

MAINE STATE LEGISLATURE

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MAINE PUBLIC DOCUMENTS

July 1, 1938 - June 30, 1940

STATE OF MAINE

TWENTY-THIRD
BIENNIAL REPORT

OF THE
FOREST COMMISSIONER

RAYMOND E. RENDALL



1939-1940

STATE OF MAINE
FOREST SERVICE
(Land Office)

March 3, 1941

Honorable Sumner Sewall,
Governor of Maine

Dear Governor Sewall:

In accordance with Section 9, Chapter 11, of the Revised Statutes 1930, I have the honor to transmit herewith the Twenty-third Biennial Report for the years 1939-1940.

Respectfully yours,

RAYMOND E. RENDALL,
Forest Commissioner

**MAINE FOREST SERVICE
PERSONNEL**

Forest Commissioner

Raymond E. Rendall, Augusta

Supervisors

Forestry District

George A. Faulkner, Ellsworth

George H. Gruhn, Augusta

Robert G. Stubbs, Hallowell

Harry G. Tingley, Island Falls

Rex E. Gilpatrick, Augusta

Organized Towns

Austin H. Wilkins, Augusta

State Entomologist

Henry B. Peirson, Augusta

Assistant Entomologist

Robley W. Nash, Augusta

Laboratory Entomologist

Auburn E. Brower, Augusta

Laboratory Technician

Alonzo L. Jones, Augusta

Blister Rust Control Agent

Walter O. Frost, Augusta

District Agents

Harrington G. Bradbury, Belfast

Daniel S. Curtis, North Bridgton

Guy H. Kimball, Auburn

John M. White, Waterville

Air Patrol Pilot

Lieut. Earl F. Crabb, Augusta

Draftsman

Thaddeus L. Martin, Augusta

Property Custodian

Philip R. Violette, Augusta

Bookkeeper

Lillian J. Coleman, Augusta

Junior Accountant

Blanche L. Violette, Augusta

Stenographers

Lillian E. Tschamler, Augusta

Mabel C. Rowell, Augusta

Violette Cote, Waterville

The Maine Forest Service, as administered by the Forest Commissioner, has jurisdiction over 16,000,000 acres of forest land and is composed roughly of 10,000,000 acres in the Maine Forestry District and 6,000,000 acres outside in the organized towns. Forest protection includes fire prevention, insect and disease control, and the perpetuation of the forest growth.

Maine Forestry District

Fire control in the Maine Forestry District is successfully carried on by an organization which has been developed through the years. Before the creation of the District, many devastating fires occurred on large areas.

The little attention paid to fire prevention in the early days, when no money was available, was due in part to a small population. The state was wholly unprepared and untrained to cope with what virtually was a calamity. Records show that in 1825 Maine had its greatest forest fire, known in history as the Miramichi fire. This fire started in the central part of northern Maine, spreading north and east burning over an area of 825,000 acres. No more devastating fires of large acreages occurred until the year 1903 when records show that a total of 200,000 acres burned. It was during this year that the Forest Commissioner advocated the need for control and prevention of forest fires in Maine. Due to excessive acreages being burned there was a strong public sentiment against fires, although nothing definite had been done up to this time in preventing them except that some individual companies were maintaining a fire control on their own land. Land owners in the St. John region employed men to do patrol work in these waters. These men were deputized as wardens by the Forest Commissioner with authority to summon help when needed. The expense of these men was paid for by the land owners. During 1903, the state made an appropriation of several thousand dollars for the purpose of preventing fires as far as possible. Because the appropriation was inadequate to properly protect the vast area of timber lands, the land owners created a fund obtained by pro-rating an assessment by acreages to supplement the state money. The plan was not altogether successful because there were some owners who were unwilling to enter into any agreement. Because of a lack of coöperation, work in this manner did not continue. The idea, however, persisted. In 1908, the state suffered another large loss of timber by fires and the need for forest fire protection was revived. The Maine Forestry District law was placed on the Statutes in 1909

embodying the principles of coöperation which had been earlier advocated by the land owners. The state law made it impossible for any of the land owners not to coöperate. It has been the permanence of income, based upon an assessment per acre, that has made forest fire protection so successful in the state. The fire protection work in the Maine Forestry District is unique in that the operating funds are contributed by the timberland owners. Private and state coöperation has been further supplemented by federal coöperation of funds, dissemination of information, work of the U. S. Weather Bureau, labor from the C.C.C. camps, etc. Maine demonstrates a self-protective system which operates with a high efficiency.

Subsequent to 1909, a concerted effort was made to prevent fires by a lessening of hazards through education and preparedness in the accumulation of fire fighting equipment made ready for emergencies. The personnel at this time consisted of 39 chief wardens and over 300 deputy wardens, either on duty for part time or subject to call during the fire hazard season.

During the years 1903 to 1924, before supervisors were employed, the average number of acres burned per fire was 357. There were heavy losses during the years 1920 to 1924 inclusive. Annually 165 fires burned over 42,302 acres. This was an increase of 93 in the annual number of fires and an increase of 11,592 acres annually burned since the organized control had been established in 1903. It seemed evident that there was a necessity for coördinating and supervising the work of the district wardens by the use of supervisors to work under the direction of the Forest Commissioner and furnish a direct contact with the field force.

Prior to 1921 the Forest Commissioner employed one or more men in addition to the Deputy Commissioner to assist him in the administration of forest fire protection in the state. Beginning in 1923, and since, the Forest Commissioner had administered his duties without a deputy. At that time two agents were engaged for regular work. Fire permits were issued with care and users supervised in the blueberry areas of Washington County. Closer attention was given to the enforcement of the slash law. All field problems were attended to with less delay. This use of field men proved of great value and in 1926 two more agents were employed. Each was given the title of supervisor. Since 1934, the District has had five supervisors who serve as deputies and represent the Forest Commissioner in the field.

The increase in the supervisor force and resultant cost has been necessitated by the increased field organization and increasing depart-

mental functions. The number of recreationists coming into our state and their use of our forests is one factor in the increase of fire hazard. Protection has been expanded to insect control with much time given to the control of the spruce bud worm and sawfly. Public relations necessitate contact with land owners, lumber and pulp operators, and forest users.

Road improvement and increased mileage construction has carried fire hazard farther into the wilderness areas. An additional hazard has been brought about by the common use of airplanes equipped with pontoons and outboard motors on our waterways.

The present field force, consisting of 27 chief wardens, 75 watchmen, and 50 odd patrolmen, supplemented when needed by a hundred or more deputies, is responsible for the maintenance and care of 2,500 miles of telephone wire and all equipment necessary to combat forest fires.

The following division is used in the District for administrative purposes:

The Eastern Division (St. Croix, Machias, Narraguagus and Union River waters)

5 Sub-districts (5 chief wardens)

13 Watchmen

8 Patrolmen

The Central Division (Penobscot River waters)

5 Sub-districts (5 chief wardens)

16 Watchmen

12 Patrolmen

The Northern Division (St. John River waters)

5 Sub-districts (5 chief wardens)

14 Watchmen

12 Patrolmen

The Western Division (Kennebec, St. John & Penobscot waters)

7 Sub-districts (7 chief wardens)

16 Watchmen

14 Patrolmen

The Southern Division (Androscoggin and Kennebec waters)

5 Sub-districts (5 chief wardens)

16 Watchmen

13 Patrolmen

During the years 1925 to 1939 inclusive, when supervisors were employed, the average number of acres burned per fire was 128. This is a reduction of 129 acres per fire. Since the old fire suppression system was reorganized, more efficient suppression work was accomplished.

Previous to 1932, the District had spent an average of \$3,000 per year fighting forest fires that originated in the Province of Quebec. These fires crossed or threatened to cross the international boundary into Maine. The fires were set by homesteaders, burning slash while clearing land, without control from the Quebec Forest Protection officials. The supervisors in that section interested the Quebec officials in the advantages to their government if this burning was jointly controlled. Proof of the effectiveness of this program is borne out by the fact that not a single fire has crossed the boundary since 1932, when the agreement went into effect.

The District was over \$100,000 in debt in 1921. Since that time the debt has been paid, and a reserve fund of \$172,954.67 was built up by 1929. This balance has been reduced by refunds to the land owners; \$50,695.28 in 1930, \$54,401.84 in 1932, and \$31,775.64 in 1934.

Furthermore, the yearly District assessment has been reduced from \$181,396.98 in 1932 to \$133,648.61 in 1940. This reduction was absorbed by practicing strict economy and reorganization of the work. Even with this reduction, we have been able to increase our balance from \$65,873.19 in 1935 to \$87,370.67 in 1940.

The following summary tables are included for record purposes:

MAINE FORESTRY DISTRICT

RECEIPTS

1921--1940

| Year | Balance | Assessments | Int. on Deposits | Federal Cooperation | Misc. | Total |
|------|------------|--------------|---------------------|------------------------|------------|--------------|
| 1921 | \$330.05 | \$157,043.56 | \$211.23 | \$17,508.82 | \$4,625.70 | \$209,722.08 |
| 1922 | 1.98 | 157,898.32 | 159.68 | 18,141.20 | 4,366.24 | 304,141.72 |
| 1923 | 4,313.88 | 164,996.94 | 126.19 | 21,450.92 | 5,676.77 | 196,564.70 |
| 1924 | 430.88 | 162,962.95 | 127.67 | 23,698.66 | 785.53 | 188,005.69 |
| 1925 | 7,755.29 | 165,572.27 | 157.43 | 23,424.14 | 2,005.67 | 198,914.80 |
| 1926 | 37,412.78 | 165,513.42 | 184.10 | 26,760.04 | 1,539.68 | 231,410.02 |
| 1927 | 61,698.65 | 167,477.17 | 278.39 | 33,180.37 | 4,649.75 | 267,284.33 |
| 1928 | 84,028.07 | 167,477.17 | 234.01 | 57,902.14 | 3,229.82 | 312,871.21 |
| 1929 | 150,184.59 | 168,984.28 | 208.45 | 48,510.52 | 2,243.78 | 370,131.62 |
| 1930 | 172,954.67 | 168,984.28 | 192.81 | 46,649.78 | 4,300.30 | 396,081.84 |
| 1931 | 133,960.17 | 181,339.45 | 127.07 | 29,156.56 | 4,338.70 | 348,921.95 |
| 1932 | 151,992.14 | 181,396.98 | 148.84 | 34,879.55 | 3,192.69 | 371,610.20 |
| 1933 | 106,129.73 | 158,878.22 | 62.03 | 26,719.88 | 3,196.49 | 294,986.35 |
| 1934 | 141,944.40 | 158,878.22 | ..... | 49,014.65 | 4,195.04 | 353,593.62 |
| 1935 | 92,066.30 | 137,138.75 | ..... | 36,800.00 | 4,293.83 | 270,298.88 |
| 1936 | 65,873.19 | 137,542.35 | ..... | 36,550.00 | 2,104.03 | 241,180.35 |
| 1937 | 78,040.77 | 133,499.47 | ..... | 30,196.00 | 2,233.91 | 243,932.35 |
| 1938 | 75,013.28 | 133,499.47 | ..... | 31,781.00 | 2,082.71 | 250,843.33 |
| 1939 | 85,098.07 | 133,616.63 | ..... | 34,171.00 | 2,862.38 | 255,880.19 |
| 1940 | 84,433.85 | 133,648.61 | ..... | 30,827.00 | 3,186.54 | 260,109.23 |

The above totals include the following items:

In 1921, \$30,002.72 was advanced by the land owners.

In 1922, \$17,600.00 was received from Federal Cooperation Emergency, and \$105,974.30 was loaned from the contingent fund.

In 1939, an abatement was made of \$132.11 and in 1940, \$705.08.

At the end of the calendar year 1940, \$7,308.15 is the balance tied up since the bank closings.

**MAINE FORESTRY DISTRICT
DISBURSEMENTS
1921-1940**

| Year | Chief Wardens | Deputy Wardens | Patrolmen | Watchmen | Supervision | Improvement | Tools and Supplies | Fire Fighting | Administration | Miscellaneous | Total | Balance |
|------|---------------|----------------|-------------|-------------|-------------|-------------|--------------------|---------------|----------------|---------------|--------------|------------|
| 1920 | | | | | | | | | | | | \$ 330.05 |
| 1921 | \$26,388.00 | \$2,897.00 | \$25,160.00 | \$45,143.00 | | | \$16,626.00 | \$80,120.00 | \$6,811.00 | \$6,569.00 | \$209,720.00 | 1.98 |
| 1922 | 23,737.00 | 984.00 | 19,013.00 | 25,647.00 | | | 19,590.00 | 25,801.00 | 8,797.00 | 3,660.00 | 299,827.84 | 4,313.88 |
| 1923 | 20,158.37 | 793.80 | 18,477.17 | 36,540.38 | | | 16,361.32 | 40,806.61 | 8,118.28 | 4,104.26 | 196,133.82 | 430.88 |
| 1924 | 22,307.40 | 1,105.57 | 20,125.43 | 38,894.58 | | | 27,501.64 | 61,207.71 | 5,349.37 | 3,713.70 | 180,250.40 | 7,755.29 |
| 1925 | 19,666.30 | 1,057.31 | 21,142.56 | 47,621.32 | | | 34,492.96 | 10,802.85 | 6,287.97 | 3,821.05 | 161,502.02 | 37,412.78 |
| 1926 | 19,217.48 | 1,050.65 | 19,468.57 | 51,162.74 | | | 35,868.34 | 33,791.07 | 5,523.57 | 3,626.95 | 169,711.37 | 61,698.65 |
| 1927 | 21,987.21 | 449.93 | 27,352.29 | 52,242.10 | | | 38,554.76 | 33,031.21 | 5,815.96 | 3,822.80 | 183,256.26 | 84,028.07 |
| 1928 | 21,894.42 | 356.85 | 24,450.48 | 40,738.01 | 14,977.28 | | 46,662.26 | 3,289.63 | 7,008.26 | 3,309.43 | 162,686.62 | 150,184.59 |
| 1929 | 25,720.02 | 858.70 | 32,755.20 | 33,394.85 | 12,256.65 | 37,636.56 | 36,391.18 | 5,529.12 | 7,214.63 | 5,420.04 | 197,176.95 | 172,954.67 |
| 1930 | 25,658.60 | 1,028.81 | 33,450.75 | 35,550.42 | 10,026.36 | 27,476.91 | 41,595.31 | 24,087.26 | 8,249.75 | 4,302.22 | 211,426.39 | 133,960.17 |
| 1931 | 25,073.83 | 652.74 | 34,322.75 | 34,637.51 | 10,385.32 | 27,662.18 | 46,157.28 | 5,288.85 | 7,465.84 | 5,283.51 | 196,929.81 | 151,992.14 |
| 1932 | 23,378.89 | 996.52 | 31,753.62 | 35,315.74 | 13,341.78 | 10,396.72 | 32,956.93 | 48,399.68 | 7,657.86 | 6,880.89 | 211,078.63 | 106,129.73 |
| 1933 | 20,910.53 | 1,579.75 | 25,888.83 | 29,049.40 | 11,209.55 | 12,763.42 | 29,192.17 | 10,199.69 | 6,081.22 | 6,167.39 | 153,041.95 | 141,944.40 |
| 1934 | 22,147.73 | 792.59 | 28,600.55 | 28,209.79 | 14,543.85 | 12,260.51 | 52,556.56 | 54,652.46 | 5,852.16 | 10,135.48 | 229,751.68 | 92,066.30 |
| 1935 | 23,915.00 | 1,514.88 | 32,099.53 | 28,353.72 | 16,930.44 | 14,586.47 | 44,415.42 | 20,506.44 | 8,683.61 | 13,420.18 | 204,425.69 | 65,873.19 |
| 1936 | 21,085.57 | 1,144.07 | 26,313.72 | 23,692.31 | 16,686.05 | 19,083.37 | 32,854.42 | 3,209.72 | 9,616.71 | 9,453.64 | 163,139.58 | 78,040.77 |
| 1937 | 21,376.34 | 1,275.27 | 27,007.92 | 26,479.32 | 16,383.97 | 14,045.61 | 37,079.01 | 9,536.80 | 7,347.75 | 8,387.08 | 168,919.07 | 75,013.28 |
| 1938 | 21,887.77 | 1,187.02 | 26,722.43 | 26,945.48 | 16,933.36 | 14,659.02 | 34,615.36 | 9,064.70 | 6,276.63 | 6,276.63 | 165,745.26 | 85,098.07 |
| 1939 | 22,228.04 | 861.97 | 27,169.39 | 26,225.25 | 15,923.23 | 17,702.18 | 30,997.80 | 7,826.92 | 7,492.03 | 7,447.16 | 163,873.97 | 84,433.85 |
| 1940 | 22,229.76 | 645.32 | 24,195.28 | 22,985.95 | 16,705.92 | 26,293.17 | 37,562.91 | 4,965.45 | 7,889.01 | 7,855.63 | 171,328.40 | 87,370.67 |

The above totals include the following items:

In 1921, there was a fire fighting deficit of \$106.620.

In 1922, \$55,974 was repaid to the contingent fund, as well as \$50,000 in 1923.

In 1923, \$1,499.63 was paid in abatements.

In 1925, \$16,609.70 was repaid as fire fighting balance of 1921 and 1922.

At the end of the calendar year 1940, \$7,308.15 is the balance tied up since the bank closings.

Maine Forestry District

FINANCIAL STATEMENT

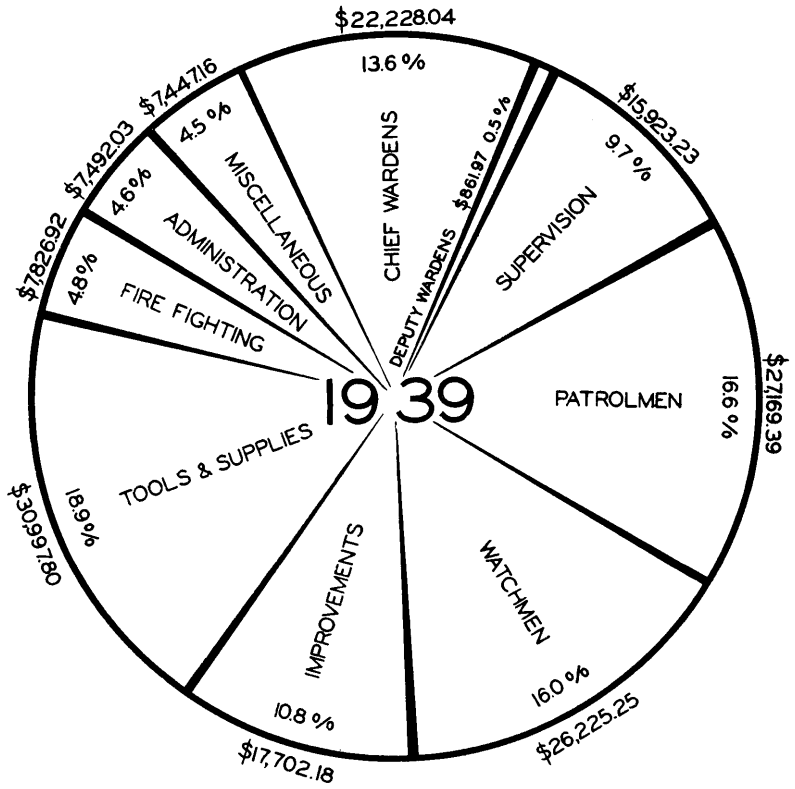
1939

| Receipts | | |
|---|---------------------|--------------|
| Balance on hand January 1, 1939 . . . | \$77,789.92 | |
| Amount tied up in closed State Trust Co. | 7,308.15 | |
| 1939 Assessment | 133,616.63 | |
| Federal Coöperation | 34,171.00 | |
| Miscellaneous | 2,862.38* | |
| Total Receipts | \$255,748.08 | |
| Forestry District tax abated | 132.11 | \$255,615.97 |
| Disbursements | | |
| Chief Wardens | \$22,228.04 | |
| Deputy Wardens | 861.97 | |
| Supervision | 15,923.23 | |
| Patrolmen | 27,169.39 | |
| Watchmen | 26,225.25 | |
| Improvements | 17,702.18 | |
| Tools and Supplies | 30,997.80 | |
| Fire Fighting | 7,826.92 | |
| Administration | 7,492.03 | |
| Miscellaneous | 7,447.16 | \$163,873.97 |
| | | \$91,742.00 |
| Amount tied up in closed State Trust Co. | | 7,308.15 |
| Balance on hand January 1, 1940 . . . | | \$84,433.85 |

*This amount includes reimbursements by towns for pumps, telephone tolls, etc.

