | \$39,315.75 |
| By Counties: | | | | | | |
| Aroostook..... | 16 | 17 | 220 | 183½ | \$800.00 | \$785.00 |
| Franklin..... | 4 | 4 | 250½ | 1½ | 1,185.00 | |
| Hancock..... | 7 | 16 | 277 | 466½ | 775.00 | 935.00 |
| Oxford..... | | 1 | | 30 | | .75 |
| Penobscot..... | 15 | 30 | 76½ | 7,293½ | 763.00 | 10,660.00 |
| Piscataquis..... | 15 | 13 | 8 | 163½ | 163.00 | 8,320.00 |
| Somerset..... | 14 | 5 | 155 | 16½ | 4,417.00 | 110.00 |
| Washington..... | 19 | 43 | 337 | 3,549 | 3,260.00 | 18,505.00 |
| | 90 | 129 | 1,323½ | 11,677½ | \$11,363.00 | \$39,315.75 |
| By Causes: | | | | | | |
| Railroad..... | 2 | 6 | 1½ | 1,538½ | \$10.00 | \$830.00 |
| Smokers..... | 12 | 8 | 269 | 58 | 4,265.00 | 180.00 |
| Fishermen..... | 13 | 23 | 266 | 2,730½ | 2,753.00 | 14,585.00 |
| Campers..... | 9 | 5 | 6 | 22 | 243.00 | 70.00 |
| Brush burning..... | 7 | 5 | 255 | 58 | 340.00 | |
| Unknown..... | 6 | 10 | 113 | 1,156½ | 1,110.00 | 4,800.00 |
| Lumbering..... | 6 | 15 | 12 | 4,701 | 77.00 | 14,560.00 |
| Lightning..... | 15 | 18 | 12 | 17 | 1,080.00 | 115.75 |
| Hunters..... | 8 | 14 | 102½ | 857 | 690.00 | 2,870.00 |
| Incendiary..... | 5 | 4 | 273 | 316 | 785.00 | 650.00 |
| Miscellaneous..... | 7 | 21 | 13½ | 220 | 10.00 | 655.00 |
| | 90 | 129 | 1,323½ | 11,677½ | \$11,363.00 | \$39,315.75 |

ORGANIZED TOWNS

Organized towns working in cooperation with the State have reached a new peak in forest fire prevention and protection work. The steady development of this forestry practice throughout these towns is nothing short of remarkable.

One outstanding accomplishment this year was the forming of a Fire District of the organized towns overlooked by the Dedham-Bald lookout in Hancock County. Sixteen towns form this district with a chief fire warden elected by the unanimous choice of the selectmen. The State cooperates by maintaining a telephone line direct from the lookout to the warden's house, pays his wages, and supplies him with fire fighting equipment. Whenever a fire starts in any of these towns, the chief warden goes to it, and with permission of the town officials, takes charge. This form of organized fire fighting under the supervision of a competent man has been the means of more efficiently controlling and extinguishing fires. Several fires occurred in this Fire District which presented an excellent opportunity to try out this new plan. The success with which the fires were handled under this plan is sufficient encouragement to form similar fire districts with the other fire lookouts in the organized towns, as recognized by the Governor in his inaugural address.

Another gratifying accomplishment is the way towns have cooperated with the State in the issuing of permits to burn slash, brush, or blueberry fields, the promptness in filling out reports of fires of one acre or more, and the conspicuous posting of fire signs. In answer to a form letter sent out in 1930 to the town officials, 133 towns requested fire warnings amounting to 2,828 metal signs, 172 towns requested fire permit blanks amounting to 229 booklets, each containing 25 blanks, and 193 towns asked for a supply of fire report blanks.

Educating the travelling public to the danger of forest fires has been one of the problems in fire prevention and protection work. The State issues free a variety of metal forest fire signs as applied to fishermen, hunters, motorists, farmers,

springs, slash danger, and general warnings. Many towns have cooperated by conspicuously posting these signs where they may best serve a useful purpose. This summer a start was made in erecting large forest fire prevention signs along the main public highways, particularly in the southern part of the State. These are also furnished free by the State and are set up in wooden frames two by four feet.

Still another phase of educating the public is the increasing number of people visiting the lookout stations. It is not uncommon for some of the towers to have as many as seven to eight hundred visitors during one season. In this respect, however, much depends on the location of the tower. Some of the lookouts in the wild land townships are so inaccessible to summer tourists that there was not a single registration. The register for Agamenticus lookout in York County showed that 843 people climbed to the tower. This number would have been considerably greater if all who climbed the mountain had registered. Many people, however, especially the older folk do not feel equal to the task of climbing the iron-rung ladder leading to the lookout house on the steel frame work. One interesting fact borne out by the register for this lookout was the registration of people representing twenty-four States. This included States as far west as California and Oregon, and as far south as Florida and Texas. Even foreign countries and United States possessions were represented such as Canada, Holland, North Wales, England, Bermuda, and Haiti.

The visiting of these lookout towers by transient summer people has proved to be most educational. In the mid-section and southern part of the State the towers are located in an area where there are many boys' and girls' camps, outing organizations, and summer vacationists. The watchmen are very courteous in explaining the maps, the use of instruments in detecting fires and means of reporting any smoke to the fire warden or town selectmen. In addition, useful forestry literature is freely distributed to parties making these tower visits.

The issuing of burning permits is another problem. These permits to burn brush, slash, or blueberry fields are signed by the Forest Commissioner, and in turn are signed by the

selectmen, who issue them at their discretion. A new plan was tried out in an attempt to reduce the fire hazard of careless burners. The selectmen were urged to issue burning permits for the day only, rather than a long time limit of a week, or as in some cases, a month. Permits to burn for the day only may be granted verbally over the telephone or otherwise, and the signed permit mailed to the burner. It is hoped that this plan will be widely adopted by the organized towns. Several times this year conditions became so dry that no permits were issued; in fact, it was even necessary for awhile to suspend fishing in the spring, and hunting in the fall. The Legislature will be asked to amend the so-called slash law so that no grass areas adjacent to any woodlands will be burned without a permit.

Aside from the fire prevention and protection work, the State is cooperating with the towns in general forestry. Each year during the summer months many requests come in asking for information and advice. In many instances the information asked for is not sufficient to warrant recommendation from this office without first-hand knowledge of field conditions. To make a closer contact men are sent out from this Department to make personal inspections and to talk over with the selectmen and individuals their particular problem pertaining to forestry. Advice is given or suggestions made for the betterment of forested tracts, encouragement given to reforest areas unfit for agriculture. Forestry literature is distributed by the Department.

The State in respect to planted areas furnishes metal forest plantation signs free. Many of these plantations are located near the highways and serve as a show place or demonstration exhibit of the work recommended and accomplished by planting.

Forestry talks were given to various organizations, clubs, and associations about the forests of Maine, and the function and organization of the Maine Forest Service. These talks are fruitful in that the people have a greater appreciation of what the Maine Forest Service is doing and the historical background of the forests of this State. Then too, many boys' and girls' camps were visited this summer and short talks

given. There are in Maine 110 boys' camps and 92 girls' camps, and 274 family camps which include hunting and fishing camps. It is quite impossible to visit during one summer all these camps. But as requests come in for a speaker or other work, the Department endeavors to have a man available for that time. It is believed that these talks to the young folk makes them a little more woods-wise about fires, planting, familiarity with the common trees, and general woodcraft.

On the whole, these have been two very successful years, and with the splendid cooperation between the organized towns and the State, even more is planned for the next two years to increase the efficiency of the fire prevention and protection system of Maine.

LOOKOUT STATIONS

| | OPENED | | CLOSED | | NO. FIRES | |
|---------------------|---------|---------|---------|---------|-----------|------|
| | 1929 | 1930 | 1929 | 1930 | 1929 | 1930 |
| Agamenticus Mt..... | Apr. 10 | Apr. 4 | Oct. 5 | Oct. 27 | 32 | 71 |
| Dedham Bald.Mt..... | May 14 | Apr. 16 | Oct. 5 | Oct. 24 | 29 | 71 |
| *Green Mt..... | May 1 | Apr. 9 | Oct. 31 | Oct. 26 | 53 | 54 |
| **Kelly Mt..... | May 28 | May 6 | Oct. 27 | Oct. 28 | 14 | 43 |
| Mt. Pleasant..... | May 14 | Apr. 17 | Oct. 4 | Oct. 23 | 12 | 21 |
| Ossipee Mt..... | Apr. 9 | Apr. 4 | Oct. 5 | Oct. 26 | 41 | 62 |
| Mt. Zircon..... | May 16 | May 3 | Oct. 26 | Oct. 22 | 9 | 8 |
| | | | | | — | — |
| | | | | | 190 | 330 |

*In New Hampshire.

**Privately owned.

FIRE RECORD—1929

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|----------------------------|---------|-------------------|--------------------|----------|
| ANDROSCOGGIN COUNTY | | | | |
| Turner..... | July 20 | 15 | Berry pickers..... | \$200.00 |
| Lisbon..... | Aug. 2 | 15 | Unknown..... | 700.00 |
| AROOSTOOK COUNTY | | | | |
| Moro Pl..... | May 7 | 20 | Brush burning..... | 100.00 |
| Moro Pl..... | May 23 | 1 | Smokers..... | |
| Littleton..... | May 26 | 2 | Smokers..... | |
| Ashland..... | May 26 | Barn and house | Fishermen..... | 400.00 |
| CUMBERLAND COUNTY | | | | |
| New Gloucester..... | Apr. 25 | 50 | Brush burning..... | |
| South Portland..... | Apr. 26 | 1 | Children..... | |
| New Gloucester..... | May 1 | 5 | Brush burning..... | 25.00 |
| New Gloucester..... | May 13 | 7 | Smokers..... | 35.00 |
| Otisfield..... | June 12 | 5 | Smokers..... | 25.00 |
| FRANKLIN COUNTY | | | | |
| Jay..... | July 17 | 1 | Smokers..... | 50.00 |
| HANCOCK COUNTY | | | | |
| Orland..... | May 12 | 100 | Brush burning..... | 500.00 |
| Trenton..... | May 14 | 30 | Fishermen..... | 200.00 |
| Orland..... | June 11 | 15 | Campers..... | |
| Orland..... | June 11 | 5 | Campers..... | |
| Gouldsboro..... | July 31 | 3 | Campers..... | |
| KENNEBEC COUNTY | | | | |
| Gardiner..... | Apr. 11 | 2 | Brush burning..... | 15.00 |
| Windsor..... | May 13 | 30 | Brush burning..... | 500.00 |
| Readfield..... | July 27 | 3 | Farmers..... | |
| Albion..... | Aug. 20 | 5 | Lumbering..... | 1,000.00 |
| Gardiner..... | Sept. 2 | 1 | Smokers..... | |
| LINCOLN COUNTY | | | | |
| Edgecomb..... | May 21 | 20 | Campers..... | 175.00 |
| OXFORD COUNTY | | | | |
| Paris..... | May 18 | 25 | Railroad..... | 100.00 |
| Paris..... | Oct. 26 | 18 | Woodsmen..... | 1,500.00 |
| Paris..... | Oct. 27 | 6 | Campers..... | 200.00 |
| PENOBSCOT COUNTY | | | | |
| Holden..... | May 11 | 2 | Brush burning..... | |
| Holden..... | May 13 | 20 | Brush burning..... | |
| Etna..... | May 28 | 60 | Lumbering..... | 3,575.00 |
| Hermion..... | July 26 | 8 | Unknown..... | 16.00 |
| Eddington..... | Aug. 1 | 15 | Campers..... | 45.00 |
| Medway..... | Sept. 8 | 1 | Lumbering..... | 8.00 |
| PISCATAQUIS COUNTY | | | | |
| Milo..... | May 11 | 2 | Brush burning..... | 4.00 |
| Monson..... | Aug. 1 | 1 | Railroad..... | |
| Monson..... | Oct. 11 | 1 | Railroad..... | |
| Monson..... | Oct. 12 | 1 | Railroad..... | |
| SOMERSET COUNTY | | | | |
| Cornville..... | May 13 | 10 | Brush burning..... | 3.00 |
| Bingham..... | July 19 | 1 | Smokers..... | |
| Athens..... | Nov. 25 | 25 | Hunters..... | 3,700.00 |
| WALDO COUNTY | | | | |
| Lincolnton..... | Apr. 24 | 2 | Brush burning..... | |
| Lincolnton..... | May 11 | 35 | Brush burning..... | 300.00 |
| Searsmont..... | May 18 | 80 | Brush burning..... | 500.00 |
| Freedom..... | Aug. 6 | 2 | Unknown..... | |