EXPENDITURES BY WATERSHEDS

| | St. John | Penobscot | Kennebec | Andros- coggin | Machias | Totals |
|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Chief Wardens | \$6,649.54 | \$7,524.74 | \$4,028.68 | \$900.31 | \$3,124.77 | \$22,228.04 |
| Deputy Wardens | 438.00 | 126.50 | 19.00 | 6.50 | 271.97 | 861.97 |
| Supervision | 4,622.93 | 5,041.46 | 1,558.85 | 1,512.17 | 3,187.82 | 15,923.23 |
| Patrolmen | 8,906.68 | 8,899.22 | 3,644.06 | 2,880.97 | 2,838.46 | 27,169.39 |
| Watchmen | 6,626.25 | 8,579.46 | 5,600.20 | 1,749.00 | 3,670.34 | 26,225.25 |
| Improvements | 5,494.85 | 4,171.73 | 3,118.06 | 3,210.58 | 1,706.96 | 17,702.18 |
| Tools and Supplies | 7,714.03 | 6,983.80 | 5,404.73 | 5,839.92 | 5,055.32 | 30,997.80 |
| Fire Fighting | 1,621.56 | 2,211.81 | 705.34 | 1,485.66 | 1,802.55 | 7,826.92 |
| Administration | 1,493.59 | 1,514.09 | 1,493.58 | 1,493.56 | 1,497.21 | 7,492.03 |
| Miscellaneous | 1,951.30 | 2,436.86 | 1,186.07 | 809.03 | 1,063.90 | 7,447.16 |
| TOTALS | \$45,518.73 | \$47,489.67 | \$26,758.57 | \$19,887.70 | \$24,219.30 | \$163,873.97 |



Total Disbursements \$163,873.97

Maine Forestry District

FINANCIAL STATEMENT

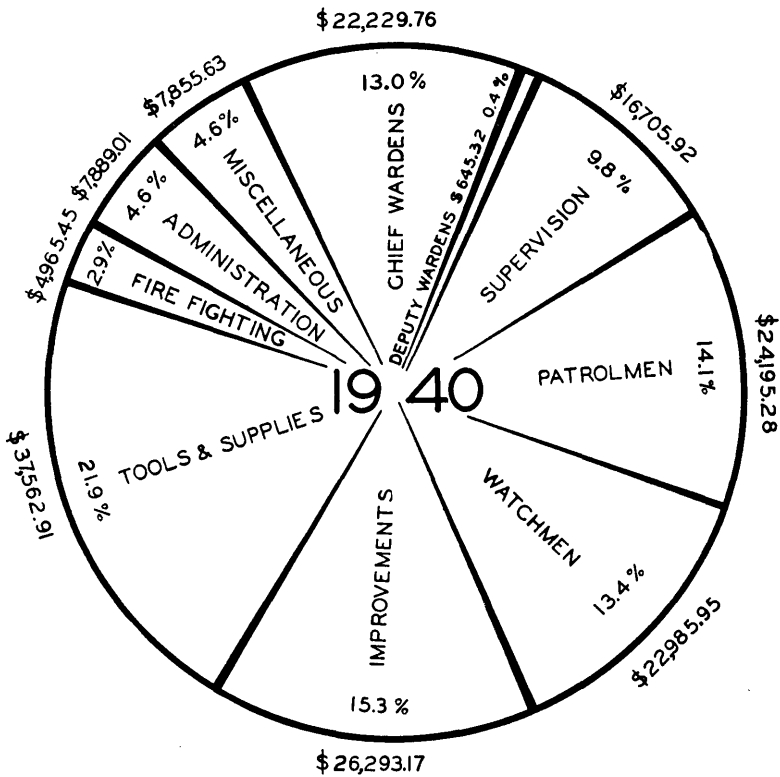
1940

| Receipts | | |
|---|---------------------|---------------------|
| Balance on hand January 1, 1940 | \$84,433.85 | |
| Amount tied up in closed | | |
| State Trust Co. | 7,308.15 | |
| 1940 Assessment | 133,648.61 | |
| Federal Coöperation | 30,827.00 | |
| Miscellaneous | 3,186.54* | |
| Total Receipts | \$259,404.15 | |
| Forestry District tax abated | 705.08 | \$258,699.07 |
| Disbursements | | |
| Chief Wardens | \$22,229.76 | |
| Deputy Wardens | 645.32 | |
| Supervision | 16,705.92 | |
| Patrolmen | 24,195.28 | |
| Watchmen | 22,985.95 | |
| Improvements | 26,293.17 | |
| Tools and Supplies | 37,562.91 | |
| Fire Fighting | 4,965.45 | |
| Administration | 7,889.01 | |
| Miscellaneous | 7,855.63 | |
| | | \$171,328.40 |
| Amount tied up in closed | | \$87,370.67 |
| State Trust Co. | | \$7,308.15 |
| Balance on hand January 1, 1941 | | \$80,062.52 |

*This amount includes reimbursements for fire fighting equipment furnished to towns and individuals as a part of our program of cooperation in forest fire prevention.

EXPENDITURES BY WATERSHEDS

| | St. John | Penobscot | Kennebec | Andros-coggin | Machias | Totals |
|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Chief Wardens | \$6,466.58 | \$7,786.76 | \$4,056.61 | \$807.60 | \$3,112.21 | \$22,229.76 |
| Deputy Wardens | 207.00 | 98.00 | | | 340.32 | 645.32 |
| Supervision | 5,169.94 | 5,206.25 | 1,664.19 | 1,511.63 | 3,153.91 | 16,705.92 |
| Patrolmen | 7,644.89 | 7,481.71 | 3,779.69 | 2,700.99 | 2,588.00 | 24,195.28 |
| Watchmen | 5,447.25 | 7,864.41 | 4,808.54 | 1,608.00 | 3,257.75 | 22,985.95 |
| Improvements | 8,437.79 | 7,402.04 | 5,003.81 | 2,638.83 | 2,810.70 | 26,293.17 |
| Tools and Supplies | 9,228.42 | 9,656.22 | 6,210.15 | 4,915.08 | 7,553.04 | 37,562.91 |
| Fire Fighting | 909.86 | 2,499.83 | 351.80 | 200.00 | 1,003.96 | 4,965.45 |
| Administration | 1,604.91 | 1,601.06 | 1,559.96 | 1,552.52 | 1,570.56 | 7,889.01 |
| Miscellaneous | 2,506.62 | 2,277.61 | 1,167.10 | 783.08 | 1,121.22 | 7,855.63 |
| TOTALS | \$47,623.26 | \$51,873.89 | \$28,601.85 | \$16,717.73 | \$26,511.67 | \$171,328.40 |



TOTAL DISBURSEMENTS \$171,328.40

FIRE RECORD

Maine Forestry District 10,000,000 Acres

| | No. Fires | Acres Burned | Per Cent of Total | Average Number Acres per Fire |
|--|-----------|--------------|-------------------|----------------------------------|
| From 1903 to 1932 Inclusive 30 year average..... | 92 | 26,673 | 0.27 of 1% | 290 |
| From 1933 to 1937 Inclusive 5 year average..... | 159 | 30,322 | 0.3 of 1% | 191 |
| 1938 | 92 | 5,210 | 0.052 of 1% | 56.6 |
| 1939 | 128 | 2,914 | 0.029 of 1% | 22.7 |
| 1940 | 120 | 523 | 0.0052 of 1% | 4.4 |

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Eastern Region

Reference:

Washington, D. C.

P

February 3, 1941

SUPERVISION

Reports

Annual Fire

Mr. Raymond E. Rendall

Forest Commissioner

Augusta, Maine

Dear Mr. Rendall:

Reference is made to your fire report for 1940. I congratulate you upon a remarkably fine record for the past year. Looking back I see that Maine's burn during the past five years has averaged less than $1/20$ of 1 per cent. That is adequate protection, under any definition thus far proposed.

I realize that there exists a danger of another bad year, such as 1934; and that the system employed for the protection of the towns is by no means as tight as we should all like to see it. I don't know that we would change any of the recommendations in Mr. Hoar's inspection report, written in 1939. Nevertheless, such results as your report speak loudly for themselves. Since fire control is not forestry, but only the abatement of a danger which threatens forestry, I hope that your department may be authorized and financed to move into the broader field of service to forest management.

Very sincerely yours,

/s/ G. H. LENTZ

*Assistant Regional Forester,
Division of State and Private Forestry.*

Airplane

The Forestry District airplane usually replaces wheels for pontoons some time the latter part of April depending on the opening of the lakes. From then on, during the fire season, the airplane stands ready for use throughout the Maine Forestry District for forest fire protection. When dangerous fire hazard conditions exist, the airplane is stationed in the area most needed and makes daily patrol. In an emergency fire tools, equipment, supplies, and men are quickly transported to place of need. All other work is secondary.

During the past two seasons, the airplane has been used extensively in the delivery of parasites to combat the European spruce sawfly in all sections of the state. Deliveries to remote sections could not have been handled effectively any other way, as emergence of parasites comes within five days.

The airplane has been used in cruising over areas to view locations for new telephone line and road construction and to observe the condition that the forest roads, trails, and bridges are in.

Men and season's supplies are carried to their stations at isolated places in the spring and brought out in the fall.

Wardens are flown over their territory to get them better acquainted with the same.

Mercy flights are often made. One of our wardens died suddenly while at work and was brought out from Rock Pond. Lost hunters and fishermen have been searched for.

The Forest Commissioner uses the plane to advantage in making flights to any section of the state in his administrative duties. Closer contact with both office and field is made possible.

Before the freezing over of the lakes in the fall, the airplane has the pontoons removed and wheels placed back on. During the winter months the airplane is stationed at the Augusta airport and is ready to perform any duty called upon.

The airplane has become an indispensable part of the department's equipment for efficiency. The retention of the services of the same pilot since 1933, when the first airplane was purchased for duty, has proven of value because each succeeding year his knowledge of the state and the work of the department is greater.

FIRE RECORD 1939

| Location | Date | Acreage | Cause | Damage |
|---------------------------|----------|---------|----------------|----------|
| Aroostook County | | | | |
| Macwahoc | May 10 | ..... | Smoking | \$ |
| T. 14, R. 7, WELS. | May 20 | 3 | Campfire | 15 |
| B, R. 2, WELS. | May 21 | 3 | Campfire | 15 |
| T. 11, R. 11, WELS. | May 22 | ..... | Campfire | ..... |
| T. 1, R. 5, WELS. | May 23 | ..... | Miscellaneous | ..... |
| T. 3, R. 4, WELS. | May 25 | 1 | Miscellaneous | 10 |
| T. 17, R. 4, WELS. | May 25 | 500 | Unknown | 200 |
| T. 17, R. 4, WELS. | May 25 | 100 | Incendiary | 50 |
| T. 17, R. 4, WELS. | May 25 | 250 | Incendiary | 125 |
| T. 11, R. 7, WELS. | May 25 | 3 | Smoking | 40 |
| Molunkus | May 26 | 6 | Smoking | 10 |
| T. 13, R. 16, WELS. | May 26 | 4 | Debris burning | 15 |
| T. 4, R. 3, WELS. | June 11 | ..... | Campfire | ..... |
| T. D. R. 2, WELS. | July 5 | ..... | Miscellaneous | ..... |
| T. 16, R. 4, WELS. | July 9 | 15 | Campfire | 500 |
| T. 3, R. 2, WELS. | July 27 | ..... | Miscellaneous | 50 |
| T. 11, R. 12, WELS. | Aug. 7 | ..... | Lightning | ..... |
| Glenwood | Aug. 12 | ..... | Miscellaneous | ..... |
| T. 11, R. 11, WELS. | Aug. 13 | ..... | Lightning | ..... |
| T. D. R. 2, WELS. | Aug. 15 | ..... | Smoking | ..... |
| T. 11, R. 13, WELS. | Aug. 16 | ..... | Lightning | ..... |
| T. 11, R. 10, WELS. | Aug. 17 | ..... | Lightning | ..... |
| T. 11, R. 11, WELS. | Aug. 18 | ..... | Lightning | ..... |
| T. A. R. 2, WELS. | Aug. 28 | ..... | Unknown | ..... |
| T. 11, R. 7, WELS. | Aug. 29 | ..... | Debris burning | ..... |
| Oxbow | Sept. 8 | ..... | Campfire | ..... |
| Glenwood | Dec. 1 | 50 | Smoking | ..... |
| Franklin County | | | | |
| Coplin | May 9 | 1 | Debris burning | 10 |
| Jerusalem | Nov. 26 | 10 | Miscellaneous | 50 |
| Hancock County | | | | |
| T. 10, S. D. | April 21 | 20 | Campfire | 100 |
| T. 10, S. D. | May 13 | 15 | Miscellaneous | 30 |
| T. 9, S. D. | May 17 | 100 | Campfire | 235 |
| T. 3, N. D. | June 18 | 1 | Campfire | ..... |
| T. 41, M. D. | Aug. 16 | ..... | Lightning | ..... |
| T. 34, M. D. | Aug. 16 | 1 | Lightning | 18 |
| T. 10, S. D. | Nov. 17 | 25 | Incendiary | ..... |
| Oxford County | | | | |
| Magalloway | May 16 | 650 | Lumbering | 5,400 |
| Grafton | July 20 | ..... | Lightning | ..... |
| "C" | July 24 | ..... | Lightning | ..... |
| Grafton | Sept. 10 | ..... | Lightning | ..... |
| Mason | Oct. 20 | ..... | Smoking | ..... |
| Riley | Nov. 22 | ..... | Smoking | ..... |
| Penobscot County | | | | |
| Stacyville | May 13 | 4 | Debris burning | 8 |
| T. 2, R. 8, WELS. | May 13 | ..... | Railroad | ..... |
| Stacyville | May 14 | ..... | Smoking | ..... |
| Drew | May 16 | 2 | Campfire | ..... |
| T. 3, R. 8, NWP | May 16 | 100 | Campfire | ..... |
| Indian No. 3 | May 16 | 4 | Smoking | 8 |
| Indian No. 3 | May 18 | 60 | Incendiary | 120 |
| T. 1, R. 8, WELS. | May 19 | 1 | Miscellaneous | 5 |
| T. 1, R. 9, WELS. | May 19 | 2 | Smoking | 10 |
| Medway | May 21 | 10 | Smoking | 50 |
| Stacyville | May 22 | ..... | Smoking | ..... |
| T. 6, R. 6 & 7, WELS. | May 26 | 600 | Campfire | 1,020 |
| T. 1, R. 7, WELS. | June 3 | ..... | Miscellaneous | ..... |
| Stacyville | Nov. 23 | 4 | Smoking | 16 |
| Indian No. 4 | Nov. 25 | ..... | Debris burning | ..... |
| T. 2, R. 7, WELS. | Nov. 26 | 6 | Smoking | ..... |
| T. 5, R. 8, WELS. | Nov. 30 | 4 | Smoking | ..... |
| Piscataquis County | | | | |
| Sapling | June 2 | ..... | Smoking | ..... |
| Big Squaw Mt. | June 22 | ..... | Smoking | ..... |
| Big Squaw Mt. | June 24 | ..... | Lightning | 15 |
| T. 5, R. 9, NWP | July 5 | ..... | Miscellaneous | ..... |
| T. A. R. 11, WELS. | July 7 | ..... | Campfire | 20 |
| Gore, A. R. 2 | July 8 | ..... | Lightning | ..... |

| Location | Date | Acreage | Cause | Damage |
|---------------------------------|----------|---------|----------------|--------|
| Piscataquis County Cont. | | | | |
| T. 7, R. 9, WELS. | July 10 | ..... | Lightning | ..... |
| T. 9, R. 11, WELS. | July 10 | ..... | Lightning | ..... |
| T. 10, R. 12, WELS. | July 10 | ..... | Lightning | ..... |
| Little Squaw | July 13 | ..... | Lightning | ..... |
| T. 8, R. 10, WELS. | July 20 | ..... | Lightning | ..... |
| T. 5, R. 9, NWP. | July 22 | ..... | Smoking | ..... |
| Lakeview | July 25 | ..... | Campfire | ..... |
| West Bowdoin | July 27 | ..... | Campfire | 10 |
| T. 8, R. 12, WELS. | July 27 | ..... | Lightning | ..... |
| T. 8, R. 12, WELS. | July 31 | ..... | Lightning | ..... |
| T. 8, R. 12, WELS. | Aug. 7 | ..... | Lightning | ..... |
| T. 10, R. 13, WELS. | Aug. 7 | ..... | Lightning | ..... |
| T. 6, R. 11, WELS. | Aug. 7 | ..... | Lightning | ..... |
| T. 6, R. 10, WELS. | Aug. 7 | ..... | Lightning | ..... |
| T. 7, R. 11, WELS. | Aug. 7 | ..... | Lightning | ..... |
| T. 10, R. 11, WELS. | Aug. 16 | ..... | Lightning | ..... |
| T. A, R. 10, WELS. | Aug. 16 | ..... | Lightning | 25 |
| T. 3, R. 12, WELS. | Aug. 17 | ..... | Lightning | ..... |
| Big Squaw Mt. | Aug. 20 | 3 | Incendiary | 150 |
| T. 6, R. 11, WELS. | Aug. 22 | ..... | Lightning | ..... |
| Center Island | Sept. 9 | ..... | Campfire | 25 |
| T. 1, R. 9, WELS. | Nov. 23 | ..... | Campfire | ..... |
| T. 9, R. 9, WELS. | Nov. 26 | 50 | Campfire | ..... |
| T. 1, R. 9, WELS. | Dec. 1 | ..... | Campfire | ..... |
| Somerset County | | | | |
| T. 2, R. 6, BKP, WKR. | July 20 | ..... | Campfire | ..... |
| Middlesex | Aug. 16 | ..... | Lightning | ..... |
| Dennistown | Aug. 31 | ..... | Miscellaneous | 5,000 |
| Bowtown | Nov. 25 | 50 | Smoking | 200 |
| Chase Stream | Nov. 26 | ..... | Smoking | ..... |
| Carrying Place | Nov. 26 | 12 | Smoking | 460 |
| Washington County | | | | |
| Plantation No. 21 | May 6 | 3 | Smoking | ..... |
| Brookton | May 8 | ..... | Smoking | 10 |
| Beddington | May 15 | 50 | Smoking | ..... |
| No. 6, N. D. | May 15 | ..... | Campfire | 5 |
| Plantation 14 and Township 18. | May 15 | 20 | Debris burning | 20 |
| T. 26, M. D. | May 15 | 15 | Incendiary | ..... |
| Wesley | May 15 | 25 | Incendiary | 50 |
| Plantation 14. | May 16 | ..... | Smoking | 10 |
| Beddington | May 16 | 50 | Incendiary | ..... |
| Cooper | May 20 | 10 | Incendiary | 20 |
| Plantation 14. | May 21 | 5 | Campfire | 20 |
| Cooper | June 13 | ..... | Smoking | ..... |
| Indian Township | June 23 | ..... | Smoking | ..... |
| Marion | June 20 | 10 | Campfire | 10 |
| Plantation 21 | July 17 | ..... | Campfire | ..... |
| No. 27, E. D. | July 23 | ..... | Miscellaneous | 50 |
| Northfield | Aug. 2 | ..... | Miscellaneous | ..... |
| Plantation 19. | Aug. 2 | 4 | Campfire | 116 |
| Edmunds | Aug. 3 | ..... | Lumbering | 500 |
| T. 24, M. D. | Aug. 6 | ..... | Smoking | ..... |
| Codyville | Aug. 8 | 1 | Campfire | 150 |
| T. 30, M. D. | Aug. 10 | ..... | Smoking | ..... |
| T. 6, N. D. | Aug. 10 | 1 | Smoking | 50 |
| T. 6, N. D. | Aug. 12 | ..... | Campfire | ..... |
| Plantation 14. | Aug. 16 | ..... | Incendiary | ..... |
| T. 36, M. D. | Aug. 20 | 6 | Lightning | 12 |
| T. 36 and 42. | Aug. 20 | 20 | Lightning | 100 |
| Codyville | Aug. 28 | 18 | Smoking | 590 |
| Marion | Aug. 30 | 3 | Lightning | 24 |
| T. 24, M. D. | Sept. 4 | 1 | Smoking | 5 |
| Northfield | Sept. 14 | 2 | Miscellaneous | ..... |
| Wesley | Sept. 19 | ..... | Smoking | ..... |
| Marion-Edmunds | Oct. 16 | ..... | Smoking | ..... |

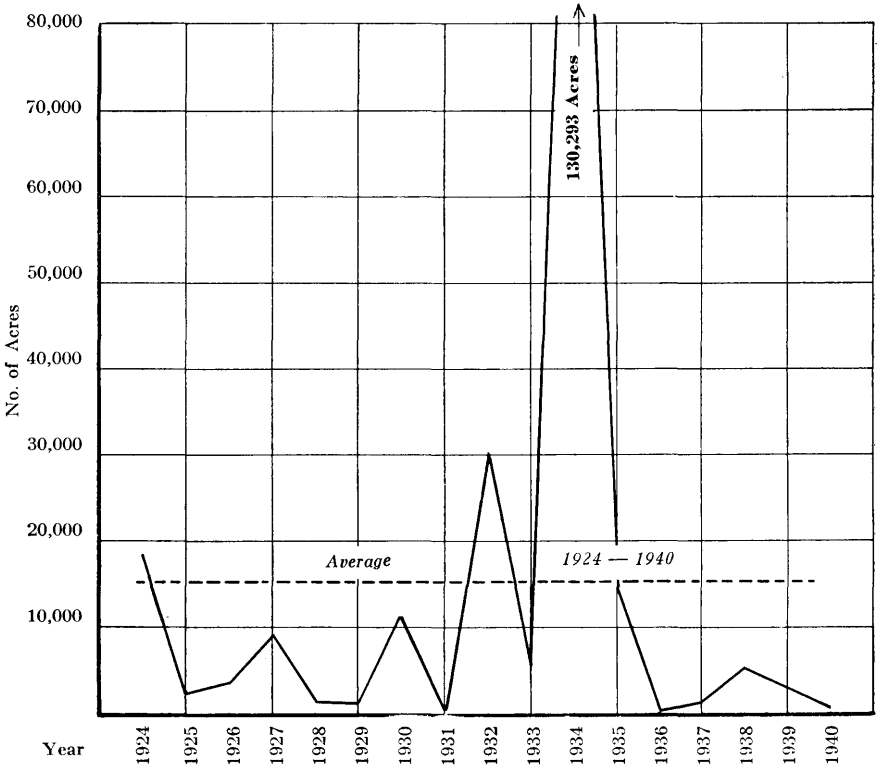
SUMMARY OF FOREST FIRES FOR 1939-1940 BY MONTHS, COUNTIES AND CAUSES

| | No. of Fires | | Acreage | | Damage | |
|---------------------|--------------|------|---------|------|----------|---------|
| | 1939 | 1940 | 1939 | 1940 | 1939 | 1940 |
| By Months: | | | | | | |
| April..... | 1 | 2 | 20 | .. | \$100 | \$100 |
| May..... | 39 | 21 | 2,597 | 359 | 7,511 | 565 |
| June..... | 9 | 14 | 11 | 11 | 25 | 231 |
| July..... | 24 | 23 | 19 | 14 | 1,246 | 1,667 |
| August..... | 33 | 54 | 53 | 74 | 6,119 | 1,063 |
| September..... | 6 | .. | 3 | .. | 30 | .. |
| October..... | 2 | 4 | .. | 62 | .. | 40 |
| November..... | 12 | 2 | 161 | 3 | 726 | 15 |
| December..... | 2 | .. | 50 | .. | .. | .. |
| | 128 | 120 | 2,914 | 523 | \$15,757 | \$3,681 |
| By Counties: | | | | | | |
| Aroostook..... | 27 | 28 | 935 | 184 | 1,030 | 1,767 |
| Franklin..... | 2 | 5 | 11 | 5 | 60 | 85 |
| Hancock..... | 7 | 5 | 162 | 5 | 383 | 116 |
| Oxford..... | 6 | .. | 650 | .. | 5,400 | .. |
| Penobscot..... | 17 | 26 | 797 | 63 | 1,237 | 185 |
| Piscataquis..... | 30 | 24 | 53 | 13 | 245 | 426 |
| Somerset..... | 6 | 8 | 62 | 62 | 5,660 | 55 |
| Washington..... | 33 | 24 | 244 | 191 | 1,742 | 1,047 |
| | 128 | 120 | 2,914 | 523 | \$15,757 | \$3,681 |
| By Causes: | | | | | | |
| Campfire..... | 27 | 32 | 914 | 79 | 2,241 | 291 |
| Debris burning..... | 6 | 6 | 29 | 118 | 53 | 185 |
| Incendiary..... | 10 | 3 | 538 | 4 | 515 | 105 |
| Lightning..... | 32 | 13 | 30 | 6 | 194 | 62 |
| Lumbering..... | 2 | .. | 650 | .. | 5,900 | .. |
| Miscellaneous..... | 14 | 9 | 29 | 3 | 5,195 | 1,345 |
| Railroad..... | 1 | 2 | .. | 2 | .. | 25 |
| Smoking..... | 34 | 52 | 224 | 301 | 1,459 | 1,468 |
| Unknown..... | 2 | 3 | 500 | 10 | 200 | 200 |
| | 128 | 120 | 2,914 | 523 | \$15,757 | \$3,681 |