FOREST COMMISSIONER'S REPORT

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|--------------------------|---------|---------|--------------------|-----------|
| WASHINGTON COUNTY | | | | |
| Steuben..... | May 26 | 20 | Smokers..... | \$20.00 |
| East Machias..... | June 25 | 1 | Campers..... | |
| Baring..... | Sept. 2 | 5 | Brush burning..... | 100.00 |
| Baring..... | Sept. 2 | 12 | Campers..... | 100.00 |
| YORK COUNTY | | | | |
| Shapleigh..... | Apr. 10 | 2 | Campers..... | |
| Newfield..... | Apr. 10 | 1 | Smokers..... | |
| York..... | Apr. 11 | 5 | Fishermen..... | 100.00 |
| North Berwick..... | May 1 | 2 | Smokers..... | |
| York..... | May 1 | 4 | Unknown..... | |
| Sanford..... | May 12 | 100 | Smokers..... | 10,700.00 |
| Kennebunk..... | May 13 | 4 | Unknown..... | 50.00 |
| Wells..... | May 13 | 2 | Railroad..... | 25.00 |
| Sanford..... | May 13 | 5 | Unknown..... | |
| Sanford..... | May 13 | 250 | Smokers..... | 8,000.00 |
| North Berwick..... | May 13 | 6 | Smokers..... | |
| Kennebunk..... | May 29 | 3 | Unknown..... | 30.00 |
| Sanford..... | June 2 | 3 | Fishermen..... | 25.00 |
| Wells..... | June 10 | 3 | Fishermen..... | 30.00 |
| Wells..... | June 19 | 1 | Fishermen..... | 15.00 |
| Kennebunk..... | June 19 | 4 | Fishermen..... | 60.00 |
| York..... | June 19 | 5 | Incendiary..... | 75.00 |
| Kittery..... | July 12 | 1 | Unknown..... | 20.00 |
| Wells..... | July 13 | 1 | Unknown..... | 20.00 |
| York..... | July 16 | 1 | Unknown..... | |
| Eliot..... | July 19 | 15 | Campers..... | 30.00 |
| Sanford..... | July 22 | 1 | Smokers..... | |
| York..... | July 22 | 3 | Smokers..... | 40.00 |
| Eliot..... | July 23 | 2 | Smokers..... | 10.00 |
| Sanford..... | July 29 | 5 | Children..... | |
| Sanford..... | July 31 | 10 | Unknown..... | 8.00 |
| Lebanon..... | July 31 | 3 | Campers..... | 20.00 |
| Kennebunk..... | Aug. 2 | 3 | Campers..... | 30.00 |
| Eliot..... | Aug. 4 | 5 | Incendiary..... | 10.00 |
| Newfield..... | Aug. 22 | 2 | Brush burning..... | |
| Shapleigh..... | Sept. 3 | 1 | Unknown..... | |

FIRE RECORD — 1930

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|----------------------------|---------|---------|-----------------------|----------|
| ANDROSCOGGIN COUNTY | | | | |
| Lewiston..... | Apr. 27 | 5½ | Burning rubbish..... | \$500.00 |
| Auburn..... | Apr. 28 | 150 | Canoes burning..... | 300.00 |
| Greene..... | May 6 | 25 | Unknown..... | 100.00 |
| Leeds..... | May 11 | 196 | Unknown..... | 700.00 |
| AROSTOOK COUNTY | | | | |
| Crystal..... | May 6 | 25 | Unknown..... | |
| Ashland..... | May 13 | 75 | Unknown..... | 150.00 |
| Eagle Lake..... | May 24 | 75 | Brush burning..... | 200.00 |
| Oakfield..... | Oct. 2 | 200 | Brush burning..... | 1,250.00 |
| CUMBERLAND COUNTY | | | | |
| Sebago..... | Apr. 12 | 5 | Burning grass..... | 150.00 |
| Standish..... | Apr. 14 | 150 | Burning slash..... | 1,000.00 |
| Sebago..... | Apr. 16 | 300 | Railroad..... | 2,000.00 |
| Sebago..... | Apr. 29 | 6 | Smokers..... | 150.00 |
| New Gloucester..... | Apr. 30 | 75 | Unknown..... | 500.00 |
| Brunswick..... | June 16 | ¼ | Berry pickers..... | |
| FRANKLIN COUNTY | | | | |
| Carthage..... | Apr. 27 | 5 | Smokers..... | 20.00 |
| Carthage..... | Oct. 4 | 20 | Lumbering..... | 70.00 |
| Phillips..... | Oct. 6 | | Railroad..... | |
| HANCOCK COUNTY | | | | |
| Franklin..... | Apr. 16 | 100 | Railroad..... | 200.00 |
| Brooklin..... | Apr. 17 | 3½ | Blueberry fire..... | 10 00 |
| Gouldsboro..... | Apr. 29 | 5 | Burning house..... | 25.00 |
| Sedgwick..... | Apr. 29 | 5 | Blueberry fire..... | 10.00 |
| Sedgwick..... | May 10 | 6 | Unknown..... | 200.00 |
| Orland..... | May 11 | 200 | Smokers..... | 200.00 |
| Sedgwick..... | Aug. 6 | | Tourists..... | |
| Southwest Harbor..... | Aug. 6 | 300 | Unknown..... | 850.00 |
| Gouldsboro..... | Aug. 7 | 4 | Unknown..... | |
| Tremont..... | Sept. 7 | 20 | Berry pickers..... | |
| Tremont..... | Sept. 7 | 30 | Unknown..... | |
| Tremont..... | Oct. 3 | 7 | Brush burning..... | 10.00 |
| Penobscot..... | Oct. 4 | | Dynamite..... | |
| Bucksport..... | Oct. 9 | 3 | Hunters..... | 100.00 |
| Clifton..... | Oct. 10 | 125 | Unknown..... | 625.00 |
| Bucksport..... | Oct. 11 | | Burning rubbish..... | |
| Tremont..... | Oct. 11 | 1 | Unknown..... | |
| KENNEBEC COUNTY | | | | |
| Chelsea..... | Apr. 3 | 8 | Unknown..... | |
| Vassalboro..... | Apr. 12 | 50 | Burning feathers..... | |
| Vassalboro..... | Apr. 12 | 60 | Grass fire..... | |
| Chelsea..... | Apr. 13 | | Incendiary..... | |
| Vassalboro..... | Apr. 16 | 3 | Brush burning..... | |
| Fayette..... | May 7 | 20 | Unknown..... | 40.00 |
| Vassalboro..... | May 10 | 100 | Telephone crew..... | 1,070.00 |
| Benton..... | Oct. 6 | 80 | Incendiary..... | 50.00 |
| Pittston..... | Oct. 13 | 50 | Hunters..... | 25.00 |
| Pittston..... | Oct. 13 | 1 | Smokers..... | |
| KNOX COUNTY | | | | |
| South Thomaston..... | May 3 | 25 | Unknown..... | 200.00 |
| Camden..... | May 8 | 350 | Unknown..... | 700.00 |
| St. George..... | May 29 | 125 | Smokers..... | 1,020.00 |
| St. George..... | Aug. 6 | 250 | Unknown..... | |
| St. George..... | Aug. 6 | 75 | Unknown..... | 2,000.00 |
| LINCOLN COUNTY | | | | |
| Newcastle..... | Mar. 31 | 40 | Burning field..... | 300.00 |
| Newcastle..... | Apr. 5 | 7 | Unknown..... | 200.00 |
| Bremen..... | Apr. 28 | 160 | Unknown..... | 800.00 |
| Whitefield..... | May 6 | 65 | Unknown..... | 150.00 |
| Whitefield..... | May 10 | 40 | Brush burning..... | 230.00 |
| East Jefferson..... | May 11 | 100 | Unknown..... | 6,000.00 |

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|---------------------------|---------|------------|-------------------------|-----------|
| OXFORD COUNTY | | | | |
| Stow | Apr. 26 | 25 | Chimney fire | \$150.00 |
| Buckfield | Apr. 27 | 70 | Brush burning | 50.00 |
| Denmark | Apr. 28 | | Brush burning | |
| Sweden | Apr. 28 | 250 | Incendiary | 500.00 |
| Rumford | Apr. 29 | 50 | Unknown | 50.00 |
| Oxford | Apr. 29 | 50 | Railroad | 60.00 |
| Mexico | Oct. 14 | 1½ | Unknown | |
| Stoneham | Apr. 28 | 25 | Unknown | |
| PENOBSCOT COUNTY | | | | |
| Greenbush | Apr. 30 | 65 | Brush burning | 40.00 |
| Corinna | May 7 | 15 | Unknown | |
| Millinocket | June 16 | 50 sq. ft. | Smokers | |
| Orrington | July 17 | 2 | Smokers | 25.00 |
| Kingman | July 23 | 1 | Lumbering | 100.00 |
| Clifton | Aug. 6 | 7 | Berry pickers | 50.00 |
| Hermou | Oct. 12 | 15 | Unknown | |
| PISCATAQUIS COUNTY | | | | |
| Sebec | May 10 | 15 | Incendiary | 115.00 |
| SOMERSET COUNTY | | | | |
| Detroit | Oct. 13 | 20 | Hunters | 75.00 |
| WALDO COUNTY | | | | |
| Unity | Apr. 27 | 175 | Unknown | 300.00 |
| Troy | May 4 | 1 | Brush burning | |
| Troy | May 10 | 60 | Unknown | 120.00 |
| Burnham | May 11 | 500 | Unknown | 2,200.00 |
| Troy | May 14 | 50 | Brush burning | |
| Winterport | May 8 | 400 | Brush burning | 2,600.00 |
| WASHINGTON COUNTY | | | | |
| Baring | Apr. 15 | 5 | Incendiary | |
| Baring | Apr. 16 | 80 | Brush burning | |
| Alexander | May 6 | 50 | Unknown | 100.00 |
| Baring | May 11 | 25 | Incendiary | |
| Calais | June 16 | 2,800 | Railroad | |
| Steuben | Oct. 6 | 30 | Unknown | 175.00 |
| Baring | Oct. 12 | 25 | Hunters | 50.00 |
| Steuben | Oct. 14 | 3,000 | Unknown | 5,000.00 |
| YORK COUNTY | | | | |
| Alfred | Apr. 1 | 13 | Burning grass | 30.00 |
| Alfred | Apr. 3 | 40 | Burning grass | |
| Alfred | Apr. 4 | 15 | Incendiary | |
| Acton | Apr. 5 | 1½ | Live coals from ash pan | |
| South Berwick | Apr. 5 | 10 | Unknown | |
| Old Orchard | Apr. 10 | 15 | Burning grass | 20.00 |
| Saco | Apr. 10 | 13 | Burning grass | 10.00 |
| Wells | Apr. 12 | 2 | Unknown | 30.00 |
| Eliot | Apr. 12 | 1 | Brush burning | |
| Berwick | Apr. 13 | 2 | Unknown | |
| Kennebunk | Apr. 14 | 6 | Unknown | 30.00 |
| Acton | Apr. 15 | 15 | Unknown | 30.00 |
| Newfield | Apr. 16 | 5 | Unknown | 10.00 |
| Wells | Apr. 17 | 10 | Railroad | 10.00 |
| Wells | Apr. 17 | 200 | Burning barn | 100.00 |
| Alfred | Apr. 20 | 3 | Smokers | |
| Kittery | Apr. 26 | 2 | Unknown | 20.00 |
| Berwick | Apr. 27 | 35 | Smokers | |
| Acton | Apr. 27 | 3 | Unknown | 20.00 |
| Kennebunk and Sanford | Apr. 27 | 2,800 | Unknown | 37,000.00 |
| Sanford | Apr. 28 | 80 | Unknown | 500.00 |
| Berwick | Apr. 30 | 5 | Railroad | 170.00 |
| Hollis | May 1 | 2,200 | Smokers | 1,300.00 |
| Limington | May 4 | 3,000 | Smokers | 10,000.00 |
| York | May 4 | 2 | Unknown | 20.00 |
| Kennebunkport | May 6 | 500 | Unknown | 10,000.00 |
| Sanford | May 6 | 12 | Unknown | 200.00 |
| Waterboro | May 7 | 14 | Lightning | 25.00 |
| Lyman | May 9 | 25 | Unknown | 1,000.00 |

ORGANIZED TOWNS

| LOCATION | DATE | ACREAGE | CAUSE | DAMAGE |
|---------------|----------|----------------|---------------|-----------|
| Wells | May 11 | 30 | Unknown | \$ 500.00 |
| Waterboro | May 12 | 50 | Unknown | 1,000.00 |
| Waterboro | May 12 | 100 | Incendiary | 1,900.00 |
| Waterboro | May 12 | 10 | Incendiary | 40.00 |
| York | July 20 | 2 | Berry pickers | 25.00 |
| York | July 25 | 1 | Berry pickers | |
| York | Aug. 5 | $\frac{1}{2}$ | Incendiary | 1,200.00 |
| York | Aug. 14 | 2 | Incendiary | 25.00 |
| York | Sept. 2 | 15,000 ft. | Incendiary | 300.00 |
| Kennebunk | Sept. 19 | $1\frac{1}{2}$ | Unknown | 15.00 |
| North Berwick | Sept. 19 | 3 | Unknown | 45.00 |
| Kittery | Sept. 23 | 3 | Unknown | |
| Kennebunkport | Oct. 4 | 1 | Unknown | 10.00 |
| Waterboro | Oct. 6 | 6 | Hunters | 200.00 |
| Kennebunk | Oct. 6 | 3 | Unknown | |
| Berwick | Oct. 6 | 800 | Incendiary | 4,800.00 |
| York | Oct. 13 | 15 | Unknown | 100.00 |
| Berwick | Oct. 13 | 2 | Unknown | 15.00 |
| Biddeford | Oct. 13 | 27 | Hunters | |