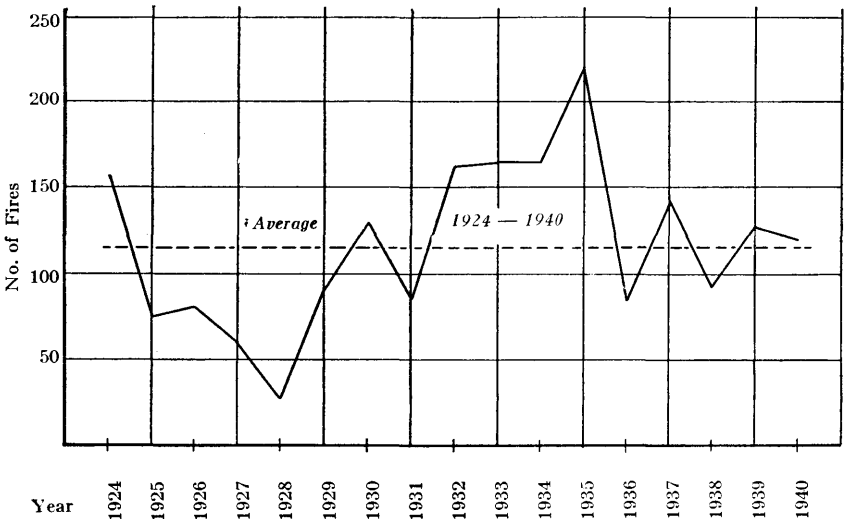
FIRE RECORD 1940

| Location | Date | Acreage | Cause | Damage |
|-------------------------|----------|---------|----------------|--------|
| Aroostook County | | | | |
| Reed Pl. | April 30 | ..... | Miscellaneous | \$100 |
| T. 3, R. 2, WELS. | May 10 | 1 | Smoking | 5 |
| T. 1, R. 4, WELS. | May 10 | 2 | Smoking | 10 |
| T. 2, R. 4, WELS. | May 12 | 118 | Debris burning | 185 |
| T. A, R. 2, WELS. | May 12 | 12 | Smoking | ..... |
| "E" Pl. | May 13 | 15 | Smoking | 75 |
| T. 11, R. 7, WELS. | May 13 | ..... | Unknown | ..... |
| T. 11, R. 4, WELS. | May 17 | 9 | Smoking | 45 |
| T. 3, R. 3, WELS. | May 24 | 1 | Smoking | 5 |
| T. 3, R. 4, WELS. | May 30 | ..... | Debris burning | ..... |
| Silver Ridge Pl. | July 20 | ..... | Miscellaneous | 1,000 |
| T. 12, R. 8, WELS. | July 26 | ..... | Lightning | ..... |
| T. 13, R. 7, WELS. | July 27 | ..... | Campfire | ..... |
| T. 15, R. 6, WELS. | Aug. 4 | 1 | Campfire | 5 |
| T. 14, R. 8, WELS. | Aug. 4 | 1 | Campfire | 5 |
| T. 9, R. 10, WELS. | Aug. 5 | 1 | Lightning | 17 |
| T. 12, R. 9, WELS. | Aug. 11 | ..... | Campfire | ..... |
| Hammond Pl. | Aug. 12 | ..... | Smoking | ..... |
| T. 12, R. 7, WELS. | Aug. 13 | ..... | Lightning | ..... |
| T. 15, R. 9, WELS. | Aug. 13 | ..... | Lightning | ..... |
| T. 13, R. 5, WELS. | Aug. 13 | ..... | Lightning | ..... |
| T. 11, R. 12, WELS. | Aug. 13 | 3 | Lightning | 15 |
| T. 9, R. 6, WELS. | Aug. 15 | ..... | Smoking | ..... |
| Oxbow Pl. | Aug. 16 | 10 | Campfire | 100 |
| Reed Pl. | Aug. 16 | ..... | Smoking | ..... |
| T. A, R. 5, WELS. | Aug. 18 | ..... | Unknown | ..... |
| T. 9, R. 10, WELS. | Aug. 23 | ..... | Lightning | ..... |
| T. A, R. 5, WELS. | Aug. 29 | 10 | Unknown | 200 |
| Franklin County | | | | |
| No. 6 | June 7 | 3 | Smoking | 75 |
| T. 2, R. 6, WBKP. | June 22 | ..... | Smoking | ..... |
| Rangeley Pl. | Aug. 1 | ..... | Campfire | ..... |
| Freeman Twp. | Aug. 9 | 1 | Campfire | 5 |
| Jerusalem Twp. | Oct. 29 | 1 | Smoking | 5 |
| Hancock County | | | | |
| T. 32, M. D. | April 30 | ..... | Debris burning | ..... |
| Summit Pl. | June 7 | 3 | Incendiary | 100 |
| T. 10, S. D. | June 17 | ..... | Campfire | 6 |
| T. 33, N. D. | June 10 | 1 | Smoking | 5 |
| T. 7, S. D. | June 15 | 1 | Railroad | 5 |
| Penobscot County | | | | |
| T. 1, R. 7, WELS. | May 12 | 1 | Smoking | 5 |
| Indian No. 3 | May 13 | 3 | Smoking | 15 |
| T. 2, R. 8, WELS. | May 15 | 40 | Campfire | 40 |
| Indian No. 3 | May 16 | 1 | Incendiary | 5 |
| Indian No. 4 | June 4 | 1 | Campfire | 5 |
| Indian No. 4 | June 16 | 1 | Smoking | 20 |
| Indian No. 4 | July 12 | ..... | Smoking | ..... |
| Lakeville Pl. | July 14 | 2 | Campfire | 25 |
| Indian No. 3 | July 15 | ..... | Campfire | ..... |
| Indian No. 4 | July 19 | 1 | Campfire | 5 |
| T. 9, R. 8, WELS. | July 24 | ..... | Lightning | ..... |
| Indian No. 3 | July 27 | 1 | Smoking | 5 |
| Drew Pl. | July 28 | ..... | Incendiary | ..... |
| T. 2, R. 8, WELS. | July 28 | ..... | Campfire | 5 |
| Indian No. 3 | Aug. 3 | ..... | Smoking | ..... |
| Indian No. 3 | Aug. 5 | ..... | Smoking | ..... |
| Indian No. 3 | Aug. 9 | ..... | Smoking | ..... |
| Indian No. 3 | Aug. 9 | 1 | Smoking | 5 |
| T. 2, R. 9, NWP. | Aug. 9 | 1 | Campfire | 5 |
| Indian No. 3 | Aug. 10 | 9 | Smoking | 20 |
| T. 1, R. 7, WELS. | Aug. 11 | ..... | Smoking | ..... |
| Lakeville Pl. | Aug. 17 | ..... | Miscellaneous | ..... |
| T. 1, R. 1, WELS. | Aug. 23 | 1 | Lightning | 5 |
| Indian No. 3 | Aug. 27 | ..... | Debris burning | ..... |
| Lakeville Pl. | Aug. 29 | ..... | Campfire | 20 |
| Stacyville Pl. | Nov. 1 | ..... | Smoking | ..... |

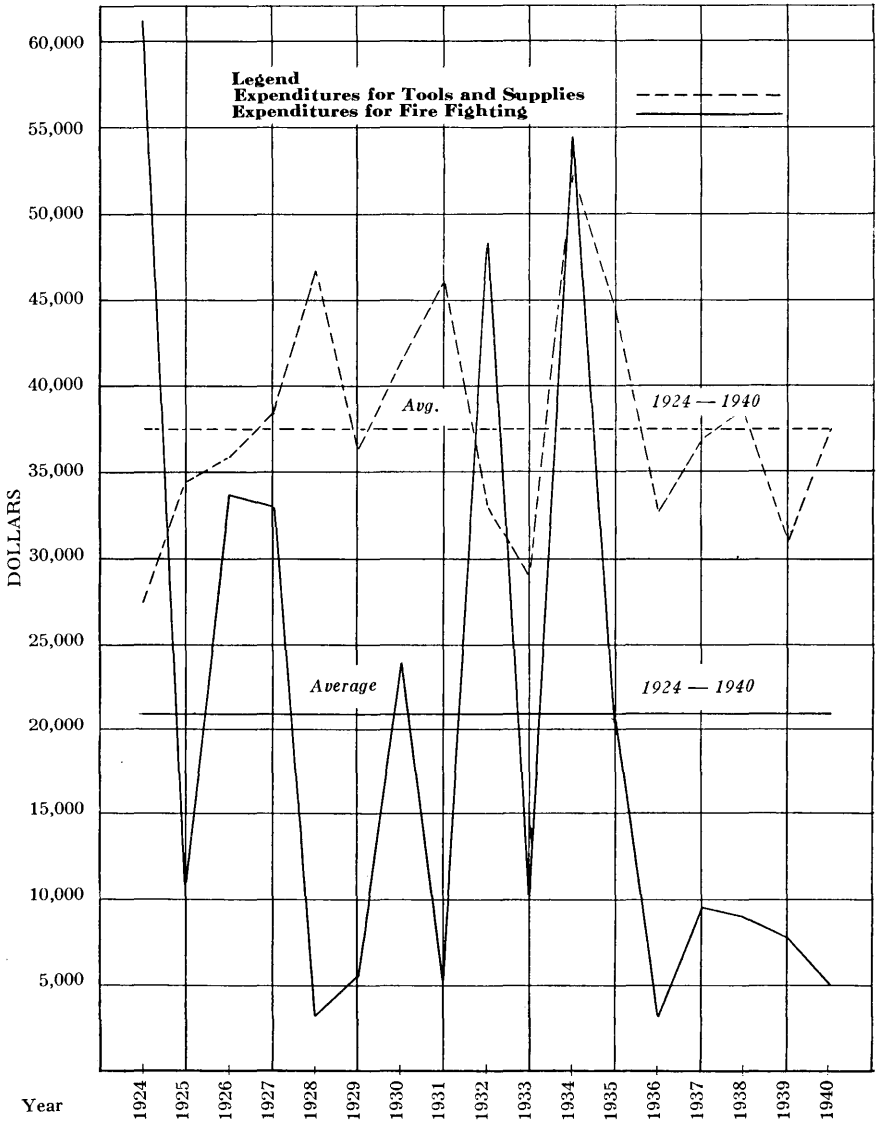
| Location | Date | Acreage | Cause | Damage |
|---------------------------|---------|---------|----------------|--------|
| Piscataquis County | | | | |
| T. 6, R. 9, NWP | May 10 | ..... | Smoking | ..... |
| T. 1, R. 9, WELS | May 13 | ..... | Debris burning | ..... |
| T. 8, R. 10, NWP | May 13 | ..... | Smoking | ..... |
| T. 4, R. 14, WELS | June 2 | ..... | Lightning | ..... |
| T. 5, R. 9, WELS | June 5 | ..... | Campfire | ..... |
| T. 1, R. 10, WELS | June 7 | ..... | Campfire | ..... |
| T. 1, R. 9, WELS | June 16 | ..... | Campfire | ..... |
| Gore A2 | June 16 | 1 | Campfire | 15 |
| T. 5, R. 9, NWP | June 19 | ..... | Lightning | ..... |
| T. 1, R. 14, WELS | July 7 | 1 | Miscellaneous | 20 |
| T. 7, R. 13, WELS | July 10 | ..... | Smoking | ..... |
| T. 6, R. 11, WELS | July 24 | 1 | Lightning | 25 |
| T. 3, R. 14, WELS | July 24 | ..... | Lightning | ..... |
| T. 1, R. 9, WELS | Aug. 3 | 8 | Smoking | 156 |
| T. 10, R. 12, WELS | Aug. 7 | ..... | Smoking | ..... |
| T. 6, R. 11, WELS | Aug. 7 | ..... | Campfire | ..... |
| T. 6, R. 8, NWP | Aug. 7 | ..... | Campfire | ..... |
| T. 2, R. 9, WELS | Aug. 9 | 2 | Smoking | 10 |
| T. 5, R. 13, WELS | Aug. 11 | ..... | Smoking | ..... |
| T. 2, R. 9, WELS | Aug. 13 | ..... | Smoking | ..... |
| T. 7, R. 15, WELS | Aug. 17 | ..... | Campfire | ..... |
| T. 2, R. 8, WELS | Aug. 17 | ..... | Smoking | 200 |
| T. 2, R. 9, WELS | Aug. 17 | ..... | Smoking | ..... |
| T. 6, R. 9, WELS | Oct. 5 | ..... | Campfire | ..... |
| Somerset County | | | | |
| T. 1, R. 7, BKP, WKR | May 15 | 1 | Railroad | 20 |
| T. 2, R. 2, BKP, EKR | July 13 | ..... | Campfire | ..... |
| T. 2, R. 3, BKP, EKR | July 13 | ..... | Miscellaneous | ..... |
| T. 5, R. 1, NBKP | Aug. 16 | ..... | Campfire | ..... |
| Dennistown Pl. | Aug. 30 | ..... | Campfire | ..... |
| West Forks Pl. | Oct. 20 | 50 | Smoking | 25 |
| Caratunk Pl. | Oct. 22 | 10 | Smoking | 5 |
| T. 2, R. 3, BKP, EKR | Oct. 28 | 1 | Campfire | 5 |
| Washington County | | | | |
| Marion Twp. | May 11 | 100 | Smoking | 100 |
| Cooper | May 14 | 4 | Smoking | 5 |
| T. 1, R. 3, T. S. | May 14 | 50 | Smoking | 50 |
| Marion Twp. | May 16 | 1 | Miscellaneous | ..... |
| Indian Twp. | July 14 | ..... | Miscellaneous | ..... |
| T. 19, E. D. | July 14 | 2 | Smoking | 22 |
| Edmunds Twp. | July 16 | ..... | Campfire | ..... |
| T. 43, M. D. | July 18 | 6 | Smoking | 560 |
| Codyville Pl. | July 18 | ..... | Miscellaneous | ..... |
| No. 21 Pl. | July 19 | ..... | Debris burning | ..... |
| T. 6, N. D. | Aug. 2 | 1 | Miscellaneous | 225 |
| Indian Twp. | Aug. 5 | ..... | Smoking | ..... |
| No. 14 Pl. | Aug. 7 | ..... | Smoking | ..... |
| T. 1, R. 3, T. S. | Aug. 8 | ..... | Smoking | ..... |
| No. 21 Pl. | Aug. 8 | 1 | Campfire | ..... |
| T. 34, M. D. | Aug. 9 | 3 | Campfire | 15 |
| T. 35, M. D. | Aug. 10 | 1 | Smoking | ..... |
| T. 35, M. D. | Aug. 11 | 15 | Campfire | 30 |
| Beddington | Aug. 12 | ..... | Smoking | ..... |
| Indian Twp. | Aug. 15 | ..... | Smoking | ..... |
| T. 10, R. 3, T. S. | Aug. 17 | 2 | Smoking | 15 |
| Cooper | Aug. 20 | 1 | Smoking | 5 |
| T. 1, R. 3, T. S. | Aug. 26 | 1 | Miscellaneous | 5 |
| No. 14 Pl. | Nov. 1 | 3 | Smoking | 15 |



Graph showing acreage burned in the Maine Forestry District during the period 1924 — 1940 inclusive.



Graph showing the number of fires which occurred in the Maine Forestry District during the period of 1924—1940 inclusive



Graph showing range of expenditures for fire fighting and for tools and supplies in the Maine Forestry District for the period 1924 — 1940 inclusive.

The European Spruce Sawfly

General Situation

The European Spruce Sawfly (*Diprion polytomum*), which has threatened to be the most serious of any of our forest insect invaders, has gained a foothold in practically every spruce stand in the state. Up to the present, it has been very much like a smouldering fire breaking out here and there into heavy infestations. In a few places defoliation has reached as high as eighty per cent. To date almost no spruce has died, although stands have been left in a weakened condition. The outbreak during the season of 1940 was not as severe as that during 1939 due to three major factors: (1) a large holdover of cocoons, (2) weather conditions unfavorable to the sawfly, and (3) the presence in many sections of the state of a wilt disease which attacked the larvae. In addition to these factors, mammals, parasites, and predaceous insects are taking a heavy toll.

Reports from Wardens, Timberland Owners, and C.C.C. Camps

The coöperation of the Maine Forest Service warden force has made it possible to keep in close touch with conditions in the field. These men have visited remote areas and taken hundreds of sample counts to determine the degree of infestation.

The land owners have coöperated by sending in reports on conditions on their lands. They have also set up a project in which detailed figures and notes have been taken on permanent sample plots. The field work has been under the direction of Professor Demeritt and Professor Dirks of the University of Maine. The data from these plots has yielded valuable information. Further on in the report a list of the parasite recoveries found on these plots is included.

Civilian Conservation Corps Camps at Wesley, Princeton, Jefferson, and Bar Harbor did thorough scouting within their camp work areas and sent in a total of 206 reports.

A total of 1,234 reports were received during the year on spruce sawfly alone.

A summary of these reports shows the outbreak to still be light in the following regions: Chamberlain, Chesuncook, Seboomook, East Branch, Mattawamkeag, Passadumkeag, Princeton, Rangeley (except

for one town), and most of the Dead River section. It is lighter in 1940 in the following sections: DeBoulie Mt., Portage, Oxbow, Marsardis, Eastbrook, Machias watershed (Washington County), Nine Mile, Seven Islands, and along the coast from Bath to Bar Harbor. Increases in the infestation occurred near Cooper, Beddington, Mt. Katahdin, Baker Mt., Northwest Branch of the St. John, southwest of Jackman, and in local areas in the lower Allagash watershed. The outbreak in general was considerably lighter this year, although in some areas there was a marked increase and in others a heavy hold-over of cocoons in the duff. In practically all areas new cocoons were found this fall.

Recoveries of the Parasite *Microplectron*

The most accurate picture of what control the parasites are giving is best obtained by basing the percentage of parasitism on the number of good cocoons in the sample, for cocoons from which the sawfly has emerged, or in which the larva has been dead for some time, could not be parasitised. As it is not possible with our present knowledge to always tell the condition of the larva within a cocoon from the appearance of the cocoon itself, all cocoons were dissected. In this way, percentage of parasitism was based on those cocoons which could be parasitised.

To date sixty-six recoveries have been made in thirty-two towns. Of these, seventeen recoveries have been reported by Professor Dirks in twelve towns, five of which are in towns from which the Maine Forest Service had no reports. Due to the shortness of the season at which *Microplectron* is active in northern Maine, it cannot be expected to build up as quickly as in central and eastern Maine. As an example of this, there is an average difference of seventy-five days between the growing season (time between last killing frost in the spring and first killing frost in fall) of the areas along practically the full length of the Allagash and St. John watershed and the coastal area. In addition to this, the temperature in the deep moss under spruce is much cooler than air temperature. The five generations at Bar Harbor may be cut to two in parts of northern Maine. This means that a much longer time will be needed for the parasite to build up.

A list of the recovery points to date follows:

MAINE FOREST SERVICE RECOVERIES

| | | | | | |
|------------|-----|--------------|-----|------------|-----|
| 16 R 10 | (4) | 12 R 16 | (2) | T 36 | (1) |
| 16 R 5 | (1) | 12 R 15 | (1) | T 37 | (1) |
| 15 R 11 | (1) | Ashland | (6) | T 30 | (1) |
| 15 R 10 | (1) | 11 R 4 | (1) | T 19 | (1) |
| 15 R 9 | (1) | Presque Isle | (5) | Pl. 14 | (1) |
| New Sweden | (1) | Masardis | (2) | T 24 | (1) |
| 14 R 16 | (1) | 9 R 5 | (3) | Eastbrook | (1) |
| 14 R 10 | (1) | D R 2 | (1) | Bar Harbor | (6) |
| 14 R 6 | (2) | A R 2 | (1) | Mt. Desert | (1) |

RECOVERIES BY PROFESSOR DIRKS UNIVERSITY OF MAINE

| | | | |
|------------------|-----|--|-----|
| New Towns | | Towns also Reported by Maine Forest Service | |
| 18 R 13 | (1) | 15 R 10 | (1) |
| 15 R 5 | (1) | 15 R 9 | (3) |
| 8 R 3 | (1) | 14 R 6 | (2) |
| 8 R 4 | (2) | 9 R 5 | (2) |
| Indiantown | (1) | T 37 | (1) |
| | | T 30 | (1) |
| | | T 19 | (1) |

Figures in parentheses indicate number of locations in town from which recoveries have been reported. In addition to the above, a number of reports have been made of cocoons showing typical emergence holes of *Microplectron*. These have not been included as there is a possibility of error. For the most part the recovery figures are still very low and in many areas no recoveries were made. The best records have for the most part been obtained in areas where the sawfly is quite abundant and where parasites have been out for some time. The collections from T 30 and T 24 were made by a C.C.C. crew and to the best of our knowledge were refrigerated as soon as collected and carefully handled. Percentages of parasitism follow:

16 R 10 East Branch Twin Brook—10%, 14 R 16—4.5%, 14 R 6—9%, Ashland—8.3%, 9 R 5—5.1%, T 19—4.1%, Eastbrook—6.8%, T 30—71.4%, T 24—63.1%, Cadillac Mt. Bar Harbor (1936 liberation point) 51%.

Rearing of *Microplectron*

In the fall of 1939 plans were made to rear 50,000,000 *Microplectron*. Cocoons of the sawfly, which are used in rearing parasites, were collected by the Bellows Falls C.C.C. camp at Wilmington, Vermont. Due to the presence of a wilt disease in this area, collecting was much more difficult than the previous year. A total of 3,395,000 cocoons were collected for Maine.