**Summary of Forest Fires for 1929—1930 by
Months, Counties and Causes**

| | No. of Fires | | Acreage | | Damage | |
|---------------------|--------------|------|---------|---------|-------------|--------------|
| | 1929 | 1930 | 1929 | 1930 | 1929 | 1930 |
| By Months: | | | | | | |
| March | | 1 | | 40 | | \$300.00 |
| April | 7 | 51 | 63 | 5,144½ | \$115.00 | 44,995.00 |
| May | 28 | 35 | 845 | 8,486 | 25,242.00 | 42,060.00 |
| June | 9 | 3 | 42 | 2,800 | 230.00 | |
| July | 16 | 4 | 73 | 6 | 414.00 | 150.00 |
| August | 8 | 8 | 48 | 638½ | 1,785.00 | 4,125.00 |
| September | 5 | 6 | 20 | 58½ | 208.00 | 360.00 |
| October | 4 | 26 | 26 | 4,457½ | 1,700.00 | 12,555.00 |
| November | 1 | | 25 | | 3,700.00 | |
| | 78 | 134 | 1,142 | 21,630½ | \$33,394.00 | \$104,545.00 |
| By Counties: | | | | | | |
| Androscoggin | 2 | 4 | 30 | 376½ | \$900.00 | \$1,600.00 |
| Aroostook | 4 | 4 | 23 | 375 | 500.00 | 1,600.00 |
| Cumberland | 5 | 6 | 68 | 536½ | 85.00 | 3,800.00 |
| Franklin | 1 | 3 | 1 | 25 | 50.00 | 90.00 |
| Hancock | 5 | 16 | 153 | 808½ | 700.00 | 2,230.00 |
| Kennebec | 5 | 10 | 41 | 372 | 1,515.00 | 1,185.00 |
| Knox | | 5 | | 825 | | 3,920.00 |
| Lincoln | 1 | 6 | 20 | 412 | 175.00 | 7,660.00 |
| Oxford | 3 | 9 | 49 | 472½ | 1,800.00 | 810.00 |
| Penobscot | 6 | 7 | 106 | 105 | 3,644.00 | 215.00 |
| Piscataquis | 4 | 1 | 5 | 15 | 4.00 | 115.00 |
| Somerset | 3 | 1 | 36 | 20 | 3,703.00 | 75.00 |
| Waldo | 4 | 6 | 119 | 1,186 | 800.00 | 5,220.00 |
| Washington | 4 | 8 | 38 | 6,015 | 220.00 | 5,325.00 |
| York | 31 | 48 | 453 | 10,086½ | 9,298.00 | 70,700.00 |
| | 78 | 134 | 1,142 | 21,630½ | \$33,394.00 | \$104,545.00 |
| By Causes: | | | | | | |
| Railroad | 5 | 7 | 30 | 3,265 | \$125.00 | \$2,440.00 |
| Smokers | 16 | 11 | 403 | 5,577½ | 18,880.00 | 12,715.00 |
| Fishermen | 7 | | 46 | | 830.00 | |
| Hunters | 1 | 6 | 25 | 131 | 3,700.00 | 450.00 |
| Campers | 12 | 1 | 100 | | 600.00 | |
| Brush burning | 15 | 22 | 365 | 1,428 | 2,047.00 | 6,970.00 |
| Unknown | 12 | 55 | 55 | 9,416 | 844.00 | 71,675.00 |
| Lumbering | 4 | 2 | 84 | 21 | 6,083.00 | 170.00 |
| Lightning | | 1 | | 14 | | 25.00 |
| Burning buildings | | 2 | | 205 | | 125.00 |
| Incendiary | 2 | 13 | 10 | 1,302½ | 85.00 | 8,930.00 |
| Miscellaneous | 4 | 14 | 24 | 270½ | 200.00 | 1,045.00 |
| | 78 | 134 | 1,142 | 21,630½ | \$33,394.00 | \$104,545.00 |

FOREST ENTOMOLOGY

FOREST ENTOMOLOGY

The Legislature of 1928-1929 passed an act creating the office of State Entomologist whose duties shall be to answer calls for information on insect control and identification, to supervise necessary control work not already provided for by law, and to assist other departments in work along this line. As the present appropriation is entirely for the control of forest insects, inquiries in relation to other insect pests are handled almost entirely by mail. These inquiries are increasing each year and have become an important phase of the entomology work which is requiring more and more attention. Many of the requests for assistance are of such a nature that personal calls should be made, but it is not always possible to do so.

A great deal of interest is being shown by municipalities and individuals in shade and ornamental trees and the State has endeavored to assist people in the proper care and protection of these trees whenever possible. Tree surgery is an exact science and if properly done requires considerable technical knowledge. Unfortunately the State has been flooded with itinerant tree workers, who, for the most part, are doing a great deal of damage to the trees. These injuries usually take the form of improper spraying, poor pruning, and poor cavity work. For several years, there has been considerable demand for some form of State supervision, possibly in the form of a license that will protect those carrying on a legitimate tree repair business and at the same time protect the public.

The seasons of 1929-1930 have been periods of considerable insect activity. Outbreaks of unusual occurrence have been reported in many sections of the State and it has been necessary in many cases to work out new methods of control. The entomology work falls under five heads, (1) Correspondence in answer to inquiries, (2) Insect detection work carried on in the Maine Forestry District, (3) Control of the Birch Leaf

Miner and Birch Case Bearer, (4) Research projects in which new methods of control are being worked out, and (5) Publications.

(1) General Correspondence

Household Insects. As many of the so-called household insects are disease carriers, they are deserving of considerable attention when present in epidemic form. The usual requests for information on control of ants, fleas, lice, mosquitoes, and flies were received. Silver fish and roaches seemed to be particularly abundant this past year. Two cities had heavy migrations of roaches from dumps, the insects swarming into stores and houses. They were very satisfactorily controlled in one place by placing a four foot wide strip of tarvia around the dump from which they were swarming. This stopped the migration. The dump was then saturated with crude oil and gasoline and then burned. Quick lime was then spread on the surface and the whole covered with soil. A thorough spraying of the infested houses and grounds was then carried out, using a commercial roach spray. It was found best to first spray the ground floor, then the basement and then the upper floors. By doing this, it kept the roaches from migrating from one floor to another, while the spraying was being done. Borax, which ordinarily will control minor outbreaks was useless, as the roaches were so thick it was necessary for the fire department to wash them from the houses and street. Beetles and weevils caused considerable damage to stored products, such as grain, cereals, spices, etc. An unusual infestation of an unknown Tineid occurred at Bar Harbor. The larvae in their protective cases swarmed on to a large estate in such numbers that doors and windows had to be kept closed. They were controlled with an oil emulsion spray. A heavy outbreak of pseudo-scorpions was reported in one house.

Shade Tree Insects. Control work on two of the most serious pests—the Gipsy and Brown-Tail Moth—are handled by the State Department of Agriculture. A third foreign insect, known as the Satin Moth, has invaded the State in epidemic form and has been present in such great numbers that

people have fought them with shovels, rakes, blow torches, oil, garden hoses, and in one city it was necessary to call out the fire department to wash the caterpillars from the houses. In some sections of the State people would not go out of their homes. One house was invaded by the caterpillars in such numbers that the family moved out and a rather humorous situation existed in a row of tenement houses, where the landlord who lived in another section of the city would not come around for the monthly rentals, while the pests were swarming over the houses. This insect is quite easily controlled by proper spraying, and an effort should be made to curb the rather rapid northward spread of the insect, so as to keep it from reaching the valuable stands of poplar in northern Maine. The Sugar Maple Borer and the Bronze Birch Borer have become serious pests throughout the State. It is hardly advisable at the present time to plant either sugar maple or white birch. An unusual outbreak of psocids (*Psocus venosus*) was reported on the coast. These insects were feeding on lichens on the trees.

The weakened condition of many shade trees in the State is due to starvation. Trees are so crowded by houses, sidewalks, and highways, that they can get very little food, especially from soil already run down. A good all around hardwood tree food can be made from bone meal, ammonium sulphate, muriate of potash, and nitrate of soda at the proportions of 5-3-1-1.

Forest Product Insects. A large number of calls have been received asking for assistance in the control of insects attacking manufactured forest products such as lumber, furniture, houses, barns, and log cabins. In several cases it has been possible to show that damage for which Maine manufacturers were blamed, in reality took place before the raw material was brought into the State or after the manufactured product had been shipped out. Identification of the insects causing the damage proved that they were not native to Maine.

Many inquiries are received about insects infesting log cabins. A few general statements may prove helpful. Some trouble may always be expected if logs or slabs with the bark left on

are used. If it is desired to build a rustic cabin with the bark left on, hemlock will probably be found to be the freest from bark beetle and borer attack. Logs should be cut in the late fall and piled so that they will be thoroughly dry in the spring before being used for building. Very good results have been obtained by spraying infested logs with orthodichlorobenzine.

Orchard and Market Garden Insects. The inquiries received in relation to these pests have been varied and general, indicating no unusual outbreaks. The European Red Mite on fruit trees seems to be gaining some headway in the State and is a pest that orchardists must be prepared to meet. A delayed dormant oil emulsion spray has been found very effective. Many species of cut worms were reported.

Greenhouse and Flower Insects. Here again the inquiries have been varied showing no unusual outbreaks. Wire worms, cut worms, plant lice, and the tarnished plant bug have been quite prevalent.

Forest Insects. Through the cooperation of the State forest fire protective force and private foresters, it has been possible to keep in pretty close touch with insect conditions in the forest regions of the State. Large numbers of outbreaks are reported each year and every effort is made to prevent the spread of those which in our judgment are likely to prove serious. Particular attention has been called to insect outbreaks on white birch, spruce, larch, beech, and pine.

(a) White Birch. During the past two seasons several serious insect pests have been attacking the white birch in the State. Two of these, the Birch Leaf-mining Sawfly (*Phyllotoma nemorata*) and the Birch Case Bearer (*Coleophora salmani*) are new to this country and are threatening to do a great deal of damage. An appropriation was made by the State to find means of controlling these insects and a summary of the progress made is included in this report. A third insect about which very little is known has appeared locally on Mount Desert Island. Indications are that this too is a foreign pest. The Birch Leaf Skeletonizer (*Bucculatrix canadensisella*) an insect which appears periodically in vast numbers has been in epidemic form this past year. This insect eats off the surface of the leaves. The Birch Sawfly (*Hylotoma pectoralis*) which in its larval stage

is a yellow, black spotted false caterpillar was reported defoliating birch in many sections of the State.

(b) Spruce and Fir. The Spruce Gall Aphid (*Adelges abietis*) and the Spruce Web Worm (*Epinotia nanana*) have been present in epidemic form in the spruce along the coast and have been the cause of considerable apprehension on the part of many camp and hotel owners. Spraying for the Spruce Gall Aphid has proved very successful and it is hoped that this coming season a satisfactory control for the Spruce Web Worm can be worked out. No outbreaks of the Spruce Bud Worm (*Cacoecia fumiferana*) or the Hemlock Looper (*Ellopiella fuscicollaria*) have been reported. The Spruce Destroying Bark Beetle (*Dendroctonus piceaperda*) has appeared in epidemic form in several sections of the State. Where, at the suggestion of this office, cutting operations of the infested timber have been started, control has been very effective. Large amounts of spruce have been killed by this insect and every effort should be made to curb outbreaks. The Fir Sawfly (*Neodiprion abietis*) has defoliated balsam in several sections of the State.

(c) Arbor Vitae. Two species of leaf miner (*Recurvaria thujaella*) and (*Argyresthia thuiella*) have been very abundant on cedar throughout the State for several years. In some sections the stands appear very brown and scraggly.

(d) Beech. The Beech Leaf Skeletonizer (*Psilocorsis fagi-nella Chambers*) appeared in great numbers in a belt through central Maine from New Brunswick to the New Hampshire line, with the heaviest outbreak in Hancock County. The outbreak was confined almost entirely to beech, although oak was attacked to some extent. Reports from New Hampshire, Vermont, New York, New Brunswick, and Nova Scotia showed the outbreak to be very wide spread.

(e) Poplar. The Satin Moth (*Stilpnotia salicis*) which in its northward spread has been largely a shade tree insect, has proved in New Hampshire that it is a real menace to our large areas of poplar in the north. An outbreak of the Dusky Leaf Roller (*Amorbia humerosana*) occurred in the large stands of poplar near Jackman.

(f) Larch. Outbreaks of the Larch Case Bearer (*Coleophora laricella*) have continued over a period of several years.

Efforts to raise parasites have so far been fruitless. In 1930 several outbreaks of the Larch Sawfly (*Lygaeonematus erichsonii*) were reported. This insect during 1880-1890 practically annihilated the larch in the Northeast. Indications are that this insect can be controlled by parasites.

(2) Insect Detection Work

Through the splendid cooperation of the Maine Forest Service fire prevention force, a system of locating insect outbreaks, while they are still in their incipiency is being worked out. Mr. R. W. Nash, Assistant Entomologist, is spending the greater part of his time travelling with the supervisors, wardens, patrolmen, and visiting the lookout men. These men are all being shown the nature of insect outbreaks, what to be on the lookout for, and how to identify the more common forest insects. Booklets for identifying the insects, mailing tubes to ship them in, and blanks to report outbreaks on, are furnished to the men. Experience has shown that most of our serious insect outbreaks start in small isolated areas, and then if left unchecked, spread into the surrounding timber. Every effort is being made to spot these infestations early. They are then investigated and control recommendations are made to the owner of the timber. The results obtained to date are very promising. The men in the woods are showing a great deal of interest in the work and the timberland owners have done everything possible to assist. Outbreaks of the spruce budworm, hemlock looper, and spruce destroying bark beetles have already been stopped. Two weeks are spent in the winter at the University of Maine Forestry camp teaching the forestry students the nature of forest insect outbreaks.

(3) Birch Leaf Mining Sawfly and Birch Case Bearer

Work on the life history and control of these two enemies of the white birch have progressed very satisfactorily. Laboratory quarters have been furnished by the Acadia National Park. The life history work should be completed this summer. This work is essential as a basis for working out control measures. Large amounts of spraying and dusting have been

carried on. Owing to the wide spread extent of the Birch Leaf Miner outbreak, the only feasible means of control is through parasites and a large amount of the time has been spent in rearing these. Twenty-four large parasite cages have been built, in which the parasites are raised for distribution. Permanent sample plots have been established throughout the white birch region, where the effect of the insect work on the trees is being studied, percentage of defoliation followed, and parasitic material collected for rearing and distribution into areas where parasites are not working. Through cooperation with the Federal Government, parasites are being collected in Europe for distribution in Maine. A preliminary report on the work accomplished has been published. The Birch Case Bearer outbreak is restricted to Mount Desert Island and it is hoped that through cooperation with private owners, a spraying program can be worked out that will keep the insect from spreading into the white birch belt. Some woodland spraying has already been carried on to show the practicability of this method of control. Large numbers of parasites are also being raised. Very heavy defoliation of birch occurred this past year.

(4) Research Projects

With the advent of new insects and changing conditions which have to be met, the working out of new methods of control is a very important phase of the work.

A—Protection of Logs from Borers. In cooperation with the Brown Company, a project is under way to protect logs from borers by dusting them with lime sulphur. This project was started in 1925 and each year logs under different conditions have been treated. It is expected that final results will be available this coming year. Data collected to date indicates that this method of holding the borers in check will prove satisfactory.

B—Artificial Defoliation. At the present time there is no definite information as to how many defoliations the different species of trees can stand without being killed. There has likewise been no information as to what season of the year defoliation is likely to prove most serious to the tree. As

knowledge of these points is very important in insect control, a fairly complete project was started in 1927 that will give us the desired information. The following species of trees were chosen: White birch, poplar, red maple, white pine, red spruce, arbor vitae, and balsam fir. With each species, a series of one hundred per cent, seventy-five per cent, and fifty per cent defoliation was started in the spring just as the leaf growth was about complete, another similar series was started in mid-summer, and a third series in the fall. Each tree has received the same amount of defoliation at the same period each succeeding year. Detailed measurements of leaf growth and change of color of the foliage as measured by a color chart are being carried on each year. When the project has been completed, the effect of the defoliation in diameter growth of the trees will also be studied. Defoliation results in smaller leaves and in a decrease in the amount of chlorophyll in the leaves. Each year the size of the leaves becomes smaller and the color verges more to the yellow. Three complete successive defoliations of birch in either spring or summer has resulted in death. Three complete successive defoliations of poplar in mid-summer has killed the trees. Two complete successive defoliations of white pine in either summer or fall resulted in the death of the trees.

C—White Pine Weevil. This weevil is unquestionably the most serious insect enemy of white pine and is having a very positive effect in curbing the planting of pine. To date, no satisfactory method of control has been found. In cooperation with the Bates College Forest, a series of control projects have been carried on for several years. Tanglefoot proved not effective. Inverted cone shaped collars, which would positively prevent any weevils from climbing to the leaders, were placed on a large number of trees. These were of no help, and showed definitely that most of the weevils fly to the tops of the trees. The use of repellants such as oil of cedar, and cedar sprays tied to the leaders, did not protect the trees. A series of poison baits using pine derivative oils were of no avail. A list of birds found feeding on the weevil as well as those birds found inhabiting pine groves was compiled and bird houses were built for these. In cooperation with the

Waterville Water District, they were erected in a large plantation near China Lake, with the belief that birds may hold the weevils in check. Arrangements have been made to start a series of mixed plantations this coming spring in an effort to prevent weevil damage.

D—Pales Weevil. In cooperation with both Bates and Bowdoin Colleges, it has been shown that cut-over areas of neither Pitch Pine nor Red Pine should be planted until the third year after cutting, as the Pales Weevil which is attracted in large numbers to these cut-over areas, will destroy the young trees. It has previously been shown that white pine cut-over areas cannot successfully be planted until the third year after cutting. An effort is being made on the Bates College Forest to cut this period down by dusting the pine stumps and seedlings with powdered lime sulphur. On one project, the damage was cut in half. The beetles destroy the seedlings by chewing off the bark and thereby girdling them.

E—Mound Building Ants. For eight years, experiments have been carried on with commercial ant poisons in order to find a cheap effective method of control for Mound Building Ants. These preparations have been furnished for the most part free to the Department. In no case has anything been found so effective as carbon bisulphide. Hundreds of mounds have been treated successfully by pouring the liquid into holes punched in the mound and then tamping the earth down hard to prevent escape of the gas.

F—Girdling Plots. The series of girdling plots which were started in 1924 to find a practical way of controlling the spruce bud worm are being examined each year. The idea of the girdling is to bring about the rapid drying of the foliage, so that when the larvae emerge in the spring, they will have no green foliage to feed on and thus will be starved out. The plots have proved that a bud worm outbreak can be checked by girdling the trees in the infested stand by means of a "V" notch or deep hack in April or August. This means of control was worked out to find a method that could be used where it was impossible to immediately put in a pulpwood operation. Notes are now being taken on the sequence of insects and fungi which attack the dead trees so that operators can be

given definite information on the length of time that they have to salvage the girdled spruce and fir. Today, five years after the death of the trees, the spruce is practically all standing. Bark beetles and borers have infested the trees, and fungi are beginning to work into the wood, bringing about decay and sap stain. The balsam fir is badly decayed and the tops of the trees have in the majority of cases broken off. Trees which were girdled by stripping off the bark in a band have checked quite badly.

G—Olfactometer. Studies are being made to determine why it is that certain forest types are relatively immune to insect damage whereas other types are very susceptible. We have found that each species of tree gives a very distinct odor from the foliage in the form of water vapor plus probably an ethereal oil. This vapor has been collected from trees by hanging Mason jars over twigs with foliage and then covering the top, in such a way as to allow moisture to collect in the jar. Indications are that many forest and shade tree insects are attracted by these odors. To test this point out a "Y" shaped box was built about ten feet long and one foot square. It was so arranged that insects could be inserted at the basal end of the "Y" and fresh foliage of different species of trees placed in the short ends of the "Y." The insects upon liberation in the olfactometer travel towards the foliage and are later counted in each fork of the "Y." In this way, it has been possible to determine what species of trees attract a specific insect and what species or mixtures repel or fail to attract. These results check very closely with field observations and indicate the forest types that are liable to be most severely damaged. The results are also useful in working up repellent sprays.

H—White Grubs. A great deal of damage is done to forest nurseries by white grubs, and through cooperation with a number of New England nurseries, a series of projects have been started to find a cheap effective method of control. A report of the results so far obtained is appended to this report.

(5) Publication

The principal insect publication distributed by the Department is the "Manual of Forest Insects," a bulletin of 130 pages

which briefly describes the most common forest insects with methods of control. Other publications prepared for distribution during 1929-1930 are as follows: (1) "Field Book of Destructive Forest Insects," a booklet of 22 pages made possible by funds furnished by the Kennebec Valley Protective Association. This booklet describes the general types of forest insects and specifically describes twenty-two of the most common pests. Each insect is illustrated. The booklet was prepared for the warden service to aid them in identifying the insects, and has received wide distribution. (2) "Notes on the Immature Stages and Biology of a Birch Case Bearer" by K. A. Salman. This was published in the Annals of the Entomological Society of America, Vol. 22, No. 3, pp. 480-488, September 1929. (3) "Observations on the Birch Leaf-mining Sawfly" published in the Journal of Economic Entomology, Vol. 22, No. 3, pp. 588-593, June 1929. (4) "Progress Report on Birch Leaf Miner Problem," Maine Forest Service circular No. 1, 1930.

MAINE FOREST SERVICE
FOREST INSECT REPORT BLANK

If possible, send specimens of the insect with this report to the State Entomologist, State House, Augusta, Maine.

Township *Size of infested area*

Infestation (heavy or light) *Date of observation*

Type of Insect *Kind of trees infested*

(leaf-feeder, bark-beetle, borer, or name, if known)

Type of infested forest *Type of surrounding forest*

(spruce, fir, cedar, hemlock, pine, birch, poplar, hardwood, or mixed hardwood-softwood)

Length of time insects have been feeding in the area

Sketch location of infested area on other side of paper.

Reported by *Address*

If personal correspondence is not added, this form may be enclosed with the specimen as fourth class postal matter.

CONTROL OF WHITE GRUBS IN FOREST NURSERIES

H. B. PEIRSON and R. W. NASH
Maine Forest Service

White Grubs are the young of the common May beetles or June bugs. They destroy large amounts of coniferous nursery stock by feeding on the root system of the tender seedlings. They feed also on the tubers of potatoes and on the roots of such agricultural crops as beans, corn, potatoes, strawberries, timothy, and hay. The adult beetles feed at night on the foliage of ash, elm, hickory, locust, oak, poplar, and willow trees.

In the spring the pearly white eggs are laid separately in the ground wherever there is a field crop of any kind, except that of clover (Davis, 1918, "Common White Grubs" U. S. D. A. Farmers Bulletin 940). They hatch in about three weeks. During the summer the grubs are near the surface feeding on the roots, and in the winter they go deep into the soil. The second and third years the grubs continue feeding on the roots. They pupate in the ground and become adult beetles the third fall after hatching. The following spring the adults emerge from the ground to feed on the trees and to lay their eggs. It is possible that in northern New England it sometimes requires four years to complete the life cycle of this insect.

With the purpose in mind of controlling these pests, the Maine Forest Service outlined a series of experiments, in which eleven forest nurseries cooperated in doing the field work. A total of one hundred and eighty plots were laid out. The cooperating nurseries were those at Horseheads and Painted Post in New York; Northeastern Forestry Company, Cheshire, Connecticut; Maine State Nursery, Orono; Bristol's Trees, Plattsburg, New York; Western Maine Forest Nursery, Fryeburg; Connecticut State Nursery, Torrington; Vermont State Nursery, Essex Junction; Otter River State Nursery, Winchendon, Massachusetts; Keene New Hampshire Forestry Associates; Bates College Forest Nursery, Alfred, Maine; New Hampshire State Nursery, Gerrish.

Crude white arsenic, lead arsenate, and calcium arsenate were the three chemicals tried. It was believed that any of these poisons put into the soil in sufficient quantities would kill the grubs, due to the fact that when feeding a certain amount of soil passes through the intestinal tract of the insects.

These three chemicals have been found to have a tendency to accumulate as they are added to the soil. Arsenic or its compounds has been used before, but has given evidence of burning the plants when present in amounts of 1500 pounds or more to the acre. With this in mind, the experiments were outlined with the use of small amounts of these poisons, that is 60, 80, and 100 pounds to the acre. This was done to see if such small amounts would be sufficiently effective to kill the grubs, and at the same time cause no burning of the plants in either the first year of application or years to come as the arsenic accumulates in the soil.

For each project there were three treated plots and one check plot four (4) feet by twelve (12) feet, laid out contiguous. With each poison, the first plot was treated at the rate of sixty (60) pounds to the acre, the next plot at the rate of eighty (80) pounds to the acre, the third plot was left untreated as a check, and the last plot was treated at the rate of a hundred (100) pounds to the acre.

A number of the experiments were of no value and thus no conclusions could be derived, due to the fact that in some areas in which the work was carried out there was no grub damage in either the treated or check plots. This seemed to be the case more with those plots involving calcium or lead arsenate, so that in the end there were few results with which to work in the cases of these two insecticides. It is therefore, impractical to make any recommendations either for or against these. It should be added, however, that the few experiments giving results with these two poisons did not show as good control as those experiments involving crude white arsenic. Furthermore, the only results obtained with either calcium or lead arsenate were with plots having eighty (80) pounds to the acre and none having either sixty (60) or a hundred (100) pounds of poison per acre.

The experiments with crude white arsenic showed a definite

lessening of damage only where eighty (80) pounds or more of the poison to the acre was present in the soil. Out of sixteen (16) experiments giving results with sixty (60) pounds to the acre of this poison used, six of these had more grub damage than their corresponding check plots. This tends to show that an application of sixty (60) pounds of the poison to the acre is not enough to control the grubs. The same holds true of application with eighty (80) pounds of crude white arsenic to the acre. Although there was only one out of fifteen such experiments that had more damage in the treated plot than in the check plot, the grub damage was not lessened sufficiently to make the use of this amount practical.