These cocoons were brought to Augusta and put through a winnowing machine which eliminated 521,000 empty cocoons. Approximately 827,000 of the remaining cocoons proved to be useless due largely to dead larvae within them. No method has been found yet to eliminate the cocoons which appear sound but which are in reality dead, so that for the most part these go through the process of having para-

sites placed with them, and it is only through dissection of samples that the true picture shows up. This means that nearly forty per cent of the cocoons received were of no value. A great deal of time has been spent in trying different methods of eliminating these dead cocoons. A large, dead cocoon will weigh as much as a small, live one.

Work on rearing Microplectron started March fourth and was completed August tenth. By starting early it was possible to have parasites ready for early distribution. Experience had shown that the best results were obtained by placing two cocoons and two mated females in each vial. The workers filled a total of 1,352,100 vials. The average yield per cocoon was 23.99 of which 76.2% were females. These figures are based on all cocoons used in the vials and not on good cocoons only. About four million were reared by the bulk method. This method has at no time given as uniform results as the vial method.

Men from the Jefferson C.C.C. camp were of great help in sorting and picking over the cocoons and in making the release cages. The National Youth Administration has also furnished a number of boys who have been very helpful in the laboratory work.

During the past season a total of 67,187,293 Microplectron was reared at the Augusta laboratory. Distribution of these parasites was made by the wardens in 394 townships. The following table summarizes the Microplectron work to date:

| Year | Average Yield per Cocoon | Average % Females | Total Number Reared | No. of Towns Colonized | Remarks |
|-----------------|--------------------------|-------------------|---------------------|------------------------|--|
| 1935 | | | 30,000 | 1 | Received from Canada through U. S. Dept. Agri. |
| 1936 | | | 280,000 | 15 | " " " |
| 1937 | | | 800,000 | 10 | " " " |
| 1938 | | | 1,000,000 | | " " " |
| 1938 | 19.96 | 62. | 37,936,467 | 195 | Reared in Maine |
| 1939 | 15.7 | 65.6 | 113,841,000 | 570 | Reared in Maine. |
| 1940 | 23.99 | 76.2 | 67,187,000 | 394 | Reared in Maine. |
| Total | | | 221,074,467* | 607† | |

*Of this number 207,866,029 were released in the field and the remainder used or held for breeding stock.

†Many of above towns were colonized more than one year.

Rearing of *Microcryptus*

Work on another cocoon parasite ***Microcryptus basizonius*** was carried on during part of the season. The rearing of this parasite requires detailed handling. A total of 6,114 eggs were transferred into individual cocoons. Checks showed that 57.2% of these eggs produced adults of which 42.7% were females. A total of 2,919 were reared and released in the field—919 in 9 R 5, 1,000 in Castle Hill, and 1,000 on Mt. Desert Island. *Microcryptus* is a large parasite and attacks the cocoon stage of the sawfly. Considerable difficulty was experienced with a parasitic mold (***Aspergillus flavus***) which developed in the cocoons after the eggs of *Microcryptus* had been transferred into them, killing large numbers of the grubs and adults of the parasite. It finally became necessary to work in the outdoor insectary. A study of the situation showed that humidity was the controlling factor.

Other Liberations

On August 3, 1940, a shipment of parasites from Canada was forwarded to us from the New Haven, Conn., office of the U.S.D.A. Bureau of Entomology. These were released on township 9 R 5.

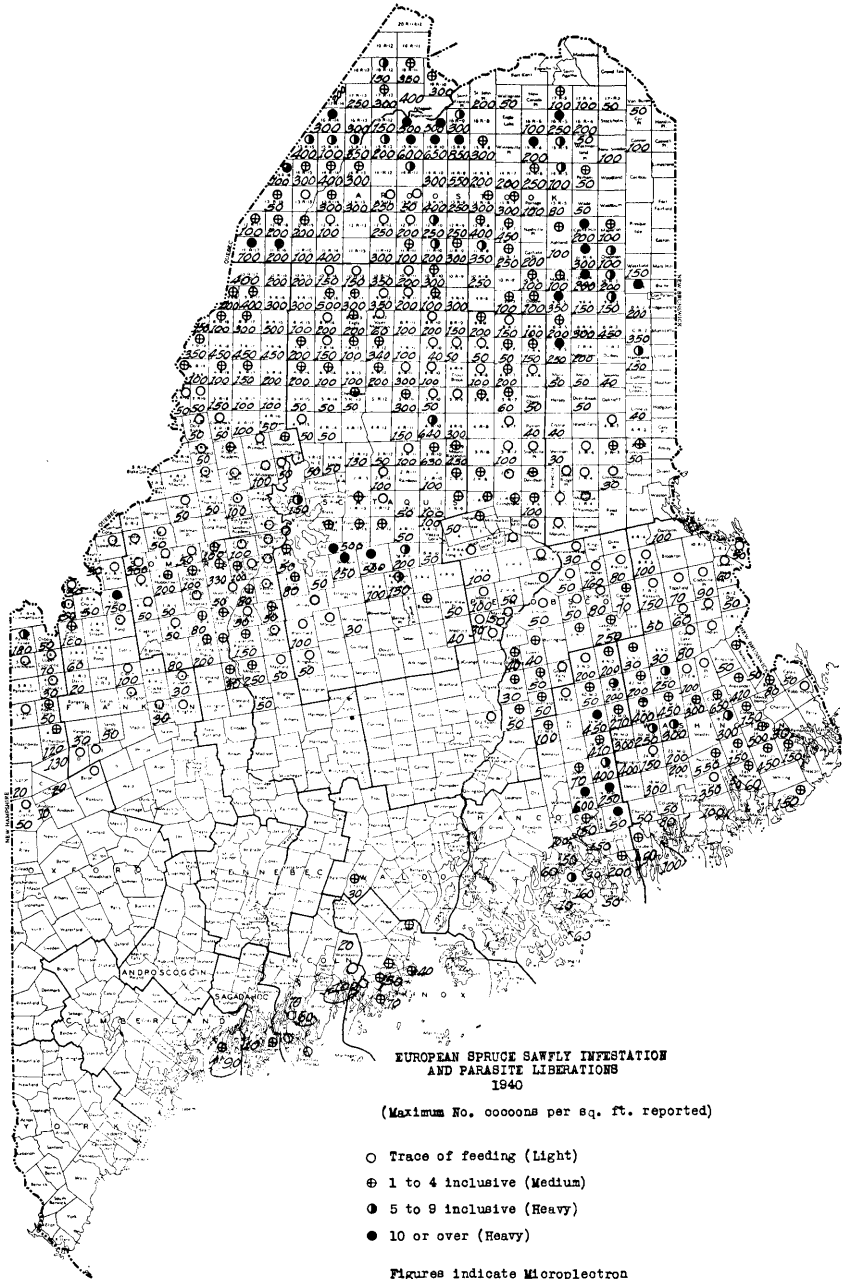
(***Exenterus claripennis***) 11 males, 91 females

(***Exenterus marginatorius***) 75 males, 206 females

(***Microcryptus basizonius***) 460 males, 607 females

Distribution of Parasites by Wardens

It has been the purpose of the distribution program to cover as near as possible all spruce stands of any size in the state. In doing this, it has been borne in mind that *Microplectron* will spread to a considerable distance when it becomes established. In Maine, we have recovered it at a distance of two miles from a point of release made two years previously. In New Brunswick, good recoveries have been found at a much greater distance within two seasons. Detailed maps have been kept of the location of parasite cages put in the field. These are all plotted on a control map. Comparing this control map with forest type maps, and with the help of the supervisors and wardens, it was determined that approximately 50,000,000 parasites would be needed in 1940 to cover areas not already treated. A definite schedule was laid out with the number of parasites to be placed in each town. Before the season started each supervisor and warden



EUROPEAN SPRUCE SAWFLY INFESTATION
AND PARASITE LIBERATIONS
1940

(Maximum No. cocoons per sq. ft. reported)

- Trace of feeding (Light)
- ⊕ 1 to 4 inclusive (Medium)
- 5 to 9 inclusive (Heavy)
- 10 or over (Heavy)

Figures indicate Microplotron
liberations in thousands

knew what he was to release, by towns, during the season. As over 60,000,000 parasites were reared, this meant that 6,000 parasites release cages had to be distributed.

The proper distribution of these cages is a big job. They are shipped out from Augusta and must be placed in the field within five days. Most of the areas covered are not easily accessible and the cages must be placed far enough apart in the spruce stands to give a good distribution. The supervisors and wardens should receive credit for efficient distribution.

The Forest Service plane was used repeatedly in distributing cages to the men in the field, sometimes to a central point, and at other times to isolated areas which would be hard to reach otherwise. It has also proved of value in getting men and field equipment in to remote areas to distribute the cages within the five day time limit.

At the present time, practically every spruce area in the state has had parasite releases of *Microplectron*. Those still remaining to be covered have not had infestations sufficient to warrant releases.

Experimental Rearing of *Microplectron*

A series of experiments was run in an effort to find the best means of rearing *Microplectron* in the laboratory, which greatly increased the efficiency of the work and the grade of the parasite released in the field. As a result of these experiments, the use of a suction tube in handling the parasites was discarded. Shields of pyralin were made. These were set on the tables in front of each worker. Cocoons to be parasitised were placed within the protection of the shield and breeding stock of adult *Microplectron*, which had been cooled and made somewhat inactive, was dumped on to the cocoons. The workers then picked up with forceps two sawfly cocoons with a single female parasite on each and placed these in a vial which was plugged with cotton and placed in incubation for egg laying. In this way the breeding stock was not handled, and injury which apparently took place previously was avoided. This new method also increased the percentage of females. Treatment of vials and cocoons with weak solutions of copper sulphate to prevent formation of molds greatly decreased the number of eggs laid. It was found that the best method of overcoming injury from molds was by cutting down on the humidity. This had to be carefully regulated for humidity is not only essential in maintaining the life of *Microplectron* during the period of egg laying but also it has a decided influence on the number of eggs laid.

Lack of moisture has a tendency to dry up the poison glands and as *Microplectron* stings the larva in the cocoon before egg laying this operation is interfered with.

The experiments which have brought about the greatest saving and efficiency were those which resulted in the use of two mated females and two cocoons per vial. These experiments were carried through two generations. They were divided into three parts: (1) 100 vials with one mated female and one cocoon per vial, (2) 200 vials with one mated female and two cocoons, and (3) 200 vials with two mated females and two cocoons. The following summary table pictures the results. The column headed “% all cocoons parasitised” indicates the high percentage of cocoons which dissection, after the incubating period is over, showed to be cocoons which were dead and could not be parasitised.

| Basis per Vial | Generation | % All Cocoons Parasitised | Based on Good Cocoons Only | | | | |
|----------------|------------|---------------------------|-----------------------------|-----------|-----------------------|-------------|-------------------|
| | | | Number Parasites per Cocoon | % Females | % Cocoons Parasitised | % Emergence | % Not Parasitised |
| 1 female | 1st | 48 | 32.79 | 78.9 | 94.7 | 84.2 | 5.2 |
| 1 cocoon | 2nd | 62 | 34.08 | 86.8 | 98.4 | 93.9 | 1.5 |
| 1 female | 1st | 48 | 29.08 | 76.1 | 95.3 | 89.7 | 4.6 |
| 2 cocoons | 2nd | 55 | 31.29 | 80.8 | 96.8 | 86.7 | 3.1 |
| 2 females | 1st | 62.5 | 36.51 | 75.5 | 100. | 93.8 | 0. |
| 2 cocoons | 2nd | 75.5 | 38.39 | 79.1 | 97.5 | 93.7 | 2.4 |

These experiments, which were run under the same conditions as the regular rearing, show that practically all good cocoons are parasitised, that the percentage of females averages about 80, that the number of eggs laid per female averages about 34, and that the use of two cocoons and two mated females per cocoon gives the best results. This information is particularly important due to the cost of collecting and handling cocoons.

Natural Control

Climatic Conditions. The month of June, when emergence of the sawfly is normally taking place, was unfavorable to the insect. The temperature remained very cool and there were very few days in which there was any sunshine. Greenville and Fort Kent recorded respectively twenty and twenty-one days of completely cloudy days.

There was nearly three times as much rainfall as in 1939. All this resulted in a fairly heavy holdover of cocoons from which sawflies did not emerge. Many of those which did emerge were prevented from egg laying by the continued rains and cool weather.

Disease. A wilt disease appeared in many sections of the state attacking the larvae. The disease received considerable publicity, some of which was very misleading. Although the causal organism has not as yet been determined, it is similar to that attacking other insect larvae. Once attacked, the infected larva loses its green color, turning first to a yellowish green and then black, becoming shriveled, wrinkled, and dry. The body contents ooze out. Diseases of this type are usually sporadic and may in some years almost completely wipe out an infestation. Then again they may not appear in epidemic form for a number of years. In some sections of southern Vermont and New Hampshire and in New Brunswick the disease has been very prevalent. It may be in Maine that it is just building up. Long range dependence on this disease for control seems very unwise if we may judge from experience with other insect outbreaks. It has destroyed large numbers of larvae in some sections of the state and undoubtedly has caused considerable setback in these areas.

Insect Predators. Predatory insects have been very important in holding the sawfly in check particularly in areas of light infestation. A number of species of beetles have been found feeding on the cocoons. These were listed in the 1938 report. One insect in particular—a predatory bug (**Podisus seriventris**)—has been observed in numbers feeding on the larvae. It feeds by sucking the juice from the larvae leaving the dried, shriveled skins some of which hang to the foliage but most of which fall to the ground. In one place thirty spruce trees which were beaten yielded 2.3 shriveled larvae per tree, some with the larvae still impaled on the beak of the bug. Careful examination will separate the larvae killed by this bug from those killed by disease.

Animal Predators. Large numbers of cocoons are destroyed each year by shrews, rodents, and other small mammals. The exact number is difficult to estimate from field counts as the number of cocoons in the ground accumulates from year to year. In some sections, notably along the coast, very little destruction of cocoons by these predators has been found. In northern Maine, the percentage thus destroyed may run from twenty to forty per cent.

Native Parasites. A few native parasites have been reared, but as yet they are not of any economic importance. The 1939 report lists a number of these recovered in 1938. During 1939 four species were recovered and identified through the courtesy of the U.S.D.A. Bureau of Entomology in Washington. Three of these species had been previously recovered and are as follows:

(**Delomerista diprioni Cush.**) Two reared from sawfly cocoons received from southern New Hampshire and Vermont.

(**Ephialtes pedalis Cress.**) Three bred from sawfly cocoons received from southern New Hampshire and Vermont.

(**Mastrus neodiprioni Vier.**) Reared from cocoons collected at Bar Harbor, and southern New Hampshire and Vermont.

A fourth species (**Ephialtes [Pimpla] Nuda Townes,**) was reared from a cocoon of a new species of Red Pine sawfly (**Neodiprion n. sp.**) collected at Passadumkeag. The adult was caged with spruce sawfly larvae in July and one offspring was found in October.

During 1940 a number of native species were reared which have not as yet been identified. One of these from St. Francis appears to be new.

Recommendations

Every effort should be made to establish a natural balance by building up the parasitic insects which attack the sawfly. It is believed that 10,000,000 more Microplectron should be sufficient to meet the needs in 1941. The major effort should now be placed on other parasites such as species of Microcryptus, Exenterus, and other species which may be found of value. The first can be reared in the laboratory; the latter still offers many difficulties, but it can be built up in the field and then redistributed into other areas. Outbreaks of all insects have their ups and downs and it has been proved many times in the past that it is false economy to ease up in our fight against a dangerous insect until it is proved to be under control.

The continued coöperation of the timberland owners is needed. Each year much assistance has come from Canadian entomologists, and from Federal entomologists located at New Haven. Through sectional meetings, the Northeast is working very much as a unit and this sort of help should be continued.

It is planned this coming year to place more emphasis on a study of actual field conditions throughout the state.

IN MEMORIAM

In the month of June, 1940, we were deeply saddened by the death of one of our oldest chief wardens, James Cassidy of Houlton, at the age of 84 years.

Mr. Cassidy went to work for the Forestry Department in 1924 as chief warden of the Number Nine District. He came to us well qualified for the job. He had spent all of his life, from the time he was a young man, taking charge of logging operations and scaling over all of the territory included in the Number Nine District. He was actively in charge of this district until within a month of the time of his death.

Early in January, 1941, we were again called upon to mourn the loss by death of another of our old friends of forestry, Charles L. Weeks. He had been in the service as chief warden twenty-four years, having been appointed in 1917 to the Aroostook Waters District. His earlier years in life were spent in logging and scaling over the territory included in this district. His knowledge of the woods and woods operations, along with his congenial disposition, made him a popular and valuable chief warden for the department as well as among the timberland owners. He will be greatly missed by the department and his associates.

Organized Towns

The administration of forest protection outside the Maine Forestry District is carried on with the assistance of one supervisor and a field force of 8 county wardens and 16 watchmen serving 21 cities, 418 towns, and 65 plantations.

Forest ownership is not found in large, unbroken areas. Even owners of large acreages have their holdings located in various towns and in comparatively small blocks. Responsibility for fire protection has always been and still is in the municipal officers. Since the institution of the Forest Commissioner's office in 1891, state coöperation has been wholly in an advisory capacity. Prior to extending coöperation in the erection and maintenance of lookout towers, an average of 15,000 acres were burned over annually. This average has lessened since the erection of the first tower in 1916 and remained rather consistently about 6,000 acres. Since 1931, there has been a sharp drop in the average acreage burned over per fire, and a reduction in town suppression costs. Although there are more fires than ever before, the protective organization has been responsible in keeping down to a reasonable figure the acreage burned over per fire. In 1931, the warden system was instituted making available to towns the services of trained men with forest fire fighting equipment. Although the warden expense is borne by the state, their authority rests wholly with the municipal officers as does the cost of fire suppression. The system does provide increased protection because of quicker detection, closer fire fighting supervision, and permanent patrol during period of fire lasting until final suppression. The system insures the proper attention to fires regardless of town lines or local inefficiency due to lack of training.

At present, approximately 85% of the organized sections receive some form of direct protection from the state.

Districts with warden service are determined by road accessibility and lookout tower visibility. Here the greatest fire hazards exist due to proximity of forested areas to densely populated centers, network of roads and highways, big volume of tourist traffic, activity of portable sawmills, and types of forest growth.

Another county fire warden district is needed to establish protection in southern Oxford County, northern York County, and western Cumberland County where the hurricane down timber created such a fire hazard. Expansion of this program to include the remaining sections of the organized towns depends entirely upon existing fire hazards and funds.

Districts without warden service comprise areas which can be effectively seen from lookout towers. There are now eight, and as time goes on they should receive county warden service.

The whole present set-up of fire districts in the organized towns is at best only a skeleton, coöperative organization.

During 1940, the Department of Forestry coöperated with the towns and distributed at strategic places in the field some fifty completely equipped forest fire tool caches. The main thought was to have available small, complete units of proper fire hand tools which could be quickly reached or transported. The department furnished the boxes free provided the towns raised \$25.00 to purchase the hand tools.

In 1939, a new 60' all steel lookout tower was erected on Sabattus Mt. in the town of Lovell, Oxford County.

New storehouse-headquarters were constructed in Naples, Richmond, and Searsport in 1939 and 1940.

New watchmen's camps were built on Mountain Hill, Agamenticus, and Sabattus. (Rain shelters.)

Two miles of metallic circuit telephone lines were constructed from the Frye Mt. lookout tower.

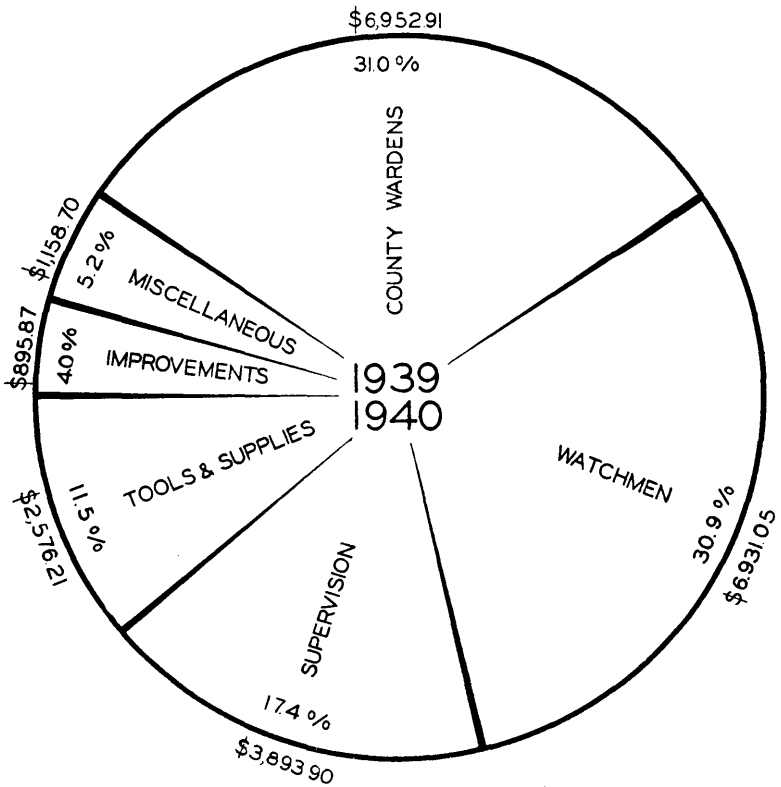
One decided improvement was the coöperative establishment of fire weather stations erected on Blackstrap Hill, Bear Mt., and Mountain Hill, which proved of value in predicting fire danger computed from data from these stations.

To meet the test of possible serious fire losses, the state, in coöperation with federal agencies, worked out a plan for weather forecasts and forest fire danger predictions. Several field stations were set up, and by averaging all the recorded data it was possible to make a daily fire weather forecast of a warning of future fire danger. Such forecasts were based upon the accurate measurements of fuel moisture content, wind, condition of vegetation, and season of the year. The predictions were expressed in a numerical scale of 1 to 5—in which class 1 represents no danger and class 5 extreme danger—and by regions of the state. In order to have this information reach the field personnel in charge of fire control, radio stations WGAN in Portland, WABI in Bangor, and WAGM in Presque Isle kindly gave free time to daily broadcasts; daily telegrams were sent to the Forest Commissioner, and several daily newspapers carried a short notice. During the season, this daily weather forecasting and fire danger predicting proved to be most useful in forest fire control work.