Plots treated with crude white arsenic at the rate of a hundred (100) pounds to the acre showed fairly good control. No experiment was found where a plot with this amount had more damage than its corresponding check plot. A hundred (100) pounds to the acre, however, was not successful in totally preventing the damage. The amount has evidently got to be increased in the initial application and then lessened when added in years to come as the amount of the chemical in the soil demands. On areas treated in previous years the grub damage was very small. For example, at the Bates College Forest Nursery in plots treated in two previous years at the rate of at least a hundred (100) pounds to the acre each time, the grub damage was less than one per cent. In a nearby bed which received this year its application of eighty (80) pounds of arsenic to the acre, the damage was 12.5 per cent killed, and in its corresponding check plot never treated the injury done by the white grubs was 28.4 per cent. The highest percentage of trees killed in any bed previously treated, and having an accumulation of at least 200-300 pounds of arsenic to the acre, was found to be 10 per cent. All this shows that crude white arsenic present in the soil at the rate of 200-300 pounds to the acre is very effective in keeping grub damage down and is much more effective than a hundred (100) pounds to the acre. This shows also that for better control results, the initial application should be over one hundred (100) pounds to the acre and preferably around two hundred (200) pounds. In succeeding years the soil in areas could be

tested for the amount of arsenic present and sufficient amounts could be added, so as to keep the rate of poison present between two hundred (200) and three hundred (300) pounds per acre.

Mr. Flannagan of Bristol's Nursery tried three experiments, all with crude white arsenic at the rate of one thousand (1,000) pounds to the acre. This was done with 2-1 red pine to see if the trees would be injured or burned by such amounts in or on the soil. In one case, he placed the chemical along both sides of the roots of a number of trees and covered it with soil. Neither the roots nor the tops showed any sign of injury or burning from the treatment. In another case, he dug holes, put the arsenic in each one, covered the poison with a little soil and placed in his trees. In no case did this injure the trees. With other trees he sprinkled the arsenic on the young trees as well as on the nearby ground. Ten days later he watered these trees heavily by means of a hose. The roots, in this case, were uninjured but the tops were burnt and badly damaged which shows that such arsenic hurts the tops under certain conditions but not the roots.

As to the areas most apt to be infested within a nursery, it seems to make no difference whether an area is well or poorly drained. Some nurseries have heavier damage in the higher and better drained places, while with other nurseries the situation is exactly the opposite.

Heavy damage is often prevalent about the edges of a nursery, wherever it joins up with sod land. Different means of combatting this injury at such places have been tried by the nurseries. At the Vermont Nursery they have a man spade the sod near the edges and collect the grubs. They have also trenched around the edges and put in soil mixed with crude white arsenic at the rate of 200-300 pounds to the acre. Proell (Keene, N. H.) also has done this trenching, and in addition suggests leaving a cleared space of eight (8) feet in from the edge, due to the fact that injury in his nursery around the borders never has gone in more than seven (7) feet from the edge. Probably the most effective and practical way of stopping injury, in such areas would be a combination of two of the above methods. That is, leave the free, cleared space

of eight feet in from the sod; in addition fill a trench just at the edge of the sod with a mixture of soil and crude white arsenic at the rate of 200-300 pounds to the acre.

In some cases, the cooperators found it to be of advantage to put the poison on over the whole area rather than only on the beds or areas to be planted to trees. Time is saved and it is thus cheaper. Furthermore, it will help in killing any grubs present in the rows and in stopping them from working into the beds. At the Vermont State Nursery it was noticed that where paths were left untreated, there was heavier damage around the edges of some beds. Proell at the Keene Forestry Associates Nursery also recommends the application of the poison over the whole area before the trees are put in.

There were a number of ways practiced in applying the poisons to the soil. The chemicals were put on both free and in mixture with other things, such as soil or fertilizer. Porter of the Vermont State Nursery and Powell at the Massachusetts State Nursery seem to have the best suggestion, that is, of mixing the poison with sand or soil and then broadcasting the mixture over an area. The soil will tend to keep the poison from blowing or drifting in the air. Where fertilizer is to be put on by hand, rather than by a spreader, then the fertilizer as well as the soil may be mixed with the arsenic. Lime-sowers, phosphate spreaders, and other types of fertilizer spreaders have not been found to be practical in applying the arsenic. Such distributors clog, according to Bristol, Porter, and Proell, and give very uneven distribution. In getting the chemical down into the soil after applying, it is a matter of personal circumstances as to whether it should be plowed, or spaded in. The main object is to get the poison down to where the roots are to be. Commercial fertilizers are used for the most part now, although a compost of manure at times is used. Fresh manure should not be used because, although the beetles are not attracted to it for breeding purposes, they are attracted to it for feeding purposes.

Other means to help in controlling these pests have been tried by the cooperators. No figures were available but these were said, by the men, to have given some success. Among these methods are the placing of a ring of the poison in the

soil about an area that is badly damaged by the grubs to prevent their spread. Another means tried has been to place a poison bait in the soil where grubs are present in large numbers. Porter (Vermont) claims to have considerable success with a bait made of bran, molasses, orange juice, and Paris green placed in the soil in different parts of infested areas and covered. This bait was put out at dusk or on cloudy days. Proell, however, says that he has no success with such a bait, but it is worth noting that he had no orange juice in his mixture. Some of the cooperators have a man or boy follow the plow to collect the grubs as they are turned up. Others have the sod spaded over around the edges of a nursery to get rid of the grubs there. Davis (1918) in his bulletin on the common white grubs, feels that some good is accomplished by fall plowing before the grubs go deep into the ground to pass the winter. Ordinarily the best time, as he says, would be around October 1, and before October 10; the main point being to get the grubs before they go below the plow line and as short a time before this as can be done.

About the best natural control is afforded by skunks. Porter at Vermont has even prohibited the trapping of skunks about his nursery and is now thinking of fencing the area in so there will be no chance of the skunks being driven out.

At one nursery bordering a road, the heaviest damage has always been in that part of the nursery nearest the street. It is thought that the street lights had something to do with this by attracting the adults in that direction. It might be well, therefore, to have a lighted area in a field or wooded field away from the nursery. In this way, the adults might possibly be attracted to oviposit their eggs outside the nursery area. Light traps as a direct means of control have not proved satisfactory (Davis, 1918). The reason for this is that the light attracts many males but only few females. It is planned to continue the project during the coming year.

WHITE PINE BLISTER RUST

WHITE PINE BLISTER RUST

Importance and Control

A fungous disease known as White Pine Blister Rust is menacing the white pine stands of Maine. Generations of lumbering have practically exhausted the virgin stands of white pine, which has been the most important timber tree of the State. However, there remains hundreds of thousands of acres of young growth, including a considerable acreage of plantations established from seedlings raised in the nurseries of the State, which under protection and management should produce crops of great value.

The White Pine Blister Rust, a member of a widely distributed family of fungous diseases known as rusts, has an interesting life history. Part of its life cycle is spent on five-needle pines and the other stage of its development occurs on wild and cultivated currant and gooseberry plants belonging to the genus *Ribes*.

White Pine Blister Rust does not spread from pine to pine. Infection on pines comes from spores on the under-sides of currant and gooseberry leaves, which in turn are infected by spores from pines. The disease attacks white pine by entering through the needles, whence it works through the bark of the branches, eventually reaching and girdling the main trunk. Young white pines usually die from the disease in a few years, but older and larger trees are killed more slowly.

The spread and development of blister rust is dependent upon climatic conditions, seasons of extreme moisture being most favorable for its development. In regions where control measures have not been practiced, nearly one hundred per cent infection has been found.

Blister rust is firmly established throughout the United States wherever white pines grow. Recent investigations in the Northwest show that control measures must be adopted at once if the great white pine stands of Idaho and neighboring States are to be saved. In Maine, blister rust was first found in 1916 at Kittery Point, and for several years there-

after was thought to be confined chiefly to York County. More recent surveys showed that the rust was scattered throughout the State and was increasing rapidly in areas where control had not been practiced.

As blister rust is a two host disease and cannot go from one pine to another pine, but is carried to healthy pines from infected currant and gooseberry bushes, its control is assured by the removal of these bushes from a distance of nine hundred feet from the pine trees. (Black currants are an exception and must be destroyed when within one mile.)

Control work in Maine has been practiced since 1917, but not until 1922 was it conducted on an extensive scale. In 1922 the State and the United States Department of Agriculture entered into an agreement for the control of white pine blister rust, whereby they would cooperate with towns and white pine owners, the State and Federal Governments furnishing the educational, service, scouting and supervisory work, and the towns and owners the eradication labor. As pine owners, in general, are not familiar with the disease, and do not recognize the many varieties of wild currant and gooseberry bushes, it has been the State's duty to instruct them and supervise the work by furnishing trained men who know the disease, the alternate host plants, and the best ways to eradicate them.

Progress in Control Measures in 1929 and 1930

During 1929 control work was conducted in sixty-four towns and cities, in eleven counties, fifty-five of which appropriated cooperative funds, as follows:

Eight towns in Cumberland County, three towns in Androscoggin County, one town in Sagadahoc County, eight towns in Lincoln County, nine towns in Kennebec County, seven towns in Franklin County, twelve towns in Oxford County, five towns in Somerset County, one town in Waldo County and one town in Hancock County.

During 1930 control work was conducted in sixty-three towns and cities in twelve counties, fifty-six of which appropriated cooperative funds, as follows:

Eight towns in Kennebec County, six towns in Somerset

County, two towns in Androscoggin County, one town in Sagadahoc County, six towns in Cumberland County, three towns in Lincoln County, one town in Penobscot County, five towns in Waldo County, eight towns in Oxford County, thirteen towns in Franklin County, one town in York County and two towns in Hancock County. The largest private cooperator was the Brown Company which eradicated over one hundred and one thousand wild Ribes from one hundred and twenty-six acres of wild land around their forest tree nursery at Cupsuptic Lake. In the town of Mt. Desert the Village Improvement Societies of Northeast Harbor and Seal Harbor each raised \$250.00, and ten summer residents contributed \$252.00 to be added to funds appropriated by the town.

All towns in which blister rust control work is conducted are designated as control areas by the Forest Commissioner under the authority granted by Chapter 178, Public Laws of 1917, within which towns it becomes the duty of every landowner to remove all currant and gooseberry bushes within nine hundred feet of white pine trees in certain areas 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. This authority is seldom used, since the great majority of pine owners have willingly furnished labor to perform the eradication work. During 1929 and 1930 it has been used in but three cases, as against twenty-one hundred and forty-two willing cooperators.

Such a high percentage of cooperation is secured only by the personal contact our representatives have with pine owners. Every one of the twenty-one hundred and forty-two private eradication jobs done in the past two years were the result of educational work by our agents. Furthermore, all of this large number of pine owners and their help received a working knowledge of blister rust control that should be of value in protecting their white pine stands from this disease in the future.

Educational and service work by our blister rust agents during 1929 and 1930 resulted in the following town and pine owners cooperation:

2,142 pine owners did control work, expending \$16,066.01; 111 town appropriations were made with an expenditure of \$18,401.64, making a total of \$34,467.65 which was spent for the removal of 3,995,758 wild and 28,283 cultivated currant and gooseberry bushes from 51,046 acres of pine bearing lands, plus the protective strip, at a per acre cost of \$0.67. In addition, the State and Federal agents while doing advance scouting, removed 47,938 wild and 534 cultivated currant and gooseberry plants from 377,676 acres; making a total for all parties of 4,043,696 wild and 28,817 cultivated currant and gooseberry plants removed from 428,722 acres of pine lands plus the necessary protective strip.

WHITE PINE BLISTER RUST CONTROL
Appropriations and Expenditures Fiscal Years 1922-23 to 1929-30 and part of 1930-31

| | STATE | | TOWNS | | | OWNERS | | FEDERAL | |
|------------------|-------------|-------------|-------|-------------|-------------|--------|-------------|--------------|--------------|
| | Appro. | Exp. | No. | Appro. | Exp. | No. | Exp. | Appro. | Exp. |
| 1922-23 | \$5,000.00 | \$4,966.03 | 8 | \$1,300.00 | \$1,300.00 | 464 | \$4,409.32 | \$20,000.00 | \$15,562.01 |
| 1923-24 | 5,000.00 | 4,994.73 | 39 | 7,115.00 | 6,899.99 | 1,148 | 8,760.34 | 17,000.00 | 16,404.34 |
| 1924-25 | 5,000.00 | 4,984.38 | 49 | 8,154.25 | 8,115.55 | 1,701 | 10,619.58 | 20,000.00 | 19,910.59 |
| 1925-26 | 5,000.00 | 4,965.04 | 50 | 8,000.00 | 7,199.63 | 1,595 | 9,337.30 | 20,000.00 | 19,250.25 |
| 1926-27 | 5,000.00 | 4,759.47 | 45 | 7,321.28 | 7,318.89 | 1,485 | 9,612.67 | 20,000.00 | 19,625.75 |
| 1927-28 | 6,250.00 | 6,231.95 | 53 | 8,277.00 | 8,319.01 | 1,372 | 9,324.06 | 21,500.00 | 21,190.79 |
| 1928-29 | 6,250.00 | 6,249.60 | 61 | 10,717.00 | 10,009.07 | 1,090 | 9,567.09 | 21,250.00 | 22,263.50 |
| 1929-30 | 6,250.00 | 6,086.77 | 55 | 9,485.27 | 9,429.83 | 1,146 | 8,261.32 | 21,250.00 | 22,022.16 |
| Totals | \$43,750.00 | \$43,237.97 | 360 | \$60,369.80 | \$58,591.97 | 10,001 | \$69,891.68 | \$161,000.00 | \$156,229.39 |
| 1930-31 | \$6,250.00 | * | 56 | \$9,100.00 | \$8,971.81 | 996 | \$7,804.69 | \$21,250.00 | |

*Fiscal year ends June 30, 1931. Expenditures will be kept within the appropriations.
 By the State appropriating \$50,000.00, it was possible to receive \$182,250.00 of Federal Aid during this period.