During 1939, some 28 acres were burned over per average fire. Periodically there were several dry spells, but no serious fires occurred. It was particularly dry in October and November. In fact, the last fire of the season was on Cedar Mountain, Parsonsfield, York County, on Thanksgiving Day, November 30, 1939. Outside of this period, the fire season can be considered as normal.

For the season 1940, the same system of fire weather forecasting and class day fire danger predicting was continued. The forest fire hazard was considered to be greater than the previous year, but by alertness and well organized suppression units no serious fires occurred. Statistics show that 30 acres were burned over per average fire.

A tabulation of the class day fire danger shows only a few days considered to be hazardous. For the most part, the season compares very favorably with the season of 1939. It is a significant fact that in spite of dryness there was no need for closing of forests to the public.



**Annual Average
Total Disbursements \$22,408.64**

ORGANIZED TOWNS
Financial Statement—1939

| Receipts | | |
|---|------------|--------------------|
| Balance on hand January 1, 1939 | \$9,883.30 | |
| 1939-1940 Appropriation | 8,000.00 | |
| Federal Coöperation | 13,000.00 | |
| Miscellaneous | .72 | |
| Total Receipts | | \$30,884.02 |
| Disbursements | | |
| County Wardens (Salary) | \$5,775.43 | |
| County Wardens (Expense) | 1,411.94 | |
| Watchmen (Salary) | 6,140.00 | |
| Watchmen (Expense) (Telephone) | 504.78 | |
| Supervisor (Salary) | 3,000.00 | |
| Supervisor (Auto mileage expense) | 694.56 | |
| Supervisor (Expense) | 236.95 | |
| Equipment | 2,390.00 | |
| Improvements | 952.50 | |
| Miscellaneous | 955.03 | |
| (Insurance, publicity, reports, etc.) | | \$22,061.19 |
| Balance January 1, 1940 | | \$8,822.83 |

(Expense of fire fighting by towns—\$6,373.97)

1940

| Receipts | | |
|---|------------|--------------------|
| Balance on hand January 1, 1940 | \$8,822.83 | |
| 1940-1941 Appropriation | 7,500.00 | |
| Federal Coöperation | 13,000.00 | |
| Miscellaneous | 709.77 | |
| Total Receipts | | \$30,032.60 |
| Disbursements | | |
| County Wardens (Salary) | \$5,362.00 | |
| County Wardens (Expense) | 1,356.45 | |
| Watchmen (Salary) | 6,754.66 | |
| Watchmen (Expense) (Telephone) | 462.67 | |
| Supervisor (Salary) | 3,000.00 | |
| Supervisor (Auto mileage expense) | 517.22 | |
| Supervisor (Expense) | 339.07 | |
| Equipment | 2,762.42 | |
| Improvements | 839.24 | |
| Miscellaneous | 1,362.37 | |
| (Insurance, publicity, reports, etc.) | | \$22,756.10 |
| Balance January 1, 1941 | | \$7,276.50 |

(Expense of fire fighting by towns—\$3,554.28)

FIRE RECORD 1939

| Location | Date | Acreage | Cause | Damage |
|----------------------------|----------|---------|----------------|--------|
| Androscoggin County | | | | |
| Durham | May 8 | 1 | Debris burning | \$37 |
| Poland | May 10 | 22 | Smoking | 48 |
| Durham | May 16 | 12 | Debris burning | ... |
| Auburn | May 18 | 10 | Smoking | ... |
| Leeds | June 11 | 3 | Smoking | 6 |
| Webster | June 21 | 15 | Smoking | 430 |
| Aroostook County | | | | |
| Sherman | May 26 | .... | Railroad | 1 |
| Benedicta | June 21 | .... | Debris burning | .... |
| Monticello | June 22 | .... | Debris burning | .... |
| Madawaska | June 25 | 15 | Miscellaneous | 130 |
| Haynesville | Aug. 12 | .... | Incendiary | .... |
| Cumberland County | | | | |
| Baldwin | April 30 | 3 | Campfire | .... |
| Falmouth | May 3 | 4 | Debris burning | 20 |
| Westbrook | May 6 | .... | Debris burning | 10 |
| Baldwin | May 6 | .... | Railroad | .... |
| Baldwin | May 6 | 2 | Miscellaneous | .... |
| Falmouth | May 6 | 2 | Miscellaneous | .... |
| Baldwin | May 6 | 50 | Unknown | 2,000 |
| Falmouth | May 7 | 10 | Debris burning | .... |
| Windham | May 9 | 2 | Unknown | 10 |
| Windham | May 9 | 7 | Debris burning | 25 |
| Windham | May 11 | 23 | Smoking | 3,045 |
| Windham | May 11 | 2 | Unknown | 100 |
| Falmouth | May 15 | 5 | Railroad | .... |
| Raymond | May 16 | 10 | Unknown | 20 |
| Windham | May 19 | 10 | Railroad | .... |
| Standish | May 19 | 12 | Railroad | 20 |
| Falmouth | May 26 | 2 | Smoking | 15 |
| Gorham | June 5 | 7 | Debris burning | 14 |
| Casco | July 21 | 1 | Lumbering | 5 |
| Scarboro | Oct. 11 | 2 | Smoking | .... |
| Scarboro | Oct. 18 | 10 | Smoking | .... |
| Franklin County | | | | |
| Weld | May 15 | 1 | Miscellaneous | 1,003 |
| Kingfield | Nov. 25 | .... | Smoking | .... |
| Hancock County | | | | |
| Amherst | May 11 | 40 | Smoking | 40 |
| Dedham | May 11 | 40 | Debris burning | 4,040 |
| Trenton | May 14 | 7 | Smoking | 10 |
| Sullivan | May 14 | 5 | Unknown | 10 |
| Orland | May 16 | 3 | Smoking | 15 |
| Sullivan | May 17 | 1 | Smoking | 1 |
| Bar Harbor | May 20 | 23 | Debris burning | 150 |
| Clifton | May 20 | 15 | Smoking | 45 |
| Mariaville | May 21 | 7 | Smoking | 25 |
| Sullivan | May 21 | 7 | Smoking | 20 |
| Aurora | July 23 | 10 | Smoking | .... |
| Aurora | Aug. 7 | 10 | Smoking | 1,000 |
| Gouldsboro | Aug. 12 | .... | Smoking | .... |
| Clifton | Aug. 12 | 8 | Smoking | 16 |
| Gouldsboro | Aug. 14 | 3 | Smoking | 15 |
| Aurora | Aug. 19 | 1 | Lumbering | .... |
| Kennebec County | | | | |
| Litchfield | May 7 | 10 | Debris burning | .... |
| Winthrop | May 10 | 10 | Debris burning | 20 |
| Vienna | May 14 | 100 | Debris burning | 50 |
| Litchfield | May 14 | 1 | Debris burning | 2 |
| Wayne | May 17 | 7 | Debris burning | 25 |
| Readfield | May 17 | 5 | Railroad | 10 |
| Benton | May 18 | 10 | Smoking | 208 |
| Vassalboro | June 6 | 6 | Railroad | .... |
| Vassalboro | June 6 | 9 | Railroad | .... |
| Gardiner | July 23 | 2 | Smoking | .... |
| West Gardiner | Oct. 19 | 5 | Campfire | 15 |
| Litchfield | Nov. 25 | 30 | Unknown | 30 |
| Sidney | Nov. 26 | 8 | Smoking | 20 |

| Location | Date | Acreage | Cause | Damage |
|--------------------------|----------|---------|----------------|--------|
| Knox County | | | | |
| Union | May 19 | 3 | Unknown | \$10 |
| Lincoln County | | | | |
| Somerville | May 13 | 20 | Debris burning | 40 |
| Waldoboro | May 17 | 6 | Debris burning | .. |
| Whitefield | June 2 | 2 | Unknown | 5 |
| Newcastle | Oct. 18 | 2 | Unknown | 10 |
| Newcastle | Nov. 16 | 2 | Debris burning | 19 |
| Jefferson | Nov. 18 | 3 | Unknown | .. |
| Dresden | Nov. 18 | 25 | Debris burning | 1,020 |
| Oxford County | | | | |
| Oxford | May 12 | 100 | Railroad | 50 |
| Hiram | May 17 | 45 | Debris burning | 50 |
| Sweden | May 18 | 60 | Lumbering | 50 |
| Upton | May 26 | 600 | Campfire | 600 |
| Fryeburg | June 3 | 15 | Smoking | .. |
| Norway | June 8 | 1 | Unknown | 10 |
| Lovell | June 22 | 35 | Smoking | 76 |
| Hartford | July 10 | 1 | Lightning | 5 |
| Lovell | July 22 | .. | Lightning | 5 |
| Fryeburg | July 23 | 2 | Smoking | .. |
| Fryeburg | Sept. 15 | 1 | Smoking | .. |
| Penobscot County | | | | |
| Hampden | May 12 | 100 | Debris burning | 100 |
| Holden | June 3 | 2 | Railroad | 5 |
| Medford | June 29 | 24 | Smoking | 280 |
| Bradley | Aug. 3 | 40 | Campfire | 10 |
| Greenfield | Aug. 12 | 1 | Lightning | 5 |
| Greenfield | Aug. 16 | 5 | Smoking | 75 |
| Eddington | Aug. 19 | 2 | Miscellaneous | 26 |
| Sagadahoc County | | | | |
| Bowdoinham | April 23 | 20 | Smoking | 25 |
| Richmond | May 1 | 5 | Debris burning | 2 |
| Richmond | May 3 | 1 | Railroad | .. |
| Topsham | May 4 | 3 | Railroad | 6 |
| Topsham | May 6 | .. | Railroad | .. |
| Bowdoinham | May 11 | 15 | Smoking | 15 |
| Richmond | May 11 | 20 | Debris burning | 3,040 |
| Topsham | May 12 | 1 | Miscellaneous | 2 |
| Topsham | May 13 | .. | Unknown | .. |
| Topsham | May 15 | 2 | Debris burning | 4 |
| Topsham | May 16 | 2 | Railroad | 2 |
| Topsham | May 17 | 5 | Railroad | 10 |
| Waldo County | | | | |
| Prospect | April 29 | 8 | Miscellaneous | 25 |
| Prospect | April 29 | 15 | Debris burning | .. |
| Prospect | April 30 | 30 | Debris burning | .. |
| Frankfort | May 11 | 20 | Debris burning | 5 |
| Winterport | May 11 | 70 | Debris burning | 40 |
| Belfast | May 12 | 70 | Debris burning | 50 |
| Belfast | May 13 | 5 | Debris burning | .. |
| Waldo | May 15 | 14 | Smoking | 20 |
| Stockton | May 17 | 8 | Railroad | .. |
| Prospect | May 17 | 21 | Miscellaneous | 5 |
| Waldo | May 20 | 45 | Miscellaneous | 200 |
| Searsport | May 20 | 2 | Debris burning | .. |
| Jackson | May 26 | 35 | Smoking | 70 |
| Belmont | May 27 | 13 | Incendiary | 50 |
| Jackson | June 22 | 20 | Incendiary | 50 |
| Northport | July 9 | 21 | Lightning | 45 |
| Frankfort | Aug. 1 | 10 | Smoking | 20 |
| Searsport | Aug. 12 | .. | Unknown | 60 |
| Searsport | Aug. 16 | 3 | Smoking | .. |
| Belfast | Sept. 21 | .. | Smoking | 10 |
| Northport | Oct. 1 | 1 | Campfire | 150 |
| Washington County | | | | |
| Cherryfield | May 13 | 5 | Debris burning | .. |
| Whiting | May 14 | 15 | Incendiary | .. |
| Centerville | May 15 | 5 | Incendiary | 25 |
| Whiting | May 21 | 7 | Smoking | 15 |
| East Machias | May 26 | 27 | Miscellaneous | 60 |

| Location | Date | Acreage | Cause | Damage |
|--------------------------------|----------|---------|----------------|--------|
| Washington County Cont. | | | | |
| Harrington | May 26 | 1 | Unknown | |
| Columbia | May 27 | 7 | Incendiary | \$20 |
| Crawford | June 22 | | Smoking | |
| Charlotte | July 30 | | Smoking | |
| Cherryfield | Aug. 2 | 7 | Smoking | 25 |
| Baileyville | Aug. 7 | | Smoking | |
| Baileyville | Aug. 7 | | Debris burning | |
| Alexander | Aug. 8 | | Campfire | |
| Cherryfield | Aug. 10 | | Smoking | |
| Millbridge | Aug. 11 | | Smoking | |
| Baileyville | Aug. 13 | | Smoking | |
| Baileyville | Aug. 14 | | Smoking | 4 |
| Alexander | Aug. 16 | 1 | Smoking | 12 |
| Baring | Aug. 25 | | Smoking | |
| Jonesport | Aug. 27 | | Unknown | |
| Charlotte | Sept. 29 | | Smoking | 4 |
| York County | | | | |
| Hollis | May 7 | 65 | Debris burning | |
| Lyman | May 10 | 33 | Debris burning | 105 |
| Shapleigh | May 15 | 500 | Smoking | |
| Shapleigh | May 16 | 650 | Smoking | |
| Waterboro and Lyman | May 17 | 625 | Smoking | 1,350 |
| Biddeford | May 17 | 4 | Smoking | 10 |
| Sanford | July 9 | 1 | Smoking | 5 |
| Sanford | July 10 | | Smoking | |
| Kennebunkport | Sept. 9 | 2 | Smoking | 7 |
| Acton | Sept. 18 | 12 | Smoking | 48 |
| Acton | Oct. 17 | 20 | Smoking | 100 |
| Lyman | Oct. 25 | 58 | Smoking | 50 |
| Waterboro | Nov. 18 | 100 | Incendiary | |
| Newfield | Nov. 18 | 143 | Incendiary | |
| Sanford | Nov. 25 | 3 | Smoking | 15 |
| Shapleigh | Nov. 30 | 15 | Incendiary | 25 |
| Parsonsfield | Nov. 30 | 12 | Smoking | 35 |

FIRE RECORD 1940

| Location | Date | Acreage | Cause | Damage |
|----------------------------|----------|---------|----------------|--------|
| Androscoggin County | | | | |
| Poland | April 29 | 1 | Smoking | \$5 |
| Greene | May 11 | 105 | Debris burning | 100 |
| Turner | May 15 | 3 | Debris burning | 20 |
| Webster | June 6 | 4 | Lumbering | 20 |
| Minot | Aug. 14 | 2 | Smoking | 10 |
| Poland | Aug. 18 | 1 | Miscellaneous | ... |
| Aroostook County | | | | |
| Sherman | May 10 | 7 | Debris burning | 25 |
| Oakfield | May 12 | 80 | Incendiary | 25 |
| Oakfield | May 15 | 1 | Debris burning | 5 |
| Haynesville | Aug. 10 | ... | Campfire | ... |
| Oakfield | Aug. 11 | ... | Smoking | ... |
| Haynesville | Oct. 7 | ... | Smoking | ... |
| Cumberland County | | | | |
| New Gloucester | April 28 | 2 | Smoking | ... |
| Scarboro | April 28 | 1 | Debris burning | ... |
| Falmouth | April 29 | 3 | Debris burning | ... |
| Falmouth | April 29 | ... | Debris burning | ... |
| Scarboro | May 1 | 25 | Debris burning | ... |
| New Gloucester | May 1 | 1 | Railroad | ... |
| Gray | May 1 | 25 | Debris burning | ... |
| New Gloucester | May 1 | 15 | Debris burning | ... |
| Baldwin | May 10 | 100 | Smoking | 200 |
| Bridgton | May 13 | 3 | Miscellaneous | 15 |
| Bridgton | May 13 | 3 | Miscellaneous | 15 |
| Gorham | May 14 | 4 | Smoking | ... |
| Bridgton | May 14 | 2 | Debris burning | 10 |
| Westbrook | May 18 | 25 | Debris burning | 50 |
| Scarboro | June 4 | 3 | Smoking | ... |
| Standish | June 14 | 1 | Smoking | 5 |
| Falmouth | June 17 | 10 | Lightning | 20 |
| Portland | Aug. 11 | 2 | Campfire | ... |
| Sebago | Oct. 12 | 1 | Smoking | ... |
| Portland | Oct. 14 | 25 | Smoking | 50 |
| Falmouth | Oct. 14 | 2 | Smoking | ... |
| Windham | Oct. 18 | 1 | Smoking | 5 |
| Harrison | Oct. 20 | 1 | Campfire | 5 |
| Standish | Oct. 20 | 25 | Smoking | 50 |
| Standish | Oct. 21 | 3 | Smoking | 10 |
| Standish | Oct. 21 | 1 | Debris burning | 25 |
| Raymond | Oct. 24 | 1 | Smoking | ... |
| Gorham | Oct. 24 | ... | Campfire | ... |
| Sebago | Oct. 25 | 70 | Smoking | 70 |
| Standish | Oct. 27 | 1 | Miscellaneous | 5 |
| Baldwin | Nov. 1 | 2 | Smoking | 10 |
| Gray | Nov. 1 | 7 | Smoking | 25 |
| Raymond | Nov. 1 | 8 | Smoking | 20 |
| Hancock County | | | | |
| Mariaville | May 7 | 50 | Incendiary | 50 |
| Sullivan | May 14 | 15 | Miscellaneous | 3,500 |
| Bar Harbor | May 19 | 1 | Smoking | ... |
| Southwest Harbor | June 6 | ... | Miscellaneous | ... |
| Otis | June 7 | 1 | Smoking | 63 |
| Bar Harbor | June 16 | ... | Incendiary | ... |
| Bar Harbor | June 24 | ... | Smoking | ... |
| Bar Harbor | July 15 | 8 | Smoking | 40 |
| Steuben | Aug. 9 | 1 | Smoking | ... |
| Gouldsboro | Aug. 11 | 35 | Smoking | 100 |
| Lamoine | Oct. 12 | 1 | Smoking | ... |
| Dedham | Oct. 16 | 1 | Campfire | 5 |
| Bar Harbor | Oct. 17 | ... | Smoking | ... |
| Bar Harbor | Oct. 24 | 3 | Smoking | 25 |
| Bar Harbor | Oct. 25 | ... | Incendiary | ... |
| Kennebec County | | | | |
| Litchfield | April 28 | 300 | Debris burning | 150 |
| Litchfield | May 15 | 9 | Debris burning | 10 |
| Litchfield | June 24 | 1 | Smoking | 5 |
| China | Aug. 15 | 15 | Smoking | 30 |
| Augusta-Windsor | Oct. 19 | 1,000 | Smoking | 100 |

| Location | Date | Acreage | Cause | Damage |
|--------------------------|----------|---------|----------------|--------|
| Knox County | | | | |
| Hope | May 12 | 20 | Debris burning | \$20 |
| Cushing | Aug. 27 | 10 | Smoking | 20 |
| Lincoln County | | | | |
| Jefferson | May 1 | 5 | Debris burning | 15 |
| Waldoboro | Aug. 13 | 10 | Campfire | 20 |
| Oxford County | | | | |
| Buckfield-Hebron | May 8 | 30 | Debris burning | 15 |
| Oxford | June 6 | 15 | Debris burning | 15 |
| Penobscot County | | | | |
| Newbury | May 10 | 225 | Debris burning | 75 |
| Mattawamkeag | May 13 | 1 | Debris burning | 5 |
| Kingman | May 30 | 150 | Smoking | 94 |
| Greenbush | July 16 | 2 | Smoking | 625 |
| Clifton | July 18 | 25 | Campfire | 20 |
| Carroll | Aug. 13 | 2 | Smoking | 20 |
| Sagadahoc County | | | | |
| Topsham | May 7 | 30 | Debris burning | 30 |
| Topsham | May 9 | 4 | Smoking | 20 |
| Bath | Aug. 29 | 4 | Campfire | 20 |
| Waldo County | | | | |
| Stockton | May 9 | 4 | Smoking | 4 |
| Thorndike | May 11 | 25 | Debris burning | 25 |
| Stockton | July 16 | 1 | Lightning | 1 |
| Washington County | | | | |
| Calais | May 14 | 35 | Incendiary | 15 |
| Robbinston | May 14 | 23 | Debris burning | 26 |
| Danforth | May 15 | 125 | Debris burning | 20 |
| Trescott | May 15 | 88 | Incendiary | 76 |
| Whiting | May 15 | 2 | Smoking | 2 |
| Baring | June 6 | 2 | Smoking | 3 |
| Baring | June 17 | 2 | Smoking | 3 |
| Baring | June 17 | 6 | Smoking | 5 |
| Dennysville | June 18 | 1 | Smoking | 1 |
| Baring | July 14 | 1 | Smoking | 5 |
| Jonesport | July 29 | 1 | Smoking | 2 |
| Lube | Aug. 9 | 1 | Smoking | 5 |
| East Machias | Aug. 12 | 1 | Smoking | 5 |
| Lube | Aug. 14 | 1 | Smoking | 30 |
| East Machias | Aug. 17 | 20 | Smoking | 4 |
| East Machias | Aug. 18 | 2 | Smoking | 601 |
| Cutler | Aug. 18 | 5 | Smoking | 601 |
| York County | | | | |
| Alfred | April 29 | 4 | Miscellaneous | 5,005 |
| Newfield | April 30 | 100 | Incendiary | 60 |
| Shapleigh | April 30 | 60 | Debris burning | 70 |
| York | May 7 | 35 | Smoking | 50 |
| York | May 7 | 25 | Miscellaneous | 350 |
| South Berwick | May 7 | 35 | Miscellaneous | 120 |
| Waterboro | May 10 | 60 | Smoking | 4 |
| Shapleigh | May 11 | 2 | Smoking | 600 |
| Biddeford | May 13 | 2 | Miscellaneous | 2,000 |
| Acton | May 13 | 120 | Incendiary | 3 |
| Sanford | May 14 | 50 | Smoking | 5 |
| Dayton | Aug. 18 | 8 | Debris burning | 80 |
| Alfred | Oct. 14 | 40 | Smoking | 80 |
| Berwick | Oct. 20 | 1 | Smoking | 3 |
| Dayton | Oct. 24 | 2 | Smoking | 5 |
| Waterboro | Oct. 24 | 4 | Debris burning | 20 |
| Hollis | Oct. 25 | 3 | Smoking | 5 |
| Lyman | Oct. 27 | 4 | Smoking | 150 |
| Kennebunk | Oct. 29 | 150 | Smoking | 4,000 |
| Alfred | Nov. 4 | 1 | Miscellaneous | 4,000 |

**SUMMARY OF FOREST FIRES FOR 1939-1940
BY MONTHS, COUNTIES AND CAUSES***

| | No. of Fires | | Acreage | | Damage | |
|---------------------|--------------|------|---------|-------|----------|----------|
| | 1939 | 1940 | 1939 | 1940 | 1939 | 1940 |
| By Months: | | | | | | |
| April | 5 | 9 | 76 | 471 | \$50 | \$5,220 |
| May | 81 | 42 | 3,706 | 1,562 | 16,986 | 7,530 |
| June | 16 | 14 | 154 | 45 | 1,006 | 131 |
| July | 10 | 6 | 38 | 37 | 85 | 764 |
| August | 24 | 20 | 91 | 111 | 1,268 | 862 |
| September | 4 | 25 | 15 | 1,344 | 59 | 693 |
| October | 11 | 4 | 98 | 18 | 335 | 4,055 |
| November | 11 | .... | 341 | .... | 1,164 | .... |
| | 159 | 120 | 4,519 | 3,588 | \$20,953 | \$19,255 |
| By Counties: | | | | | | |
| Androscoggin | 6 | 6 | 63 | 116 | \$521 | \$155 |
| Aroostook | 5 | 6 | 15 | 88 | 131 | 55 |
| Cumberland | 21 | 33 | 164 | 373 | 5,284 | 590 |
| Franklin | 2 | .. | 1 | .. | 1,003 | .. |
| Hancock | 15 | 15 | 173 | 116 | 5,362 | 3,783 |
| Kennebec | 13 | 5 | 203 | 1,325 | 380 | 295 |
| Knox | 1 | 2 | 3 | 30 | 10 | 40 |
| Lincoln | 1 | 2 | 60 | 15 | 1,094 | 35 |
| Oxford | 11 | 2 | 860 | 45 | 846 | 15 |
| Penobscot | 7 | 6 | 174 | 405 | 501 | 819 |
| Sagadahoc | 12 | 3 | 74 | 34 | 3,106 | 50 |
| Waldo | 21 | 3 | 411 | 29 | 800 | 29 |
| Washington | 21 | 17 | 75 | 312 | 165 | 787 |
| York | 17 | 20 | 2,243 | 700 | 1,750 | 12,602 |
| | 159 | 120 | 4,519 | 3,588 | \$20,953 | \$19,255 |
| By Causes: | | | | | | |
| Debris Burning | 36 | 28 | 772 | 958 | \$8,868 | \$671 |
| Campfire | 6 | 8 | 649 | 43 | 775 | 675 |
| Incendiary | 9 | 8 | 318 | 510 | 170 | 710 |
| Lightning | 4 | 2 | 23 | 10 | 60 | 20 |
| Lumbering | 3 | 1 | 62 | 4 | 55 | 20 |
| Miscellaneous | 10 | 11 | 124 | 90 | 1,451 | 12,944 |
| Railroad | 16 | 1 | 168 | 1 | 104 | .. |
| Smokers | 60 | 61 | 2,292 | 1,972 | 7,205 | 4,215 |
| Unknown | 15 | .. | 111 | .. | 2,265 | .. |
| | 159 | 120 | 4,519 | 3,588 | 20,953 | \$19,255 |

*These figures do not include the fires which occurred on Acadia National Park.