GENERAL FORESTRY

GENERAL FORESTRY

Publicity

This Department has continued with satisfactory results its campaign of publicity which it initiated in 1924.

This publicity is carried on throughout the year in the daily and weekly newspapers of the State. Early in the spring with the advent of the fire season in the southern counties, the program is broadened. These news items cover the active program of the Department, progress of work, activities of its members, and comment on the fire situation, with admonitions to the traveling public by the Forest Commissioner. During the critical dry periods, the Commissioner supplements these news items by large advertisements addressed to the public.

The Great Northern Paper Company has for many years strongly supported the Department in educational and fire preventive programs. During the past season this company has caused to be published in newspapers throughout the State, at its own expense, a series of 21 large illustrated cuts which informed the public concerning the value of the forests to Maine and the destructive results of forest fires. One of these advertisements appeared each week during the fire season. They constituted a strong contribution to the work of the Department.

Through the use of notices and posters the Department reaches a large body of people that is traveling through the woods. The state fire wardens, local fire wardens, game wardens and private owners posted 10,000 fire warning notices. In the western section of the State the Kennebec Valley Protective Association has had posters and notices printed. It has greatly helped the Department by posting its notices in the traveled areas.

The Department has furnished lecturers and speakers to interested organizations, service clubs and schools, who talked concerning the work of the Department and its objects.

Education as to the worth of Maine's forests should begin

with the youth in our public schools. The Department has fittingly distributed throughout the elementary schools over 15,000 book covers, upon which are printed suggestions and rules, the observance of which will bring about more care with the use of fire in the woods. The Department always has available for distribution a number of pamphlets and folders concerning the forests of Maine and related subjects. The most popular pamphlet has been "Forest Trees of Maine," which contains a classification and brief description of all the common trees growing in the State. Five thousand copies of this pamphlet have been distributed. The Department has published 2,000 folders relative to the planting of trees. Concerning the hardwoods, the Department has published 5,000 copies entitled "Maine Hardwoods."

The forestry laws of the State are now available in a condensed form and published in the "Forest Manual" of which 3,000 copies are available for distribution.

A statistical study of forest fires and their causes during the decade from 1916 to 1925 has been published, and 5,000 copies of this bulletin entitled "Forest Fires in Maine" are available.

Concerning entomology, there are now available for the information of the public three publications, the "Manual of Forest Insects," "Progress Report on the Birch Leaf Miner Problem" and "Field Book of Destructive Forest Insects." This latter publication was issued in cooperation with the Kennebec Valley Protective Association. It furnishes a handy book for the interested field worker.

Forest Guides

A former Forest Commissioner introduced in 1921 the novel idea of enlisting the aid of Boy Scouts as Forest Guides. There can be no better opportunity for forest educational work than to arouse forest interest among young boys. At the outset, the plan was in effect in only four of the organized councils of Boy Scouts, but it is hoped this year to make this Forest Guide movement State-wide in scope.

To qualify as a Forest Guide, a boy must have a thorough

knowledge of the correct use of the axe, compass, map reading, identity of the common trees, when and how to build fires, how to extinguish and fight fires, general woodcraft, and must be familiar with the forest fire laws of the State.

Boy Scout groups in the past have been called upon to fight fires. Under the Forest Guide plan, a boy must have the consent of his parents to assist in putting out fires in his immediate vicinity when called upon by the proper authorities.

The Department will be glad to cooperate with the councilors in drawing up questions and holding examinations. Those successfully passing the examination will receive a certificate and a Forest Guide badge.

When the plan is put into actual practice, new and interesting requirements will be developed. Such new duties may involve the posting of fire-warning notices, distribution of forestry literature, taking active part in Arbor Day exercises, tree planting on waste lands, setting up forestry exhibits, white pine blister rust and insect control, and special excursions to the woods.

It is believed that this plan will add a new and useful feature to the Boy Scout activities, and in addition, greatly increase the effectiveness of our fire protection system and general forest work.

State Forest Nursery

All receipts from the sale of trees from the State forest nursery were turned over to the State Treasurer. In 1929 the sales amounted to \$657.25, in 1930 sales amounted to \$662.00. All trees were sold at the stipulated price of \$5.00 a thousand.

| <i>List of Trees Sold</i> | 1929 | 1930 |
|---------------------------|---------|---------|
| White Pine | 55,350 | 49,550 |
| Red Pine | 24,950 | 3,500 |
| White Spruce | 33,000 | 60,200 |
| Norway Spruce | 22,850 | 28,100 |
| | <hr/> | <hr/> |
| | 136,150 | 141,350 |

Through special arrangement with the Department, the number of trees distributed to town forest projects in 1929 was 4,700 and in 1930 was 8,950.

Forest Nurseries in the State

| <i>Name</i> | <i>Location</i> | <i>Acreage</i> | <i>Approximate Output</i> |
|-------------------------------|-----------------|----------------|---------------------------|
| S. D. Warren Co., | Bingham | 2 | 1,000,000 |
| J. L. Dean, | Winslow | 3 | 200,000 |
| Bates College, | Alfred | 3 | 50,000 |
| Eastern Manufacturing Co., | Matagamon | 5 | 500,000 |
| Francis H. Friend, | Skowhegan | 2 | 250,000 |
| Western Maine Forest Nursery, | Fryeburg | 22 | 2,300,000 |
| 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 of Maine 1929-1930

| | <i>1929</i> | <i>1930</i> |
|-----------------------|-------------|-------------|
| White Pine | 566,608 | 240,818 |
| Red Pine | 150,950 | 171,341 |
| White Spruce | 823,724 | 430,416 |
| Norway Spruce | 89,100 | 158,850 |
| Austrian Pine | 7,225 | 2,926 |
| Scotch Pine | 19,200 | 20,000 |
| Cedar | 4,150 | 394 |
| Douglas Fir ..... | ..... | 4,736 |
| White Birch ..... | ..... | 4,025 |
| Balsam Fir | 950 | 13,916 |
| Larch ..... | ..... | 15,093 |
| Colorado Spruce | 26,000 | ..... |
| Miscellaneous | 9,285 | ..... |
| | <hr/> | <hr/> |
| | 1,697,192 | 1,062,515 |

There is a sustained interest in forest planting in the State. The Department receives regular inquiries for the bulletins on forest planting, which it has for distribution.

Auxiliary State Forests

The Auxiliary State Forest Law enacted by the 1921 Legislature and known as the Granville Law, was repealed by the 1929 Legislature and the following bill enacted:

STATE OF MAINE

Chapter 306, P. L. 1929

An Act Relating to Auxiliary State Forests

Sec. 1. The forest commissioner shall have full charge of all auxiliary state forests, as the same are hereinafter defined.

Sec. 2. Auxiliary state forests shall include all areas owned by corporations, firms, or individuals, now covered by trees or which shall be planted to trees for use as fuel, manufacture or sale, and which are capable of producing fifteen thousand feet, board measure, of soft wood, and eight thousand feet, board measure, of hardwood, or their equivalent per average acre, exclusive of ledges, swamps, bogs, or ponds, the owner of which, shall in cities and organized townships have filed with assessors and forest commissioner plans or description of such tracts with a request that the same be included as a part of the auxiliary forests of the state; upon receipt of application of owners for inclusion of land as a part of the auxiliary state forests, the primary purpose of which shall be to produce timber for manufacturer or sale, the assessors shall notify the owner within thirty days of the acceptance or rejection of said application. If the assessors reject the application or fail to take action within thirty days, the applicant may appeal to the forest commissioner, who shall have an investigation made, and, if in his judgment the land is capable of producing timber as required by this section, shall grant such application.

Sec. 3. State, town and plantation assessors shall, for the purpose of taxing auxiliary state forests, appraise only the land, which shall be appraised at the same valuation as stripped forest land, in the same vicinity; provided, however, that such valuation shall not exceed two dollars per acre, independent of any great pond therein.

Sec. 4. No person desiring to clear land for agricultural purposes, for building, or for highways, or to cut trees for use in building camps, dams, or the construction of ways, or for use as fuel in the course of lumbering operations, or from his own land for use upon his farm in the ordinary course of good husbandry, shall pay tax under this act, unless the wood

so cut is to be sold for fuel or sold or used for manufacture.

Sec. 5. All persons, firms or corporations owning auxiliary state forests, and who are engaged in the business of cutting trees therefrom for market or manufacture shall pay to the various cities, towns and plantations, where the land from which said trees so cut is located, a tax of one-half of one per cent, if cut during the first year, two per cent for the second year, three per cent for the third year, four per cent for the fourth year, five per cent for the fifth year, and thereafter upon the stumpage value of all trees so cut and during the year ending the first day of April the value of stumpage so cut, and shall make a return to the assessors each year stating the amount of each kind of wood or timber cut during the preceding year ending April first, together with the estimated stumpage value or actual stumpage price received therefor.

Sec. 6. Any person, firm, or corporation refusing to make the returns required by this act within the time limited herein or any person who shall knowingly or wilfully make a false return of the quantity of logs cut or the number of cords of wood cut, during any season, or who shall cut any trees from the auxiliary state forests contrary to the provisions of this act shall be punished by a fine not exceeding one thousand dollars.

Sec. 7. Provided, however, that in any one year not more than ten per cent of the area of a town can be admitted as a part of the auxiliary state forests of the state if the assessors of said town file a protest with the forest commissioner within ten days from the date of application for admission.

Sec. 8. Provided that all or any part of any land included in the auxiliary state forest may be withdrawn by filing with the forest commissioner description of such land and the payment of the tax on the full value of trees thereon.

Sec. 9. Chapter one hundred and seventy-eight of the public laws of nineteen hundred and twenty-one, as amended by chapter one hundred and thirty-eight of the public laws of nineteen hundred and twenty-three, and all other acts or parts of acts inconsistent herewith are hereby repealed.

Approved Apr. 13.

**Lots or Parcels of Land Accepted by the Towns as Auxiliary
State Forests**

| <i>County</i> | <i>Town</i> | <i>Owner</i> | <i>Acreage</i> |
|---------------|----------------|-----------------------|----------------|
| Androscoggin | Leeds | Walter H. Burnell | 20 |
| Androscoggin | Livermore | Otho C. Partridge | 8 |
| Androscoggin | Mechanic Falls | S. P. Penney | 272 |
| Aroostook | St. John | Fred Pelletier | 1,000 |
| Cumberland | Bridgton | Charles E. Cobb | 1,105 |
| Cumberland | Bridgton | Walter H. Burnell | 43 |
| Cumberland | Harrison | S. D. Nutting | 95 |
| Cumberland | New Gloucester | Bates College Forest | 170 |
| Cumberland | Otisfield | Kemp Brothers | 50 |
| Cumberland | Otisfield | Kemp Brothers | 551 |
| Cumberland | Otisfield | S. D. Nutting | 939 |
| Cumberland | Otisfield | William S. Spurr | 100 |
| Cumberland | Sebago | S. D. Nutting | 370 |
| Franklin | Jay | F. C. Partridge | 77 |
| | | Otho C. Partridge | |
| Hancock | Orland | Ira D. Eastman | 1,300 |
| | | William H. Powell | |
| Oxford | Buckfield | Spaulding & Son | 50 |
| Oxford | Buckfield | N. E. Morrill | 177 |
| Oxford | Buckfield | E. E. Conant | 55 |
| Oxford | Denmark | Charles E. Cobb | 892 |
| Oxford | Fryeburg | Buzzell & Son | 250½ |
| Oxford | Fryeburg | Waldo McIntire | 13 |
| Oxford | Fryeburg | Earl P. Osgood | 217 |
| | | Enoch Pike | |
| Oxford | Fryeburg | T. C. Eastman | 21½ |
| Oxford | Fryeburg | Walter H. Burnell | 35 |
| Oxford | South Paris | S. D. Nutting | 29 |
| Oxford | South Paris | O. K. Clifford | 165 |
| Oxford | Stow | David A. Bradley | 60 |
| | | Edward E. Hastings | |
| Oxford | Stow | Hugh W. Hastings | 170 |
| Oxford | Stow | Erza W. Bosworth | 60 |
| | | Hugh W. Hastings | |
| Oxford | Stow | Charles F. Smith | 85 |
| | | Noah McDonald | |
| Oxford | Stow | E. C. Buzzell | 30 |
| Oxford | Stow | Erza W. Bosworth | 1,380 |
| | | David A. Bradley | |
| Oxford | Stow | David A. Bradley | 590 |
| Oxford | Stow | David A. Bradley | 80 |
| | | Hugh W. Hastings | |
| Oxford | Stow | Erza W. Bosworth | 30 |
| | | David A. Bradley | |
| Oxford | Stow | E. C. Buzzell | 100 |
| | | David A. Bradley | |
| Oxford | Sweden | Walter Burnell | 200 |
| Oxford | Sweden | Mrs. Lena B. Wilson | 50 |
| | | Mrs. George A. Knight | |
| Oxford | Waterford | S. D. Nutting | 200 |
| Piscataquis | Brownville | Percy L. Hamlin | 139 |
| Piscataquis | Brownville | I. M. Pierce | 723 |
| Piscataquis | Orneville | Percy L. Hamlin | 130 |
| Somerset | Hartland | Diamond Match Company | 1,510 |
| Somerset | Canaan | Diamond Match Company | 600 |