Fire Record 1940, for Acadia National Park, Hancock County

| Location | Date | Acreage | Cause | Damage |
|------------------|---------|---------|----------------|--------|
| Bar Harbor | May 6 | 1 | Smoking | .... |
| Bar Harbor | May 12 | 4 | Smoking | .... |
| Bar Harbor | May 14 | 8 | Smoking | .... |
| Bar Harbor | May 19 | 2 | Debris burning | .... |
| Bar Harbor | May 19 | .. | Campfire | .... |
| Bar Harbor | June 6 | .. | Incendiary | .... |
| Southwest Harbor | July 6 | .. | Smoking | .... |
| Bar Harbor | July 10 | .. | Smoking | .... |
| Southwest Harbor | July 28 | .. | Smoking | .... |
| Southwest Harbor | Aug. 10 | .. | Smoking | .... |
| Bar Harbor | Oct. 11 | .. | Smoking | .... |
| Tremont | Oct. 14 | 1 | Smoking | .... |
| Southwest Harbor | Oct. 15 | .. | Smoking | .... |
| Southwest Harbor | Oct. 16 | .. | Smoking | .... |
| Southwest Harbor | Oct. 18 | .. | Smoking | .... |
| Bar Harbor | Oct. 29 | 1 | Smoking | 5 |

The hurricane, which travelled northerly from the South during the middle of September in 1938, wrought great havoc through central New England. The destruction of property and windfall of timber in Maine was confined largely to Oxford, Cumberland, and York Counties. During the years 1939 and 1940, every effort was made by private and public authorities to restore normal conditions, and to reduce fire hazard and property loss, through salvage of merchantable materials.

Salvage work was definitely assigned to the U. S. Forest Service within the corporate structure of the Surplus Commodities Corporation. The organization carrying on this work was known as the Northeastern Timber Salvage Administration. The New England Forest Emergency Project was set up at the same time to handle the fire hazard reduction.

The program got under way in December of 1938 and brought to the owner of down timber an opportunity to salvage his logs for a reasonably high sale price.

At the peak of the program, in all New England, about twenty-six million feet of logs were being delivered to storage ponds per week. During this time, twelve to fourteen million feet of lumber was being sawn. Man power for salvage and hazard reduction work included the W.P.A. and C.C.C. organizations.

The Forest Commissioner was authorized by the legislature to permit the federal agents to use our "great ponds" for the storage of logs. The following ponds were used for this purpose:

| Pond | Town | Pond | Town |
|--------------------|--------------|-------------------------|----------------|
| Wilson Pond | Acton | Scribners Landing | Harrison |
| Half Moon Pond | Baldwin | Tuesday Cove, Long Lake | Harrison |
| Adams Pond | Bridgton | Town Farm | Lebanon |
| Beaver Pond | Bridgton | Pickere! Pond | Limerick |
| Woods Pond | Bridgton | Webster Pond | Limington |
| Little Rattlesnake | Brownfield | Chandler | New Gloucester |
| Burnt Meadow | Brownfield | Adams Pond | Newfield |
| Granger Pond | Denmark | Pennesseewassee | Norway |
| Long Pond | Denmark | Saturday Pond | Otisfield |
| Pickere! Pond | Denmark | Thompson Lake | Otisfield |
| Sturtevant Pond | Errol, N. H. | West Pond | Parsonsfield |
| Tilton Pond | Fayette | Tripp Lake | Poland |
| Bog Pond | Fryeburg | Lower Spectacle | Porter |
| Camp Ground | Fryeburg | Davis Pond | Rumford |
| Gerry Pond | Fryeburg | Perley Pond | Sebago |
| Lovewell Pond | Fryeburg | Webber Pond | Sweden |
| Old Saco River | Fryeburg | Crystal Pond | Turner |
| Bear River Pond | Harrison | Bear Pond | Waterford |
| Crooked River | Harrison | Moose Pond | Waterford |

Hurricane Salvage Statistics for New England

(Figures denote feet board measure)

| | Est. Total Volume Down | Amt. Salvaged by U.S.F.S. | Estimated by Private Owners | Total |
|--------------------|---------------------------|------------------------------|--------------------------------|---------------|
| Maine..... | 89,000,000 | 48,187,000 | 25,000,000 | 31,759,000 |
| New Hampshire..... | 735,000,000 | 402,479,000 | 200,000,000 | 602,479,000 |
| Vermont..... | 155,000,000 | 50,486,000 | 30,000,000 | 80,486,000 |
| Massachusetts..... | 396,000,000 | 127,817,000 | 175,000,000 | 302,817,000 |
| Connecticut..... | 90,000,000 | 19,759,000 | 12,000,000 | 31,759,000 |
| Rhode Island..... | 61,726,000 | 11,814,000 | 18,000,000 | 29,814,000 |
| | 1,526,726,000 | 660,542,000 | 460,000,000 | 1,120,542,000 |

In addition to the above figures, the records show that 59,680 cords of pulpwood were also salvaged in Maine. 90% of the timber salvaged was white pine, the remaining 10% being largely other softwoods. \$561,500.00 was paid for logs purchased. Approximately three-fourths of the expenditure was for labor in operating.

Although the fire hazard was reduced greatly during the salvage program, much hazard still remains. With the completion of the salvage work, C.C.C. and commuting camps, as well as W.P.A. labor, have been removed from the area. The present hazard will require exceptional watchfulness on the part of local authorities and others operating in this region this year and for several years to come.

The U. S. Forest Service has jurisdiction over the White Mountain National Forest, a part of which extends into Maine. By an Act of Congress in 1908, the Weeks Law was passed. It was not until 1918 that 24,994 acres were first acquired in Oxford County, Maine, as part of the White Mountain National Forest Reserve. Since this original purchase, the acreage has increased to 47,858 acres. The following tabulation shows the civil sub-divisions of this land in Oxford and York Counties:

| Forest (1) | County Township (2) | Net Forest Area—Acres (3) | Amt. Paid to State 25% of Receipts 1940 (4) |
|----------------------|---------------------------|---------------------------------|--|
| White Mountain..... | Oxford | | |
| | Albany †..... | 6,362 | \$128.83 |
| | Batchelders Grant.. | 14,260 | * |
| | Gilead..... | 2,161 | 43.76 |
| | Lovell..... | 78 | 1.58 |
| | Mason †..... | 10,153 | 205.59 |
| | Stoneham..... | 8,736 | 176.90 |
| | Stow..... | 3,619 | 73.28 |
| | | 45,369 | \$629.94 |
| Massabesic..... | York | | |
| | Alfred..... | 1,191 | .90 |
| | Dayton..... | 3 | |
| | Hollis..... | 1 | |
| | Lyman..... | 1,294 | .98 |
| | | 2,489 | \$1.88 |
| Total for Maine..... | | 47,858 | \$631.82 |

*All of Batchelders Grant is National Forest land; consequently, its proportional part was apportioned among the other towns.

†Now wild land towns; Mason deorganized in 1935 and Albany in 1937.

Under the Congressional Act of 1908, the State Treasurer each year receives 25% of the net receipts realized from the National Forest land in Maine. Column 4 shows the apportionment of the revenue received for the fiscal year ending June 30, 1940. The money is to be expended by the towns for public schools and roads as prescribed by this Act.

The Massabesic Experimental Forest is a nucleus of the former Bates College Forest which had been under management since 1921. This area was purchased by the U. S. Forest Service in 1938.

The custom of exhibiting at various fairs has been continued during the years of 1939 and 1940. The following list indicates the location of these exhibits:

- Skowhegan Fair (1939-40)
- Smithfield Centennial (1940)
- Eastern States Exposition (1939-40)
- Dover-Foxcroft Fair (1940)
- North Turner Historical Club (1939)
- Camden Regatta (1939)
- Topsham Fair (1940)
- Central Maine Flower Convention, Winslow (1940)

In addition to the fairs listed above, the department maintains a forest protection exhibit at the State House museum. There is also a permanent field demonstration of white pine blister rust at Belfast.

On August 29 and 30, 1940, the New England Section of the Society of American Foresters met for their annual summer meeting in Maine. The Great Northern Paper Company acted as host for this meeting, in which the Atlas Plywood Company, the University of Maine, and the Maine Forest Service coöperated. The meeting was held at Pittston Farm and Seboomook. Exhibits in fire, insect, and fungus control were set up at Pittston Farm. Over 100 foresters and invited guests were present at this meeting.

The only pamphlet or publication for general distribution during 1939 and 1940 was a handbook giving the laws on forestry and certain related subjects.

Insect Control

The climatic conditions of 1939 were quite normal, and hence not adverse to insect life. This was especially true in the spring. However, the spring of 1940 and extending into early July was very unfavorable, and helped greatly in reducing various insect infestations. During this period there was an excessive rainfall and prolonged periods of damp, cloudy, cool weather. When the sun did appear it was usually very penetrating and accompanied by high humidity.

Foreign insects continue to appear, and have caused the most trouble. General interest by the public in all types of insect and disease control has continued to increase as has the interest in general care of shade and ornamental trees, shrubs, and flowering plants. All of this results in much personal contact and correspondence by the department with involved parties.

Surveys previously started on other insects have been carried on.

The work at the Bar Harbor laboratory was all transferred to the new insect laboratory at Augusta early in 1939. This building was built by the Jefferson C.C.C. camp, which also built in 1939 a nearby outdoor insectary.

Forest Insects

The average annual loss from forest insects in Maine is probably in excess of three million dollars. As our system of reporting on outbreaks when they first appear becomes increasingly efficient, much of this may be averted. The building up of interest and knowledge amongst the warden force, and the recognition of reporting on insect and disease outbreaks as one of their duties will do much to bring about efficient control measures.

The following list covers the most important outbreaks reported during the past two years:

(1) **Balsam Gall Midge (*Cecidomyia balsamicola*)** causes the needles to fall prematurely. In eastern Maine it caused harvesters of Christmas trees to abandon cutting in certain areas.

(2) **Balsam Woolly Aphid (*Adelges piceae*)** has become increasingly abundant in Washington and Hancock Counties during the past two years. Considerable injury has been reported along the coast, particularly at Dark Harbor, Cliff Island, and Bar Harbor. Local outbreaks far inland have also been reported.

(3) **Basswood or Linden Leaf Beetle (*Calligrapha scalaris*)** was abundant in the southern tip of the state at Eliot.

(4) **Beech Leaf Tyer (*Psilocorsis faginella*)** was heavy throughout the state in 1939, especially through Hancock and Washington Counties where 80% of the leaves were affected. It was generally lighter in 1940. The grubs tie leaves together and skeletonize the inner surfaces.

(5) **Beech Scale (*Cryptococcus fagi*)**. Checks on this insect show it as continuing to increase in severity and extent. It is now being found heavily in southern Aroostook and northern Penobscot Counties. The Nectria disease which follows is also very common. There is extensive dying of beech in Washington County. Infested trees may appear white with millions of the scales on trunks and branches. A curious fungus (***Gonatoratiella* sp.**) has been found destroying the Nectria disease on Pocomoonshine Mt. and in Moulunkus.

(6) **Birch Case Bearer (*Coleophora salmani*)** has assumed epidemic proportions at Burnt Isle, Isle au Haut, Winter Harbor, Addison, Jonesboro, and Jonesport. Efforts are being made to find concentrations of parasites, and transfer such parasites to areas where they are absent.

(7) **Birch Leaf Mining Sawfly (*Phyllotoma nemorata*)** is light except in the very western section of the state.

(8) **Birch Leaf Skeletonizer (*Bucculatrix canadensisella*)** again became abundant in northern Maine in 1940, and will probably become more widespread by next year. Premature yellowing of the foliage in 1940 was commonly seen as caused by this insect.

(9) **Birch Sawfly (*Hylotoma pectoralis*)** was common in 1940 in many northern areas.

(10) **Bronze Birch Borer (*Agrilus anxius*)** has caused noticeable injury to yellow and white birch in eastern Maine. In the case of white birch, undoubtedly the previous work of defoliating insects has helped to reduce the vigor of trees, but with yellow birch maturity of stands appears to have contributed to the present attack. Mature and cut over stands are particularly attacked. In most cases the stands reported dying have previously been opened up, which leaves the trees very susceptible to injury from this insect.

(11) **Hemlock Looper (*Ellopiia fiscellaria*)** is present in small numbers in various places in the state having been observed in the eastern, western, and northern sections; particularly in stands of fir mixed with spruce.

(12) **Larch Case Bearer** (*Coleophora laricella*) has continued in much lighter numbers than it was previous to 1938, but did increase somewhat in 1940.

(13) **Larch Sawfly** (*Lygaeonematus erichsoni*) outbreaks occur in Washington and Hancock Counties. Collections of cocoons have been obtained and rearings made to know of the presence and effectiveness of parasites of this insect in case infestations become widespread in the state and demand liberations. In the period following 1880 practically all of the larch in the state was destroyed by this insect. Meanwhile the larch has been coming back, and is again being seriously threatened.

(14) **Green Striped Maple Worm** (*Anisota rubicunda*) was exceptionally heavy in both Hancock and Washington Counties and in the vicinity of Denmark causing extensive defoliation of maples. Periodic outbreaks of this native insect have occurred in the past in New England.

(15) **Mountain Ash Sawfly** (*Pristiphora geniculata*) severely defoliated trees through the Kennebec and Dead River valleys, particularly in 1940. This European insect is, of course, of more importance on ornamental trees, but is a good example of a foreign insect causing severe defoliation in forested areas.

(16) **Pine Bark Aphid** (*Pineus strobi*) has increased greatly in the last two years; being heavy in townships 22 and 34 M. D., 14 and 19 E. D., Indian Town, and T. 1, R. 6, W.E.L.S.

(17) **Pine Sawflies—Abbott's** (*Neodiprion pinetum*) occurred at Southport in numbers, Introduced (*Diprion simile*) was quite heavy at Bar Harbor, Pitch (*Neodiprion pini-rigidiae*) occurred on white and pitch pine at Cape Porpoise, the larvae being full grown on September 11.

(18) **Pine Webworm** (*Tetralopa robustella*) as tentatively determined caused severe defoliation of Jack Pine at Bridgton.

(19) **White Pine Weevil** (*Pissodes strobi*) continues to be the most serious insect pest of white pine being grown for lumber. It is generally common all over the state causing crooked and limby trees.

(20) **Zimmermann's Pine Moth** (*Diorcytria zimmermani*) has recently been found attacking white pine. Adults were bred at Augusta in early August. Attack is often close to wounds, such as from limbing or by blister rust. It seems able to kill small branches and even small trees in plantations. The attack on small trees shows a constricted area near the base similar to injury caused by ants. Pitch masses with frass castings are noticeable about the area attacked. The larvae tunnel in the inner bark and outer sapwood.

(21) **Black Headed Spruce Budworm (*Peronea variana*)** was lighter by 1940. It was previously causing noticeable defoliation at Mt. Desert Island and Winter Harbor.

(22) **Eastern Spruce Bark Beetle (*Dendroctonus piceaperda*)** outbreaks in the Rangeley regions have killed large amounts of spruce. Damage by this insect is still going on in places there, but in general the outbreaks have subsided as the bulk of the big spruce in the infested areas has been killed.

(23) **Spruce Needle Miners (*Taniva albolineana* and *Epinotia nanana*)** are increasing in prevalence along the coast.

(24) **Spruce Sawfly (*Neodiprion abietis*)**, a native insect, over winters in the egg stage. There are evidently two species involved—one attacking spruce; and one both spruce and fir, more particularly the latter when both trees are present. Quite heavy infestations occur. At Five Islands heavy defoliation of fir took place with much less feeding on adjacent spruce. At Cape Elizabeth it was severe on fir with noticeable feeding on blue spruce. On Squirrel Island the larvae were found only on spruce although considerable fir grows there.

(25) **European Spruce Sawfly.** A detailed report is given separately in this report.

(26) **Yellow-headed Spruce Sawfly (*Pikonema alaskensis*)** is being studied for effectiveness of parasites in keeping it in check, and for other means of keeping damage down. The insect definitely prefers and kills small trees growing in open sites and is a serious threat to spruce plantations throughout the state. No injury has been seen in closed stands. The larvae are dark yellowish-green with longitudinal stripes of a gray green color, the head is reddish-yellow, and feeding is done preferably on the new growth foliage.

At Weeks Mills, where a heavy infestation occurred, yearly records of parasites emerging from sawfly cocoons have been kept. Whereas in 1937 and 1938 only a few parasites were obtained, in 1939 27% of the cocoons yielded two different species of parasites, (***Monoblastus* sp.**) and (***Ichneutes n. sp.***), of which the latter outnumbered the former at a rate of three to two. In 1940 45% of the cocoons collected showed parasitism. The same two species of parasites were obtained, but in this year the former species outnumbered the latter three to one of the parasites that emerged. A considerable number of parasites did not emerge due to poor and artificial conditions under which the cocoons were kept. Possibly a good part of those failing to emerge were (***Ichneutes***) as these are difficult to rear. In 1939 two specimens of a secondary parasite (***Mesochorus* sp.**) emerged from cocoons. Determinations of parasites were made by R. A. Cushman and C. F. W. Muesebeck of the U. S. Bureau of Entomology and Plant Quarantine.

Shade Tree Pests and Care

A large number of calls and letters was received concerning protection and care of shade trees. Insects and diseases were very common.

(a) **Insects:** The fall webworm has continued to be abundant. In southern Maine the elm flea beetle (**Haltica ulmi**) and the elm leaf beetle were causing much damage to elms, while numerous cases of infestation by the European elm scale—one on cork elm from Hancock—were seen. The woolly elm aphid (**Eriosoma americana**) was sent in often. An unusual insect—the elm sac gall (**Tetraneura ulmisacculi**)—was very abundant on the foliage of Camperdown elm at Manchester. Also unusual is the butternut woolly worm (**Monophadnus caryae**) found in South Bristol on Japanese walnut. The sugar maple borer was abundant through the state, while in southern Maine the alder blight aphid was common on the under side of maple leaves. One of the most generally reported pests was the maple and oak twig pruner. The pine twig borer (**Myeloborus ramiperda**) caused considerable killing of the tips of white pine twigs. The spruce gall aphids and red spider mites were common on ornamental spruce trees—the latter also attacking other evergreens. In the very southern part of the state the willow flea weevil (**Orchestes rufipes**) continued abundant. Psocids or bark lice were numerous in 1940.

(b) **Diseases and Climatic Injuries:** Maple wilt (**Verticillium sp.**) continues to be the most common cause of troubles to maple. In 1939 maple leaf spot diseases were very common. In 1940 on maples and beech especially, as well as other trees, foliage browned by leaf scorch and wind drying was widespread, and the cause of many calls. Wind damage was plainly evident as westerly sides of the trees were severely browned as compared to the other parts. A number of small silver maples were severely injured by the fungus (**Cytospora chrysosperma**), which killed whole branches up to an inch and one-half in diameter.

Dying elm branches, suspected of being injured by the Dutch elm disease (**Ceratostomella ulmi**), have been sent away for culturing, but to date this disease has not been found in Maine. Slight scouting has been done in the southern part of Maine for presence of the smaller European elm bark beetle (**Scolytus multistriatus**) which is a major factor in spreading the disease. No trace of this beetle was found although it has been found in Rollinsford, N. H., close to South Berwick.

The cytospora disease (**Cytospora Kunzei**) continues common on blue spruces. In the Jackman region a severe case of killing of groups of small spruce up to four feet tall was caused by the snow fungus (**Phacidium infestans**). Pine and fir in a small locality in Winthrop suffered from hail injury in the summer of 1939. Injury showed up as browning of branches in 1940, the bark being deeply scarred by the hail, which weakened the parts so much that they died from winter factors.

In general, fungus diseases of trees were abundant in 1940; especially the ash rust (**Aecidium Fraxini**), pine leaf casts, horse chestnut leaf blotch, and the Gymnosporangium rusts on Amelanchier and Crataegus.

(c) **General Shade Tree Care—Miscellaneous Injuries:** In one town a number of large, beautiful elms were killed by illuminating gas leaking from mains. In cases like this the department is called to ascertain if gas is the actual cause, and to recommend fair settlements; this last also being done in cases of injuries to trees by chemicals, automobiles, and other agencies. Many requests were received for information on feeding, pruning, bracing, transplanting, and fixing of cavities of trees; as well as on general care of shrubs.

Flower Garden Insects

Severe injury to iris pods by the iris snout beetle (**Mononychus vulpeculus**) in June occurred. Rose chafers were heavy in many places. Columbine borers did considerable damage, while dahlias were injured by a similar borer (**Papaipema nitela**). The rose midge (**Dasyneura rhodophaga**) and lilac leaf miner were common. Oyster shell scale was often sent in on such plants as lilac. The dogwood sawfly was abundant in places. A stink-bug (**Cosmopepla bimaculata**) was very common in August 1940. An unusual case was reported from Gardiner, where in August 1940 the burdock moth (**Metzneria lappella**) was swarming through a house. Severe injury to lawns by chinch bugs occurred in Augusta and Skowhegan.

Vegetable Garden and Field Crop Insects

At Pittsfield, swarms of the tortoise beetle (**Chelymorpha argus**) were present in a potato field. The striped cucumber beetle and the squash bug were the subject of many calls. Tomato hornworms were very numerous as were potato flea beetles on tomatoes and beans. The corn ear worm was abundant in places, and another borer (**Apoamea americana**) eating the center of the base of young corn plants

was sent in from Hallowell. The Mexican bean beetle was often the subject of calls. The pea aphid (**Illinoia pisi**) was abundant in small garden plots back in the woods of Washington County many miles from planted areas.

Wild rice seeds are being severely injured by what is apparently either the wheat head army worm (**Neleucania albilinea**) or a closely related species which feeds on and destroys the developing rice seeds.

Fruit Insects

The scale insect (**Phenacoccus aceris**) was abundant at Jefferson on apple trees, while from Gardiner abundance of the green apple aphid and the plum curculio was reported. The pear leaf blister mite was the subject of many calls for assistance. The eastern tent caterpillar was increasingly abundant in 1940. Much injury to the canes was caused by the raspberry cane borer.

Miscellaneous Insects

Numerous reports were sent in of snow fleas. Larvae of the buck moth were very abundant in the Kennebunk area in June. These are one of our few poisonous insects and a number of people were poisoned.

Household and Stored Products Insects

The great majority of requests for information concerned such common pests as bean weevils, bed-bugs, carpenter ants, carpet beetles, clothes moths, cockroaches, house-flies, larder beetles, powder post beetles, rice weevils, silver-fish, and the European brown cricket. Red or black ants were obnoxious in many places. A heavy infestation of (**Neoclytus muricatus**) occurred in one place. The grubs of these beetles were breeding in pine and spruce slabs which had been used to give a rustic finish in a room. The variable oak borer swarmed through one house. They were emerging from stored beech and birch cord wood. House flooring was being damaged severely in places by (**Hadrobregmus carinatus**).

In stored products the cigarette beetle, the drug store beetle, the confused flour beetle, and the saw-toothed grain beetle caused considerable damage. The last insect named brought up a rather unusual case in that no source of food could be found except the insulating material of the house which contained buckwheat hulls.

The elm leaf beetle and elm flea beetle caused annoyance in houses by coming in for winter hibernation. The swallow bug (**Oeciacus vicarius**) caused considerable concern in two places by swarming over

houses and into upper rooms in that the bug resembles very much the bed-bug. The swallow bug infests swallows of various kinds, often being in the nests in large numbers. As far as known, they do not readily attack humans.

The dog tick (***Ixodes cookei***) was sent in from Ellsworth. Many inquiries concerning mosquitoes and black flies were sent in. Mosquitoes especially were very abundant late in 1939 in the Sebago Lake region. Owners of boys' and girls' summer camps are particularly anxious to eliminate the nuisance. Several reports have been received of houses heavily infested with clover mites which appear like tiny spiders.

Publications, Lectures, and Exhibits

Numerous talks have been given before organizations on the protection of gardens and forests from insect and disease attack. In several cases, the insect exhibit has been set up at meetings and fairs. A new exhibit, showing proper methods for protecting trees from mechanical damage and subsequent decay, is now being prepared. The following publications have been published:

(1) "**Control Work on European Spruce Sawfly in 1939**" by H. B. Peirson and R. W. Nash. Bulletin No. 12, Maine Forest Service, 1940. This bulletin of nineteen pages with cuts and two maps describes control work to date on this insect.

(2) "**Eastern Spruce Bark Beetle**" by R. W. Nash. Tree Pest Leaflet No. 14. Published by Mass. Forest and Park Association.

(3) "**Pales Weevil**" by H. B. Peirson. Tree Pest Leaflet No. 13. Published by Mass. Forest and Park Association.

(4) "**Forest and Shade Tree Aphids**" by H. B. Peirson. Tree Pest Leaflet No. 40. Published by Mass. Forest and Park Association.

(5) "**Arbor Vitae Leaf Miners**" by A. E. Brower. Tree Pest Leaflet No. 46. Published by Mass. Forest and Park Association.

(6) "**The Newer Forest Protection**" by H. B. Peirson. Paper published jointly by American Pulpwood Association and Canadian Pulp and Paper Association, 1940.

White Pine Blister Rust Control

Today, after over three hundred years of cutting, Maine is producing an annual output of white pine lumber ranking well with the output of other states.

Very little acreage of old growth pine remains. The old growth has been replaced by hundreds of thousands of acres of younger growth, which is so extensive it has become the most important tree, as well as the greatest natural asset in the southern half of the state. Its management as a permanent crop, both on farm woodlots and on wild lands, is essential to maintain the prosperity of the region—prosperity dependent on proper protection. It is this young growth that the farmer, laborer, mill owner, and manufacturer must look to in the future. White pine is not only of great commercial value, but from an aesthetic viewpoint as well—its scenic worth is incalculable.

What the future holds in store for white pine throughout its entire range depends largely upon the application of forestry practices, including the control of the blister rust, now present in every pine town in Maine.

White pine blister rust is a two-host parasitic fungus disease. It was first found in Maine in 1916 at Kittery Point in York County. Today it is present in every white pine growing town in the state. Like many other plant and tree diseases, it makes use of an intermediary host in completing its life cycle. The two host plants of the blister rust are our white pines and all varieties of the currant and gooseberry family, wild and cultivated. It was due to the abundance of wild currant and gooseberry bushes, these having the generic Latin name of *Ribes*, and being so known in control work, plus favorable soil and moisture conditions, that caused such widespread range of the disease. Hundreds of sample plots taken in scores of towns show ten to ninety per cent of the pines are attacked by the disease, and will die—no tree with a trunk infection recovers. White pine blister rust is transmitted from one host to the other by means of wind-blown spores. Since the rust can continue to spread only through the alternate host, the elimination of the lesser valued host, in this case the destruction of all currant and gooseberry plants within infection range, holds the secret of control. The disease cannot be exterminated, but it can be controlled.

Blister rust control is conducted under a cooperative agreement between the Forest Commissioner and the Bureau of Entomology and

Plant Quarantine of the U. S. Dept. of Agriculture, in which they coöperate with towns and pine owners. The Federal Government furnishes the educational, scouting, and supervisory work. The state, towns, and owners furnish the labor. In the operation of the plan the state adds fifty per cent to town funds and the total expended for the hire of local eradication crews. Supervision is furnished from Federal and State funds. Each year around forty towns raise funds for ribes eradication work. During the past several years, large allocations of W.P.A. funds for blister rust control have been granted to Maine, thereby furnishing employment to hundreds of men on the relief rolls. The C.C.C. camps at Jefferson, Bridgton, and Alfred have also added materially to control work. The allocation of W.P.A. funds has made possible the continuance of the type mapping of white pine and control areas, which began as a C.C.C. project in 1933. This work is carried on during the period October to April.

Town Funds Expended during 1939 and 1940 Control Seasons

| | 1939 | 1940 |
|----------------------------|----------|----------|
| Androscoggin County | | |
| Poland..... | \$150.50 | |
| Turner..... | | \$220.50 |
| Webster..... | 199.80 | |
| Cumberland County | | |
| Naples..... | 200.10 | |
| New Gloucester..... | 100.00 | |
| Falmouth..... | | 133.56 |
| Scarboro..... | 140.40 | 199.08 |
| Windham..... | 300.00 | 236.88 |
| Franklin County | | |
| Weld..... | 198.17 | |
| Jay..... | | 150.99 |
| Hancock County | | |
| Sullivan..... | 97.02 | |
| Blue Hill..... | 300.07 | 298.54 |
| Hancock..... | 149.73 | 150.00 |
| Winterport..... | 199.93 | |
| Mt. Desert..... | | 400.00 |
| Bar Harbor..... | | 499.34 |
| Kennebec County | | |
| Monmouth..... | 198.52 | 199.95 |
| Manchester..... | 82.60 | 86.64 |
| Sidney..... | | 100.10 |
| Winslow..... | 98.22 | 99.47 |

| | | |
|---------------------------|------------|------------|
| Knox County | | |
| Appleton | 99.90 | |
| Camden | 334.90 | 16.00 |
| Lincoln County | | |
| Boothbay | 100.00 | 148.80 |
| Boothbay Harbor | 94.40 | 100.00 |
| Wiscasset | 66.50 | |
| Damariscotta | 99.28 | 91.52 |
| Oxford County | | |
| Newry | 71.42 | |
| Hanover | 100.07 | |
| Bethel | 178.82 | 206.09 |
| Canton | 220.42 | 173.27 |
| Dixfield | 100.00 | 100.00 |
| Norway | 185.44 | |
| Paris | 203.85 | 187.96 |
| Rumford | | 321.48 |
| Penobscot County | | |
| Enfield | 199.80 | 199.02 |
| Lincoln | 199.80 | 196.38 |
| Somerset County | | |
| Oakland | 200.00 | |
| Solon | 199.10 | |
| Skowhegan | 200.04 | 200.06 |
| Anson | 150.08 | 148.80 |
| Athens | 200.00 | |
| Fairfield | 200.00 | 200.00 |
| Madison | 199.60 | |
| Moscow | | 200.00 |
| York County | | |
| Buxton | 100.64 | 100.32 |
| Eliot | 301.24 | 299.93 |
| York | 200.49 | 224.23 |
| So. Berwick | 200.12 | 202.53 |
| <hr/> | | |
| 48 Towns | \$6,820.97 | \$6,091.44 |

Cooperative Control Work

1939

1940

(I) Towns and Pine Owners (Regular)

| | | |
|-------------------------------------|-------|-------|
| Number of towns worked in | 16 | 14 |
| Number acres worked | 7,645 | 9,027 |

| | | |
|---|------------|------------|
| Number acres pine protected | 2,425 | 2,342 |
| Town labor cost | \$2,524.36 | \$3,098.72 |
| State labor cost | 713.68 | 1,174.96 |
| Gov't labor cost (Wht. Mt. Nat. For.) | 141.25 | ..... |
| Total eradication cost | \$3,379.29 | \$4,273.68 |

The above includes 2,497 acres of initial, and 14,176 acres of re-eradication work.

(II) Emergency Conservation Work (C.C.C.)

| | | |
|---------------------------------------|--------|--------|
| Number towns worked in | 2 | 3 |
| Number acres worked | 11,109 | 24,291 |
| Number acres pine protected | 3,633 | 9,487 |

These figures include 16,809 acres of initial, and 18,591 acres of re-eradication work.

(III) Work Projects Administration (W.P.A.)

| | | |
|---------------------------------------|-------------|-------------|
| Number towns worked in | 49 | 43 |
| Number acres worked | 68,634 | 73,771 |
| Number acres pine protected | 26,507 | 26,534 |
| Government cost | \$40,551.28 | \$41,943.96 |
| Town cost | 4,320.76 | 2,992.72 |
| State cost | 758.07 | 242.84 |
| Total eradication cost | \$45,630.11 | \$45,179.52 |

Included in the above figures are 55,141 acres of initial, and 87,264 acres of re-eradication work.

SUMMARY OF WHITE PINE BLISTER RUST CONTROL WORK DURING ERADICATION SEASONS 1939-1940

| | No. Towns | Acres | No. Ribes Destroyed | Cost * | Per Acre Cost | Ribes per Acre | Man Hrs. per A. |
|-------------------|-----------|---------|---------------------|--------------|---------------|----------------|-----------------|
| Regular | 23 | 16,672 | 209,727 | \$7,652.97 | \$0.46 | 13 | 1.2 |
| C.C.C. | 4 | 35,400 | 1,215,831 | 32,802.48 | 0.92† | 34 | 3.3 |
| W.P.A. | 64 | 142,405 | 2,842,785 | 90,809.63 | 0.64 | 20 | 1.5 |
| | 77‡ | 194,477 | 4,268,343 | \$131,265.08 | Av. \$0.68 | Av. 22 | Av. 1.8 |

*Supervision not included.

†\$1.50 per man day.

‡Actual.

White Pine Type Mapping

White pine type mapping is the chief blister rust control project during the months of October to April. It is only by mapping all

white pine areas, meeting with certain requirements agreed upon by this department and the U. S. Department of Agriculture, that a permanent control area may be established and a yearly project program maintained. During the past two years this work was conducted with W.P.A. funds.

For mapping purposes, each mapping unit of two or three men use black and white prints of 2X enlargements of U. S. Geological Survey maps, a scale of approximately two inches to a mile. Compass bearings are taken and distances paced, each mapper using a protractor and scale rule for plotting angles and distances. As nearly all W.P.A. mappers are inexperienced, the four U. S. Dept. of Agriculture district agents conduct training schools at the beginning of each mapping season. Type mapping was conducted in 59 towns; 45 towns completed and 14 partly mapped, showing the location of 121,054 acres of pine land, and 312,191 acres of pine plus protective strip zone for ribes eradication crew work. In addition, 729,761 acres of non-pine lands were examined but not mapped, and 88½ miles of control area boundary lines painted.

Canker Removal Work

White pine trees not fatally infected with the blister rust may be saved by removing infected branches, and by cutting out affected bark on the trunks. Many owners of ornamental pines have saved thousands of trees by following our instructions—the owners furnishing the labor, the state and federal agencies the supervision. During the past two years canker removal jobs were performed at Stockton Springs, Blue Hill, and Poland. Extension ladders, ropes, and life belts are often used, especially when working in large trees. The following work was performed at Blue Hill:

| | |
|---|---------|
| No. pines examined | 346 |
| No. pines treated for infection | 138 |
| No. pines fatally infected and cut down | 35 |
| No. pines fatally infected but not cut down | 33 |
| No. pines having stem cankers removed | 26 |
| No. infected branches removed | 369 |
| Labor cost to owner | \$99.20 |

In every instance where this work is performed, the ribes plants must be destroyed—preferably before the salvage work begins. The proper removal of these bushes will eliminate the source of new infections; otherwise the treatment of infected pines only delays the death

of the trees because new infections will continue to occur from year to year. There will be no blister rust on the pines unless there are currant or gooseberry bushes within infecting range to spread it.

Pine Infection Conditions

As stated in previous biennial reports, blister rust infection runs high in unprotected young growth. Sample plots and rod-wide strip lines show damage as high as ninety per cent. The rust spreads rapidly under favorable conditions; in fact we have data showing a two hundred per cent increase in the number of infected trees in four years in an unprotected stand; 21% in 1930, 52% in 1932, and 61% in 1934—due to the presence of wild gooseberry bushes nearby. Hence, reproduction has a very slim chance of ever attaining merchantable size when ribes plants are numerous.

Merchantable size pine stands may also be severely damaged, as was proved by infection data taken on nine one-acre plots containing pine ranging from six to over thirty inches in diameter in the towns shown in table.

| Town | Plot Size | No. Pines | TREE CONDITION | | | |
|---------------|-----------|-----------|-------------------------------|------------------|------------|------|
| | | | Healthy, or Branch Infections | Trunk Infections | | |
| | | | | Live | Top Killed | Dead |
| Madison..... | 1 A. | 56 | 25 | 26 | 2 | 3 |
| Madison..... | 1 A. | 100 | 77 | 20 | 1 | 2 |
| Madison..... | 1 A. | 131 | 106 | 19 | 0 | 6 |
| Madison..... | 1 A. | 119 | 75 | 35 | 1 | 8 |
| Lovell..... | 1 A. | 240 | 168 | 50 | 2 | 20 |
| Lovell..... | 1 A. | 320 | 206 | 60 | 5 | 49 |
| Warren..... | 1 A. | 192 | 66 | 80 | 4 | 42 |
| Scarboro..... | 1 A. | 165 | 118 | 29 | 4 | 14 |
| Bingham..... | 1 A. | 113 | 75 | 30 | 5 | 3 |
| 5 Towns..... | 9 A's | 1,436 | 916 | 349 | 24 | 147 |

Analysis: 520 or 36% with trunk infections will die.
 916 or 64% are healthy—part have non-killing branch infections.
 147 or 10% already dead.
 373 or 28% of living trees have stem infections, or top killed, and will die.

Exhibits

Several outdoor and indoor blister rust control exhibits are staged each year. For many years such displays have met with public approval, as is evidenced by many compliments and newspaper articles. Two outstanding displays were those at the Smithfield Centennial and at Belfast on Route 137. The latter exhibit of 2.2 acres contains 365 pines with diameters to twenty-two inches. Appropriate signs and posters are used for educational purposes. The exhibit is on a yearly basis, arrangements having been made with the owner to lease the area for an indefinite period.

Status of Blister Rust Control Work

The pine type mapping has progressed so rapidly that steps are being taken to establish a semi-permanent or tentatively final outlining of control areas, within which the present and future stands of pine would be protected. It is understood, however, that the forest situation gradually changes, and modifications as to the pine tracts to be worked will be necessary at intervals of three to five years. To date no control work has been conducted in Aroostook County, and a very small amount in Washington County. These two counties, as well as many towns in Franklin, Hancock, Oxford, Piscataquis, Penobscot, and Somerset Counties, are at present not included in the control area. Undoubtedly, several towns in Washington County will be included if the type mapping justifies such action.

Acreage figures for all counties, except Aroostook and Washington, show approximately two and one-half million acres of pine and protective zone within the present permanent control area, of which nearly one million acres bear pine in sufficient quantity to justify control practices. Approximately eighty-three per cent of the total control area has been worked once, and seventeen per cent or over four hundred thousand acres remain unworked.

A sub-committee of the New England Section, Society of American Foresters, reporting on the control of the white pine blister rust made this statement: "The species (white pine) cannot be perpetuated without control of blister rust, but this parasite can be controlled effectively and at a cost which can be borne by good stands."

Miscellaneous State-Wide Activities

The Civilian Conservation Corps was established to furnish training and to relieve unemployment, especially among young men and to advance a program of nationwide proportions for the conservation and building up of the country's natural resources of timber, soil, and water. The President was also authorized to extend the provisions of the Act to county, municipal, and private land, but only for the purpose of doing work in preventing and controlling forest fires, insect attacks, tree diseases, and flood control. The 1937 Act required that adequate provisions be made by the coöperating agencies for the maintenance, operation, and utilization of such projects on municipal, county, and private lands as would be considered under the general classification of prevention and control of forest fires, forest tree pests and diseases, soil erosion, and floods.

The State Forest Commissioner represents the state coöperating agency in connection with C.C.C. camps assigned to the U. S. Department of Agriculture. All camp locations are recommended by him. As one of the main objectives of the C.C.C. program is forest conservation, it is the function of the State Forest Commissioner to recommend work programs for the camps.

At the present time, Maine has four U.S.D.A. camps located as follows: Alfred, Princeton, Bridgton, and Wesley. A camp at Chatham, N. H., was closed October 9, 1939, and the camp at Jefferson was closed September 30, 1940. In addition to the U.S.D.A. camps, camps at Bar Harbor and Southwest Harbor are working under the Department of Interior. The camp located at Ayers Junction is working under the Bureau of Biological Survey.

In Maine, we have two classes of camps, namely; those engaged primarily on truck trail construction and general forest conservation measures and those engaged in the elimination or control of insect pests and tree diseases. Camps at Princeton and Wesley come under the first category and Alfred and Bridgton (and formerly Jefferson) are in the second classification.

The 1938 hurricane which swept through New England caused great disaster to our forests in the western part of Maine. C.C.C. camps within or near hurricane areas were put to work immediately on salvage operations. Special camps were organized for W.P.A. crews. Special efforts were made to stack, pile, and burn all slash possible to reduce the great fire danger. Towards this end, the Alfred, Bridgton, and Chatham camps were equipped with tools and supplies

and all crews began working on this project. While fire danger reduction, as far as our camps were concerned, was the primary objective of this program, special efforts were made to limb all down trees so that as much timber as possible could be salvaged by the owner. In many cases, this meant the re-opening of highways and the removal of hanging limbs over pedestrian and vehicular traffic ways. Communication and power lines were freed of down trees and normally brought back to everyday living conditions in the villages and towns. This work continued through 1939 and was finally ended in early 1940.

Each camp had previously been furnished with ordinary fire fighting equipment such as shovels, picks, back pumps, and trucks. Additional equipment was considered advisable. Consequently, the U. S. Government furnished each camp with 2,000 feet of fire hose, one gas fire pump, back pumps, and fire trucks.

It was at this time that a special course of fire fighting training was inaugurated by the U. S. Forest Service in all C.C.C. camps. Camp supervisory personnel spent hours, under direction of U. S. Foresters, studying and discussing ways and means of fire control. This knowledge was imparted by the personnel through active field training to all enrollees. This practice has done much for forest protection.