AUXILIARY STATE FORESTS

| LANDS ACCEPTED BY MAINE FOREST SERVICE | | | | LANDS ACCEPTED BY THE TOWN | | |
|--|-----------------|---------------------------------|---------|----------------------------|---------------------------------|---------|
| COUNTY | Number of Towns | Number of Landowners per county | Acreage | Number of Towns | Number of Landowners per county | Acreage |
| Androscoggin..... | 2 | 2 | 300 | 3 | 3 | 300 |
| Aroostook..... | 1 | 1 | 1,740 | 1 | 1 | 1,000 |
| Cumberland..... | 2 | 2 | 1,568 | 5 | 6 | 3,423 |
| Franklin..... | — | — | — | 1 | 2 | 77 |
| Hancock..... | 4 | 4 | 2,346 | 1 | 2 | 1,300 |
| Kennebec..... | — | — | — | — | — | — |
| Knox..... | — | — | — | — | — | — |
| Lincoln..... | — | — | — | — | — | — |
| Oxford..... | 6 | 11 | 4,282 | 7 | 18 | 4,940 |
| Penobscot..... | 13 | 8 | 13,819 | — | — | — |
| Piscataquis..... | 2 | 3 | 2,530 | 2 | 2 | 992 |
| Sagadahoc..... | — | — | — | — | — | — |
| Somerset..... | 2 | 2 | 175 | 2 | 1 | 2,110 |
| Waldo..... | 1 | 1 | 453 | — | — | — |
| Washington..... | 1 | 1 | 1,250 | — | — | — |
| York..... | 6 | 7 | 5,344 | — | — | — |
| Total..... | 40 | | 33,807 | 22 | | 14,142 |

11 Counties
23 Individual Landowners

8 Counties
31 Individual landowners

PUBLIC LANDS

PUBLIC LANDS

School Lots

There are about 50,000 acres of school lands in the State located in fifty-five different plantations which are held in trust for those plantations. The revenues from these lots for 1929 and 1930 are, as follows:

| TOWNSHIP | COUNTY | 1929 | 1930 |
|------------------------|-------------|-------------|-------------|
| Cyr Pl. | Aroostook | | \$41.50 |
| Glenwood Pl. | " | \$320.50 | 28.50 |
| Hamlin Pl. | " | 260.74 | 74.00 |
| Molunkus Pl. | " | 131.65 | 25.00 |
| Nashville Pl. | " | 67.50 | |
| New Canada Pl. | " | | 51.00 |
| Oxbow Pl. | " | 59.83 | 5.00 |
| Reed Pl. | " | 4,119.12 | 877.50 |
| Silver Ridge Pl. | " | 249.40 | |
| St. John Pl. | " | 414.34 | |
| Westmanland Pl. | " | | 1,524.70 |
| T. 10, R. 4, W.E.L.S. | " | 39.40 | 16.00 |
| T. 14, R. 6, W.E.L.S. | " | 520.60 | 1,060.60 |
| T. 16, R. 10, W.E.L.S. | " | 1.12 | 17.15 |
| T. 16, R. 11, W.E.L.S. | " | | 4.10 |
| T. 17, R. 10, W.E.L.S. | " | 13.25 | 31.13 |
| T. 17, R. 11, W.E.L.S. | " | 169.11 | 792.88 |
| Letter E. | Franklin | 50.00 | 50.00 |
| Rangeley Pl. | " | 9,679.95 | |
| Sandy River Pl. | " | 2,473.56 | |
| T. 3, R. 3, W.B.K.P. | " | 100.00 | 100.00 |
| T. 3, R. 4, W.B.K.P. | " | 100.00 | 50.00 |
| T. 4, R. 2, W.B.K.P. | Oxford | 100.00 | 100.00 |
| T. 5, R. 4, W.B.K.P. | " | 151.00 | 152.00 |
| T. 5, R. 5, W.B.K.P. | " | 50.00 | |
| Lakeville Pl. | Penobscot | 1,040.00 | 200.00 |
| Stacyville Pl. | " | | 1,390.80 |
| Webster Pl. | " | | 198.81 |
| T. 5, R. 8, W.E.L.S. | " | 10.00 | 10.00 |
| Lake View Pl. | Piscataquis | 105.99 | |
| T. 2, R. 11, W.E.L.S. | " | | 25.00 |
| T. 10, R. 9, W.E.L.S. | " | 12.50 | 12.50 |
| Bigelow Pl. | Somerset | 24.48 | |
| Dennistown Pl. | " | | 206.45 |
| Flagstaff Pl. | " | 639.00 | 2,601.66 |
| Highland Pl. | " | 502.86 | 564.37 |
| Jackman Pl. | " | 235.00 | |
| West Forks Pl. | " | 1,860.18 | 1,082.41 |
| Grand Lake Stream Pl. | Washington | 652.60 | |
| No. 14 Pl. | " | 423.00 | |
| | | \$24,576.68 | \$11,293.04 |

Town Forests

There have been no accessions to the lists of towns in the State which have town forests. There is a prospect that the

next town forest in the State will be in Norway. Here there is a tract of about five (5) acres, covered with a virgin stand of mature white pine, reached by a very short walk from the business section of the town. This has been purchased by private parties, with intentions of establishing a town forest.

Eight (8) towns in the State have now established town forests, as follows:

| Town | Acreage |
|-------------------------|---------|
| Bangor | 40 |
| Brunswick | 528 |
| Fryeburg | 80 |
| Kennebunk | 2 |
| Old Town | 247 |
| Skowhegan | 332 |
| Waterford | 5 |
| Cumberland Center | 50 |
| | 1,284 |

National Forests

On January 16th, the Forest Service, United States Department of Agriculture announced that the area of the National Forests of the State was 33,482 acres, which are located in Oxford County and in the following towns:

| Town | Acres |
|--------------------------|--------|
| Albany | 3,290 |
| Batchelder's Grant | 14,242 |
| Gilead | 1,116 |
| Mason | 5,976 |
| Stoneham | 8,017 |
| Stow | 841 |
| | 33,482 |

Twenty-five per cent of the net receipts realized from these Forests, representing a Federal payment in line of taxes, was received by the State Treasurer and was paid by him to the towns, as follows:

| | 1929 | 1930 |
|----------------|------------|------------|
| Albany | \$243.67 | \$311.79 |
| Gilead | 82.66 | 105.68 |
| Mason | 442.60 | 566.25 |
| Stoneham | 584.88 | 759.53 |
| Stow | 62.29 | 79.65 |
| | \$1,416.10 | \$1,822.90 |

As Batchelder's Grant is not incorporated, its share was apportioned to the other towns within that area. Besides the twenty-five per cent fund, an additional ten per cent of net receipts is set aside each year to be used for forest roads and this State quota for 1931 is \$729.16.

These forests are administered on a permanent yield basis and so revenues are expected to increase in the future as the resources develop. The State bears no expense of protecting, administering and developing these forests.

Indian Township

It has seemed desirable for some time that Maine should set aside a forested area where approved methods of forest management can be carried on by the State and where improved methods of handling stands can be worked out. Indian Township located in Washington County just north of Princeton offers these possibilities. A preliminary survey of the township made by Mr. R. E. Rendall, Manager of the Bates College Forest at Alfred, indicates that the area is well fitted as to timber, roads, drivable streams and markets for intensive forest management. It is believed that with proper supervision the area can easily warrant an annual cut of 1,000,000 feet. Authority from the Governor and Council has been obtained to employ a technical forester with practical experience, whose salary and expenses are to be paid out of the revenue obtained from the Township. This coming summer's plans are being made to have several specialists in forest management visit the area to make suggestions on its future management.

Each year since 1923 the University of Maine Forest School has held a winter camp for its students. No permanent quar-

ters or area has been available and it has been necessary to hold the camp in different localities. Permission has been granted by the Governor and Council for the Department of Agriculture at the University of Maine to erect and maintain a camp on Indian Township for the purpose of conducting its winter camp course for the Forest School students. The camp is to be built of logs taken from the Township, for which there will be no charge. The cost of building is to be borne by the University of Maine. The location of the winter camp on Indian Township will make it possible for the students to start permanent study plots and to follow the progress of management, as it is carried on from year to year. It is probable that the students may be of some help to the manager in surveying, typing, estimating timber and the making of growth studies.

From every view point the carrying through of the present plans should prove of great benefit to the State. As Maine has no State Forests, this area will serve to fill this gap and will so help to round out the State forestry program. A copy of Mr. Rendall's report follows:

"At the request of the Forest Commissioner and with the approval of the Governor, I travelled to Indian Township for the purpose of giving advice as to the desirability of applying, intensively, forest management to this township. I spent one day, October 23rd, in looking over representative parts of the area, under the guidance of Mr. George Faulkner, State Forest Supervisor.

According to the Forest Commissioner's report for 1906, Indian Township was divided as follows:

| | | |
|-------------------|--------|-------------|
| Forested | 20,941 | acres—87.0% |
| Waste land (bogs) | 2,079 | " — 11.2% |
| Meadow land | 227 | " — 0.9% |
| Cleared land | 225 | " — 0.9% |
| | <hr/> | <hr/> |
| | 24,072 | " 100.0% |

Of this acreage, 12.4% or 2,987 acres, is in adverse holdings, either as a result of sale or long time lease by the State. In 1913 there was 1,768 acres of flowage land. The net acreage at the present time is 19,317 acres, of which 16,000 to 17,000 acres is forested. This forested land is covered with saw-

timber, pulpwood and hardwood, of different degrees of size and age. There are present, mixed conifers, spruce and hardwoods, which could easily be maintained and made permanent types. There are good roads and streams available to facilitate the handling of stumpage. The local market is apparently good for fuel wood, and both a soft-wood and a hard-wood mill is located in Princeton, a village adjacent to the area. The merchantable growth, which is unevenaged, is thrifty, showing that, with the exception of the heaths, the soil is well-drained and favorable for timber growth. Both pine and spruce stumps, on a present cutting area, show a good annual growth. Reproduction is well advanced and the ground is fully stocked with desirable species.

Reports show that there are several million feet of timber and several thousand cords of birch and poplar. Stumpage and market prices are comparable to those of Western Maine. Surely, these features should warrant careful consideration in regard to the management of the area. With such a stand of timber and an area large enough to support it, the annual growth should easily warrant an annual cut of 1,000,000 feet.

The object of management should primarily be, to maintain the productivity of the forest. This, because of the State's ownership. There is a value from an educational standpoint, in demonstrating, that intensive forest management and regulation, is not only practical, but paying. Such management of State land will do much to encourage forest conservation, throughout the State. To do this, successfully, a technical forest manager should be employed for full time. Such a man would first make a cruise of the area and an estimate of the timber, the data from which, would be the basis of a comprehensible working-plan. This working-plan would be the guide for management, subject to the approval of the Forest Commissioner. From an observation of the lands, together with information given in past reports, it is certain that an annual income could be derived, from the area, to carry, not only the administration expenses including the manager's salary, but to net a surplus income as well.

Under management, many beneficial results could be obtained. Closer utilization would be enforced, thereby increas-

ing the income. Better prices would be received, because of the study the manager would make of the markets. There would be increased growth and, therefore, increased production, because of silvicultural treatment of the stands of timber. Work would be available for local labor. Lines should be re-run and well marked. Leased or sold portions of the Township should be re-acquired, from time to time, so as to consolidate the area and thereby minimize the boundaries. A system of marking of timber to be cut should be used in the mixed types, rather than using a diameter limit, so as to insure a desirable cover after logging. The area is ideally adapted for scientific studies and experimentation. Work could well be done by the students in forestry at the University of Maine that would prove valuable to both, the students and the management. The results would also be valuable for general distribution.

The white pine growth, which is of good quality, should be encouraged and the spruce stands retained. The hardwoods can be utilized but should be kept subordinated to the softwoods, as they are largely of inferior species.

Professor G. E. Tower reported in 1906 that the State had a valuable asset in Indian Township. The same statement is true in this year of 1930 and the value can be increased and perpetuated, yielding the State an income, if attention is given to management and regulation. Should a cruise and estimate be made, it would be most logical to employ a man who would be available, if the State wished to retain him, for manager of the area.

Respectfully submitted,

(Signed) R. E. RENDALL, Forester."

Alfred, Me.

Nov. 15, 1930.

The net revenues from Indian Township derived from stumpage and leases for the past two years are, as follows:

| | |
|------------|----------|
| 1929 | 1930 |
| \$1,768.91 | \$808.72 |

APPENDIX

NEW VOLUME TABLES FOR MAINE TIMBER

By Austin Cary, U. S. Forest Service

Timber estimators of these days use volume tables very extensively. These tables do not indeed replace experience on the part of the estimator, but they check and assist the judgment, greatly lessen the field in which it has to be exercised, and are in fact of great assistance.

Some readers may not understand what a volume table is; it is a very simple thing really. It is a table giving the contents of trees of specific sizes, height and diameter, the height being total height from the soil to the top bud, the diameter taken outside bark at breast height or $4\frac{1}{2}$ feet from the ground. Suppose a tree 10 inches in diameter for instance and 50, 60, or 75 feet tall. The table tells either how many cubic feet it contains, or what fraction of a cord, or how many feet of lumber approximately may be sawed out of it. This it does as a matter of averages only, however. Single trees frequently vary rather widely from the average in form, a matter which has sometimes to be studied into on its own account, though the table is a safe guide in ordinary circumstances.

Nearly 25 years ago the writer constructed volume tables for northeastern spruce, based on tree measurements taken in Maine and New York, that were printed in his "Manual for Northern woodsmen." Three tables were worked out, in cubic feet for the whole tree, in board feet according to the Maine log rule applied to 16-foot logs, in cord measure of pulpwood bark on, necessary loss of wood at stump and top of course allowed for. These tables have been extensively used in the intervening years along with those constructed by others for the same and other species, and the first two are still standard in the field they cover.

Meanwhile changes have come over our business in pulpwood. Spruce and fir wood is now mostly peeled in the woods before it is surveyed, and other species, hemlock and poplar

particularly, have come into extensive use in our part of the country. Moreover, the original spruce table was known to be defective at one point, in this to be specific—that in reducing from cubic feet to cords the same number of cubic feet was allowed in trees of all sizes, whereas it was well known that this factor is variable. This defect it was impossible at the time to correct by reason of the expense involved, but conditions finally came around in which it was practicable to correct it. The National Forest Service, a number of our Northern paper companies, and some of our Maine timber cruisers supported the work done; while the job was on, it seemed worth while to cover poplar and hemlock. The field work was carried on in three seasons, 1927-29.

First, about that matter of solid contents in the piled cord. That varies more or less, as everyone probably knows, with the closeness with which wood is trimmed of knots and with the character of the piling. Careful buyers of pulpwood naturally look closely after those matters. That the size of the wood put into a given pile affects the matter as well is a fact understood less widely. Here is the general rule—that small wood piles more loosely than does larger wood, has less cubic feet per cord, supposing the two lots to be otherwise of the same quality; the number of spaces between sticks more than offset their reduced size therefore. To define this matter accurately, in relation to trees of different sizes was, as already indicated, a main feature of the study.

It can be imagined that a lot of detail was involved in this; readers would find much of it a burden. With the results, however, they may feel concern, and these for spruce and fir are given in the following table. The very smallest spruce and fir pulpwood, it will be seen, contains around 90 cubic feet to the piled cord and the figure rises to 105 for wood of considerably larger size. The similar figures derived for hemlock and poplar will not be given here; they run the same way, are a little smaller than for spruce and fir. An inference may be drawn from these relations that has long been a subject of concern to paper manufacturers, that the piled cord is really for their purposes a defective unit of measurement for pulpwood.

| Breast Diameter of trees | Cubic Feet in 1 cord |
|--------------------------|----------------------|
| 5 inches | 90 |
| 6 | 92 |
| 7 | 94 |
| 8 | 96 |
| 9 | 98 |
| 10 | 100 |
| 11 | 102 |
| 12 | 104 |
| 13 and up | 105 |

What next of the field work necessary in the prosecution of these studies? Naturally it had to be carried on in the woods themselves, the workers living in the camps in large measure. Here is the method of procedure:

Two men were necessary for a crew; they had to be careful men and good at figures. A young man picked up at Danforth when the work started in 1927 proved to be exactly suited to the work, interested in it as well, and he carried the main burden of the detail, both in woods and office, for the three seasons.

For convenience's sake and the saving of cost, camps were selected where the wood was yarded up before sawing and piling, the job started when peeling was mostly completed and yarding had begun. With ground selected that would yard to given piling ground and that suited for the timber on it, the first measurements were made on the sticks as they lay, peeled and in long lengths, on the ground. These consisted of height of stump and its diameter inside bark, diameter of the tree breast high (obtained by calipering the peeled stick at that point with two thicknesses of bark added), thickness of bark at regular intervals, length of the stick, its diameter where cut off in the top, length of the unused top. These measures were taken down in note books, one for each pile, with each tree on a page, room enough on the page for recording the further measurements to be made and for the computing. Each tree as measured was marked with a number.

The balance of the work was done at the pile. As the sticks measured began to come in, a man stood there with the same

note book in hand and set down the diameter, cross measured, at each saw cut. With a pile completed, therefore, and its dimensions measured, it was known how many trees were in it and of what dimensions, also how many bolts and of what diameter. To figure up the contents of the bolts in cubic feet was simple if tedious business. With used volume obtained thus for the pile and for the tree, the contents of stump and top was added and bark volume of the tree also. The matter of size of trees as affecting the problem was dealt with by selecting bodies of timber running large or small or by a simple assortment as it came in to the yard, not by any elaborate method.

Some side issues connected with the study may be of interest to Maine readers.

The proportion that bark makes of the total volume of a tree, or of wood as used, is one such point. For Maine spruce it is $12\frac{1}{2}$ per cent or one-eighth, a little more in the very smallest trees, somewhat less in trees of large dimensions. For balsam fir it figured 9.2%; occasionally, however, fir has a thick, corky, ridged bark; and that condition by report appears to be rather general in Canada. The relatively thick bark of hemlock makes up right around 20% of the volume of the stick bark on. All these figures are derived from measurements of diameter; the figure for spruce has been closely confirmed by piling.

The degree of economy with which our pulp timber is utilized is perhaps a matter of general interest. Some sacrifice of wood volume in stump and top is of necessity involved in practical operation; this is not really waste to the extent that cost of saving it exceeds its value. Odd lengths at the top of sticks shorter than three feet long are not commonly put into piles, and these were figured in this study as loss in volume. It was the same, too, with pieces of partly rotten wood that occur more or less frequently in almost all timber.

This understood, we may first note that the greatest economy observed in this study occurred in a body of sound and good-sized timber cut and piled with the bark on—rough wood the operators calls it. It was utilized to an average diameter of 4 inches in the top and all but 8% of the total contents of the

stems was piled up for measurement. This for spruce. Hemlock in the same operation showed 2% better utilization.

When wood is peeled, seldom, as it appears, is it taken to a smaller diameter in the top than in a rough-wood operation; at any rate 4 inches is close to the average top diameter of used wood as ascertained in this study. The ordinary range is from 3 to little over 5, according to the size of tree mostly. For this class of operation in Maine today 88 to 89% of the wood content of the stem put into the pile is the standard of utilization according to this study, that statement to be interpreted in accordance with the first paragraph relating to this topic. It proved to be practically the same for hemlock and poplar as for spruce. Naturally and unavoidably the sacrifice is proportionally greater for small trees than for large ones. Complaint, it would seem, could hardly be lodged on the basis of these findings. As nearly as can be readily told Maine timber is being used for pulpwood purposes on or very close to the economic standard for such utilization.

Some of an inquiring turn of mind may feel an interest in the shape of trees. Clearly their stems approach the conical form; when examined closely departures are found, however. Root swelling is the first of these to note. A tree trunk usually expands fast as it connects with the roots, making a concave curve as looked at laterally; sometimes this expansion reaches up above the breast high point which as a matter of convenience in field work was long ago settled as the basis for diameter comparisons. Above this to a point near the lower limbs of a normally shaped tree diameter shrinks at a nearly uniform and a moderate rate; above that, in the crown of the tree, the taper is more rapid, less uniform, with a convex curvature usually. As against the rule that a cone contains $1/3$ the volume of a cylinder having the same diameter and height, a tree's volume is commonly between 40 and 50% of that of a cylinder with the same total height and a base equal the breast high section. The variations in this relation show something of a range with size, height, age, etc., and have been subjected to a considerable volume of investigation. Only specialists would be concerned with that. Of the species under review fir averages in form a little slimmer than spruce, having about

5% less contents for the same diameter and height on the average according to the present study.

It only remains now to present the volume tables themselves and such supplementary matter as may be needed for their understanding. First among these tables is one for spruce. Across the top is printed the total height of trees in 5-foot classes, from 35 to 80. The left hand column gives diameter at breast height or $4\frac{1}{2}$ feet from the ground, outside bark, just as the tree would be calipered in cruising. Beneath the one set of figures and opposite the other are decimal fractions representing cord contents of piled wood. Thus a tree 7 inches in diameter and 40 feet tall has .049 cords in it; in other words 20 such trees should make a cord, and the same is true of 6-inch trees if a little over 50 feet in height. Five 13-inch trees make approximately a cord if they are 55 feet in height; but 4 are required if that height is 65-70 feet, 18-inch trees if 80 feet in height, (a height, however, not reached by great numbers in the Maine pulpwoods) will pile up about half a cord each, and the same is true of trees 20 inches in diameter if 15 feet shorter. These figures, it was stated in the beginning, can be expected to hold closely only if numbers of trees are taken, as single trees often depart rather widely from average form. Tested by checking back on the piles put up in the woods in the course of the study, the resulting figure was .7 of 1% below the sum of the pile measurements, plus 3.7 and minus 4.2% the widest variation appearing for any.

Similar tables for hemlock and for poplar follow the one for spruce. They were derived in the same fashion and are designed for use in a similar way.

VOLUME TABLE FOR PEELED SPRUCE IN CORDS

| D.B.H. | TOTAL HEIGHT OF TREE-FEET | | | | | | | | | |
|--------|---------------------------|------|------|------|------|------|-----|-----|-----|-----|
| | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 |
| 5 | .024 | .028 | .032 | | | | | | | |
| 6 | .033 | .038 | .043 | .048 | .054 | | | | | |
| 7 | .043 | .049 | .055 | .061 | .069 | .077 | | | | |
| 8 | .055 | .062 | .069 | .076 | .085 | .096 | .11 | | | |
| 9 | | .076 | .085 | .095 | .11 | .12 | .13 | | | |
| 10 | | .092 | .10 | .12 | .13 | .14 | .15 | .16 | .18 | |
| 11 | | | .12 | .14 | .15 | .17 | .18 | .19 | .21 | .22 |
| 12 | | | .14 | .16 | .18 | .19 | .21 | .22 | .24 | .26 |
| 13 | | | .17 | .19 | .20 | .22 | .24 | .26 | .28 | .30 |
| 14 | | | | .21 | .23 | .25 | .27 | .29 | .31 | .34 |
| 15 | | | | .24 | .26 | .28 | .30 | .33 | .35 | .38 |
| 16 | | | | | .29 | .31 | .34 | .36 | .39 | .42 |
| 17 | | | | | .32 | .35 | .37 | .40 | .43 | .46 |
| 18 | | | | | .36 | .38 | .41 | .44 | .47 | .51 |
| 19 | | | | | .39 | .42 | .45 | .48 | .52 | .56 |
| 20 | | | | | .42 | .46 | .49 | .53 | .57 | .61 |

MAINE HEMLOCK
Used Volumes In Cords — Peeled Wood

| D. B. H. | TOTAL HEIGHT OF TREE IN FEET | | | | | | | | | | Top D.I.B. | |
|----------|------------------------------|------|------|------|------|------|------|------|------|------|---------------|----|
| | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | | |
| 5 | .014 | .017 | .020 | .023 | | | | | | | | 3½ |
| 6 | .022 | .026 | .030 | .035 | .041 | | | | | | | |
| 7 | .031 | .035 | .040 | .047 | .054 | .061 | | | | | | |
| 8 | .039 | .045 | .052 | .060 | .068 | .076 | | | | | | 4 |
| 9 | .047 | .055 | .064 | .075 | .085 | .095 | .102 | | | | | |
| 10 | .055 | .064 | .078 | .092 | .105 | .117 | .128 | .140 | | | | 4½ |
| 11 | | .095 | .110 | .125 | .140 | .155 | .170 | | | | | |
| 12 | | | .112 | .130 | .148 | .167 | .185 | .204 | | | | |
| 13 | | | .130 | .148 | .170 | .193 | .215 | .236 | .255 | .280 | | |
| 14 | | | | .168 | .192 | .217 | .244 | .268 | .290 | .318 | | 5 |
| 15 | | | | .186 | .215 | .244 | .274 | .300 | .330 | .360 | | |
| 16 | | | | | | .270 | .304 | .336 | .370 | .402 | | |
| 17 | | | | | | | .335 | .374 | .410 | .445 | | |
| 18 | | | | | | | .365 | .410 | .450 | .487 | | |

Based on 868 trees

Value above 65 feet and 16 inches based mainly on curves

PEELED POPLAR — MAINE, 1923
Volumes of used wood in cords

| D.B.H. | TOTAL HEIGHT OF TREE-FEET | | | | | | | | | | |
|--------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 |
| 5 | .017 | .020 | .022 | .025 | .028 | .032 | ..... | ..... | ..... | ..... | ..... |
| 6 | | .028 | .032 | .037 | .042 | .048 | .055 | ..... | ..... | ..... | ..... |
| 7 | | | .044 | .050 | .057 | .065 | .073 | .082 | ..... | ..... | ..... |
| 8 | | | .055 | .063 | .072 | .082 | .093 | .105 | .118 | ..... | ..... |
| 9 | | | | .078 | .090 | .102 | .115 | .130 | .145 | .160 | ..... |
| 10 | | | | .093 | .108 | .123 | .139 | .156 | .175 | .195 | .215 |
| 11 | | | | | .127 | .144 | .162 | .182 | .204 | .225 | .245 |
| 12 | | | | | | .165 | .187 | .210 | .235 | .260 | .285 |
| 13 | | | | | | .185 | .210 | .235 | .270 | .300 | .330 |
| 14 | | | | | | .205 | .230 | .260 | .300 | .340 | .375 |
| 15 | | | | | | .225 | .255 | .290 | .335 | .375 | .415 |
| 16 | | | | | | | .275 | .320 | .370 | .420 | .460 |
| 17 | | | | | | | | .350 | .410 | .460 | .510 |
| 18 | | | | | | | | | .450 | .510 | .570 |

Based on 771 trees