The Alfred camp, established in 1933 as an insect camp, has continued its work program. It branched out into hurricane reduction activities during the year 1939 and has assisted in the development of the Massabesic Experimental Forest, formerly a part of the Bates Forest and now owned and administered by the U. S. Forest Service. Three miles of truck trail have been constructed and preliminary surveys and base lines were made as a basis for a timber inventory. Waterholes were built. A wood frame workshop, size 20' x 36' on concrete foundation, was built at the Forest headquarters.

Gypsy moth and browntail moth work, in coöperation with the State Department of Agriculture, has been done in the towns of Alfred, Acton, Lyman, Shapleigh, Waterboro, and Sanford. Special consideration has been given to those areas used by tourists and summer residents. In many instances owners of lake shore property have coöperated by spraying in the spring following the winter painting of egg clusters by the camp crews. No gypsy moth work was done in 1939. In 1940, 102,262 egg masses were painted and 22,750 browntail moth webs were destroyed.

The elimination of ribes under blister rust control was carried on in the towns of Kennebunk and Lyman. Nineteen waterholes for

forest fire protection have been built at strategic points in the towns of Alfred, Springvale, and Hollis.

This camp built twenty fire tool caches for distribution to the organized towns and also twelve large size picnic tables for use at Forest Service lunch grounds.

During the season of 1939 this camp was called to fight twelve forest fires in the towns of Shapleigh, Alfred, Lyman, and Waterboro. In the year 1940, ten forest fires occurred in the towns of Alfred, Newfield, South Berwick, North Shapleigh, Acton, Sanford, Dayton, and Kennebunk. A total of 739 enrollee man days were used.

In addition, several miscellaneous projects were done for the State Forest Service such as the building of latrines, hose racks, short telephone lines, and the grading of the grounds around the equipment storehouse in the town of Lyman.

Considerable time was also spent in the supervision and care of the Government timber salvage lumber yards located in this section of the state.

The Bridgton camp was established in 1935, primarily as an insect control camp, but it also utilized its full man power in hurricane reduction throughout fourteen surrounding towns within a radius of thirty miles. The first work following the hurricane was that of restoring communication lines. In this connection 9 to 10 miles of roads were reopened or repaired. Then followed the clearing of fire hazards on 1,036 acres of blow-down and roadside clearing of 76 miles.

A total of eleven waterholes have been built during the past two years in the towns of Bridgton, Harrison, and Waterford. All waterholes are about 20' x 24' and 5' deep, with sloping banks and should supply water to a small gas pump for about two hours.

During 1939 and 1940 this camp was called to nineteen forest fires. In one instance it was chiefly responsible for the saving of considerable real estate in a fire at Fryeburg. Forest fires in western Maine usually occur in thinly populated towns, hence the presence of a C.C.C. camp is of undisputed value.

Additional efforts towards forest fire control are represented by the construction of 20 tool caches for distribution to the towns under the direction of the State Forest Service, twelve large picnic tables, hose drying rack, latrines, and the construction of a one and a half wood frame Forest Service equipment storehouse on Sebago Lake State Park in Naples. The grounds adjoining the storehouse were graded. Foot trails were made leading to the lookout tower on Pleasant Mountain.

During the summer of 1940, two side camps were operated. One was for Appalachian Mountain Trail work of sixteen miles from the Ledge House, so-called, running easterly to the Kennebec River: the second side camp was located at Turner. The towns of Minot, Auburn, and Lewiston were type mapped for the State Forest Service.

Following the completion of the hurricane reduction work in January 1940, crews were placed on gypsy moth and browntail moth control. During the past two years, this work has been carried on in seventeen neighboring towns. During this period, 750,000 egg clusters were creosoted.

The importance of this insect pest control to the state is indicated by the presence of 26 boys and girls summer camps in the vicinity of Bridgton. In addition, there are, of course, large numbers of private cottages and public resorts on eight of the more important lakes in this section.

Blister rust control engages some camp crews during the summer months. No work was done in 1939 but in 1940, crews worked in the town of Denmark and eradicated ribes.

The Sebago Lake State Park is fast becoming one of the major tourist attractions in this section. As many as 25,000 visitors per month have been counted. The Bridgton camp has done considerable work in developing this Park in the way of forest stand improvement, foot trails, bridle trails, roadside cleanup, gypsy moth control, and by miscellaneous projects. Ranger cabins, beach improvement, camper shelters, parking areas, sedimentation basins, and other projects are now proposed for construction by the Bridgton camp.

The Chatham camp, located on the White Mountain National Forest and just across the state line, was opened in October 1938 by the transfer of the Company from the Greenville camp. The principal work was that of fire hazard reduction following the hurricane.

Cleanup work was done in the towns of Lovell, Fryeburg, Stow, Stoneham, and Sweden. The hazard reduction work consisted of 18 miles of roadside cleanup, re-opening of 21 miles of roads, and slash removal on 775 acres of blowdown. This camp also erected a steel lookout tower, 54 feet high, with cabin, on Sabbattus Mountain. The materials for this tower were purchased from C.C.C. funds. One and a half miles of forest fire telephone, metallic circuit, line was constructed connecting the new tower with the commercial lines. A cabin and latrine have since been built at the tower.

During the 1939 season, the Chatham camp fought a total of sixteen forest fires occurring in Fryeburg, Sweden, Lovell, and Stoneham.

This camp was transferred to Kerwin Brook, Wesley, in Washington County on October 9, 1939. It was located to connect various projects constructed by the Beddington and Princeton camps. When the proposed truck trails are completed, the large timbered area between the towns of Princeton and the Narraguagus River will be made much more accessible for fire fighters and the present telephone system will be much enlarged and improved.

To date, about ten miles of truck trails are completed. About three miles of telephone line have been constructed and poles cut and set for 7 miles of line.

This camp is in a strategic position for fire fighting and is well equipped with fire fighting equipment. No forest fires occurred in this section in 1939. During 1940, four fires were fought by this camp, all of which were in Township 35.

The Jefferson camp was established in 1933 as a plant insect and disease control camp and occupied by World War Veterans. It was converted to a Junior enrollee camp in July 1935 and was abandoned September 30, 1940.

During the past two years the Jefferson camp has been engaged chiefly in insect and disease control in the neighboring towns. Considerable work has been done on the shade trees along the streets of Augusta. In 1939, by establishing a side camp at Cupsuptic, northerly of Rangeley, it built a large wood frame, hip roof, storehouse for the State Forest Service as well as a log crib boat landing dock and picnic ground. From this same camp, miles of roadside were cleared as fire hazard reduction and numerous trails were opened for fire fighting crews. In addition, many acres of blowdown were cleaned up by slash burning.

During 1940, another equipment storehouse for the Forest Service was built by a side camp at Searsport.

The cutting of the favorite host trees for control of gypsy moth has been carried on on the U. S. Veterans Administration property at Togus.

Blister rust, through elimination of ribes, has been the chief summer project. Many towns within a 25 mile radius have been worked.

Prompt action by the camp crews has held fires to nominal proportions. During 1939 the camp was called to five fires and during the 1940 season three fires were fought.

The Princeton camp was established in 1933, on Indian Township, and has been primarily engaged in truck trail construction for forest fire protection and in silvicultural work. The work program is based

on recommendations of the Forestry Departments of the state and of the University of Maine. Special emphasis has been placed on the location of truck trails to act, not only as fire lanes, but as a means of quick access to fires. Telephone lines have been constructed throughout the section and during the past two years two miles of metallic circuit telephone pole line, beginning at Topsfield and extending towards Springfield on Route No. 16, have been constructed. Approximately 20 miles of line have been rebuilt from a point on Route No. 1, across Indian Township to Tomah Stream, and thence northerly to Route No. 16.

Spruce sawfly investigations have been carried on in four townships.

About five miles of truck trail have been completed during the past two years, including a road 16 feet wide leading from Grand Lake Stream highway to Peter Dana Indian Point. In addition, 6 miles of the Baileyville truck trail were rebuilt.

Work was started this year on a picnic ground development near Peter Dana Point. The beach has been cleared of debris and sanded. A long L sloped boat landing dock, float with diving platforms, two bath houses 12' x 16', one shelter 12' x 30', one log cabin 16' x 16', eight fireplaces, four tent bottoms, two latrines, four table-bench combinations, and auto parking space have been constructed. A short truck trail leading to the grounds from the Peter Dana Point highway has also been constructed.

Silvicultural work has been done on about 2,000 acres under the supervision of the University of Maine Forestry Department.

An addition to the University of Maine camp has been built. This consists of two log cabins, a latrine, and small parking area.

During the past two years, this camp has responded to ten forest fire calls.

Tree Surgery abuses have been remedied by the enactment of Chapter 211 of the Public Laws of 1933. This act concerns the improvement, protection, or preservation of shade, forest, or ornamental trees. Under this act, which is administered by the Forest Commissioner, the State Entomologist, and a botanist, certificates are issued to persons qualified to improve, protect, and preserve trees. Such certificates, which when issued are good until revoked, are given to tree surgeons or others who wish to perform tree surgery work or spray trees for insects and disease. Examinations are given each year, if necessary, to ascertain the qualifications of applicants.

Twenty-one men took the examination for certification as tree surgeons in 1939 and sixteen men took it in 1940. The examination

is given in three separate parts: (1) Spraying and control of insects and diseases, (2) pruning, bracing, and general care of trees, and (3) cavity work and feeding of trees. The law provides that a licensed man be responsible for soliciting of jobs and for treatments applied.

There have been several court cases in which the involved men were fined for practicing without a license. Since the passage of the law, greater protection has been afforded the public in the care of their trees.

LICENSED TREE SURGEONS

| Name | Address | License No. | Licensed to Do | | | License Expires |
|----------------------------------|---------------------------------------|-------------|----------------|---------|-------------|-----------------|
| | | | Spraying | Pruning | Cavity Work | |
| Abbot, Chester | York Village | 115 | x | x | x | July 1, 1941 |
| Abbott, William F. | Wells | 95 | x | x | x | July 1, 1941 |
| Aborn, Willard G. | 795 Memorial Drive, Cambridge, Mass. | 77 | x | x | x | Apr. 1, 1941 |
| Aldrich, Leon | Pond St., Westwood, Mass. | 130 | | x | x | Apr. 1, 1941 |
| Amalia, Karl | 9 Bridge St., Manchester, Mass. | 75 | x | x | x | Apr. 1, 1941 |
| Aycock, Thomas W. | 105 Lowell St., Peabody, Mass. | 96 | x | x | x | Apr. 1, 1941 |
| Barnes, Carl S. | Box 516, Holliston, Mass. | 97 | x | x | x | Apr. 1, 1941 |
| *Bartlett, F. A. Tree Expert Co. | Box 353, Ellsworth | | | | | |
| Benner, Alfred L. | 2 South Main St., Rockland | 98 | x | x | x | July 1, 1941 |
| Benson, Orrin | 35 Boody St., Brunswick | 1 | | x | x | July 1, 1941 |
| Billings, Ralph E. | Falmouth Foreside, R.F.D. 4, Portland | 2 | x | x | x | July 1, 1941 |
| Bishop, John A. | R.F.D. 1, Readfield | 116 | | x | | July 1, 1941 |
| Bissler, C. H. | 330 Forest Ave., Portland | 91 | x | x | x | April 1, 1941 |
| Bixler, J. E. | 44 Danforth St., Jamaica Plain, Mass. | 79 | x | x | x | April 1, 1941 |
| Blake, Rodney | 24 Oxford St., Newton Center, Mass. | 156 | | x | x | April 1, 1941 |
| Bolick, C. B. | 330 Forest Ave., Portland | 117 | x | x | x | July 1, 1941 |
| Boothby, Earl C. | Limerick | 100 | | x | x | Apr. 1, 1941 |
| Brown, Harry | 111 Holland St., Lewiston | 145 | x | x | x | April 1, 1941 |
| Bryan, Forrest | 640 Main St., Westbrook | 157 | | x | x | April 1, 1941 |
| Burnham, Ernest J. | 304 Lowell St., Reading, Mass. | 72 | x | x | x | April 1, 1942 |
| Butland, Blair | 528 Ocean Ave., Portland | 84 | | x | x | April 1, 1941 |
| Chalmers, C. C. | 330 Forest Ave., Portland | 120 | | x | x | July 1, 1941 |
| Cooper, Elwood J. | Liberty | 147 | | x | x | April 1, 1941 |
| *Davey Tree Expert Co. | 330 Forest Ave., Portland | | | | | |
| Deering, George | Brooks | 94 | | x | x | April 1, 1941 |
| Dodge, A. W. | 795 Memorial Drive, Cambridge, Mass. | 5 | x | x | x | July 1, 1941 |

*Companies having licensed representatives.

LICENSED TREE SURGEONS (Continued)

| Name | Address | License No. | Licensed to Do | | | License Expires |
|---------------------------------------|--|-------------|----------------|---------|-------------|-----------------|
| | | | Spraying | Pruning | Cavity Work | |
| Dow, Horace | Bar Harbor | 6 | x | x | | July 1, 1941 |
| Edney, Louis C. | Main St., Searsport | 7 | | x | x | July 1, 1941 |
| Ellis, Gerald | Main St., No. Anson | 133 | | x | x | April 1, 1941 |
| Feighery, Francis | 2A Arden St., Allston, Mass. | 123 | x | x | x | July 1, 1941 |
| Franke, Wm. A. | 30 Cameron St., Brookline, Mass. | 66 | x | x | x | April 1, 1941 |
| *Frost, H. L. and Higgins Co. | 20 Mill St., Arlington, Mass. | | | | | |
| Giandrea, Albert | P. O. Box 143, Hallowell | 155 | | x | x | April 1, 1941 |
| Gleason, Carlton | 7 Noyes Place, Augusta | 150 | x | x | x | April 1, 1941 |
| Goodall, George W. | 32 Exchange St., Portland | 32 | x | x | x | July 1, 1941 |
| *Goodall Tree Expert Co. | 32 Exchange St., Portland | | | | | |
| Goodwin, John B. | 9 Pleasant St., Waldoboro | 8 | | x | | July 1, 1941 |
| Grant, Arnold G. | 170 Park Ave., Portland | 87 | | x | x | April 1, 1941 |
| Gray, Harold | 141 South St., Milltown | 158 | | x | x | April 1, 1941 |
| Griffiths, Stephen L. | Leighton Road, Augusta | 67 | x | x | x | April 1, 1941 |
| Grover, Walter | R.F.D. 2, Bethel | 151 | | x | x | April 1, 1941 |
| Hall, Nelson | Fryeburg | 159 | x | x | x | April 1, 1941 |
| Hamel, Lewis | 32 Exchange St., Portland | 33 | x | x | x | July 1, 1941 |
| Harriman, Stephen E. | Wilder District, Kennebunkport | 102 | x | x | x | April 1, 1941 |
| Hicks, Robert M. | Bridgton | 41 | x | x | x | July 1, 1941 |
| Higgins, E. W. | 20 Mill St., Arlington, Mass. | 135 | x | x | x | April 1, 1941 |
| Irons, Maynard A. | 118 William St., Portland | 43 | | x | x | July 1, 1941 |
| Irving, Clifford | 70 Columbia Road, Portland | 160 | | x | x | April 1, 1941 |
| Jackson, Robert D. | 293 Westbrook St., Portland | 11 | x | x | x | July 1, 1941 |
| Jameson, John H. | 779 Hammond St., Bangor | 12 | x | x | x | July 1, 1941 |
| Jones, Arthur P. | Box 1674, Portland | 152 | | x | x | April 1, 1941 |
| Jose, Thomas H. | 32 Exchange St., Portland | 34 | x | x | x | July 1, 1941 |
| Keene, Roy D. | 20 Mill St., Arlington, Mass. | 56 | x | x | x | April 1, 1941 |
| Kezar, Thomas F. | 255 Main St., Sanford | 13 | x | x | x | July 1, 1941 |
| King, Roland L. | 32 Factory St., Skowhegan | 14 | | x | x | July 1, 1941 |

LICENSED TREE SURGEONS (Continued)

| Name | Address | License No. | Licensed to Do | | | License Expires |
|------------------------------------|---------------------------------------|-------------|----------------|---------|-------------|-----------------|
| | | | Spraying | Pruning | Cavity Work | |
| Ledger, E. J. | 330 Forest Ave., Portland | 136 | x | x | | April 1, 1941 |
| Linnell, Rodney | Peru | 125 | | x | x | July 1, 1941 |
| Lord, Daniel | Parsonsfield, P. O. Kezar Falls | 165 | x | | | April 1, 1942 |
| Lord, Frank | Parsonsfield, P. O. Kezar Falls | 166 | x | | | April 1, 1941 |
| *Lucas, John, Tree Expert Co. | 304 Fidelity Bldg., Portland | | | | | |
| Lyden, James | Gardiner | 80 | x | x | x | April 1, 1941 |
| Maddocks, Royden K. | 49 Moody St., Portland | 46 | x | x | x | July 1, 1941 |
| Maddox, Elmer L. | E. Monmouth, Route 1, Winthrop | 19 | | x | x | July 1, 1941 |
| Maddox, Wesley | Brown St., Kennebunk | 153 | | x | x | April 1, 1941 |
| McCarthy, Charles | 61 Jordan Ave., Brunswick | 20 | | x | | July 1, 1941 |
| McClaine, E. L. | Belfast Rd., Camden | 105 | x | x | x | April 1, 1942 |
| McClure, J. A. | 330 Forest Ave., Portland | 138 | x | x | x | April 1, 1941 |
| McInnis, James V. | R.F.D. 8, South Brewer | 71 | | x | x | April 1, 1941 |
| McSherry, Thomas F. | Fryeburg | 52 | x | x | x | Oct. 1, 1941 |
| Meaney, Ralph B. | 330 Forest Ave., Portland | 154 | x | x | x | April 1, 1941 |
| Messer, Albert R. | 2 High St., Fort Fairfield | 47 | | x | x | July 1, 1941 |
| Moody, Charles F. | 374 Beach St., Saco | 139 | | x | x | April 1, 1941 |
| Mores, Carl D. | 852 Ocean Ave., Portland | 48 | x | x | | July 1, 1941 |
| Marois, Philip L. | 84 College St., Lewiston | 140 | | x | x | April 1, 1941 |
| *Munson-Whitaker Co. | Amherst, Mass. | | | | | |
| Nealley, Charles | Box 353, Ellsworth | 70 | x | x | x | July 1, 1941 |
| *New England Forest Service Inc. | 20 Kilby St., Boston, Mass. | | | | | |
| *New England Tree Expert Co., Inc. | 539 Smithfield Ave., Pawtucket, R. I. | | | | | |
| Oatway, Hubert | 22 Child St., Augusta | 141 | x | x | | April 1, 1941 |
| O'Shea, Robert S. | R.F.D. 3, Box 18A, Amherst, Mass. | 24 | x | x | x | July 1, 1941 |
| Peeke, Leslie A. | 28 Spofford St., Newburyport, Mass. | 82 | | x | x | April 1, 1941 |
| Perro, Robert | 133 Front St., Old Town | 161 | | x | x | April 1, 1941 |
| Pimpare, Leo | 572 Washington St., Wellesley, Mass. | 86 | | x | x | April 1, 1941 |
| Post, Charles L. | 330 Forest Ave., Portland | 107 | x | x | x | April 1, 1941 |

*Companies having licensed representatives.

LICENSED TREE SURGEONS (Concluded)

| Name | Address | License No. | Licensed to Do | | | License Expires |
|-------------------------|---------------------------------------|-------------|----------------|---------|-------------|-----------------|
| | | | Spraying | Pruning | Cavity Work | |
| Quinn, Albert | 249 Rankin St., Rockland | 74 | x | x | x | April 1, 1941 |
| Ralston, Frederick | 19 Rector Road, Mattapan, Mass. | 108 | | x | x | April 1, 1941 |
| Riff, J. Lyman | Lancaster, N. H. | 109 | x | x | x | April 1, 1941 |
| Riley, John E. | 120 Sheridan Ave., Medford, Mass. | 110 | | x | x | April 1, 1941 |
| Robarts, Myron | 135 Washington St., Camden | 50 | x | x | x | July 1, 1941 |
| Robbins, Lester | 9 Kinderhook St., Randolph | 25 | x | x | x | July 1, 1941 |
| Rodick, Kenneth | 16 Newton Way, Bar Harbor | 26 | x | x | x | July 1, 1941 |
| Roy, Edward | 330 Forest Ave., Portland | 90 | x | x | x | April 1, 1941 |
| Ryerson, Erlon | 32 Exchange St., Portland | 78 | x | x | x | April 1, 1941 |
| Safstrom, Alfred J. | 11 Grove St., Augusta | 44 | x | x | x | April 1, 1942 |
| Shand, Charles L. | 4 Ash St., Bar Harbor | 58 | | x | x | April 1, 1941 |
| Sherman, Robert C. | 48 Harpswell St., Brunswick | 27 | | x | x | July 1, 1941 |
| Sherwood, Lloyd | R. 5, Manchester | 162 | | x | x | April 1, 1942 |
| Sirois, Arnold | 16 Court St., Augusta | 163 | | x | x | April 1, 1941 |
| Skillin, Alexander | Falmouth Foreside, R.F.D. 4, Portland | 28 | x | x | x | July 1, 1941 |
| Smith, Clarence L. | 40 Cobb St., Portland | 81 | x | x | x | April 1, 1941 |
| Stackhouse, Arthur | 92 Congress St., Portland | 88 | x | x | x | April 1, 1941 |
| Tamke, H. J. | 539 Smithfield Ave., Pawtucket, R. I. | 73 | x | x | x | April 1, 1941 |
| Waltman, George C., Jr. | 214 Danforth St., Portland | 112 | | x | x | April 1, 1941 |
| Waltman, Henry | 198 Congress St., Portland | 164 | | x | x | April 1, 1941 |
| Watson, Myles S. | Newington, N. H. | 69 | x | x | x | April 1, 1941 |
| West, Harry V. | 32 Exchange St., Portland | 76 | x | x | x | April 1, 1941 |
| Wheaton, Archie | Passadumkeag | 143 | | x | x | April 1, 1941 |
| *White & Franke Inc. | 30 Cameron St., Brookline, Mass. | | | | | |
| White, Howard M. | P. O. Box 374, Augusta | 29 | x | x | x | July 1, 1941 |
| White, J. Cooke | 20 Mill St., Arlington, Mass. | 53 | x | x | x | Oct. 1, 1941 |
| Woodworth, Kenneth | West Sullivan | 128 | | x | x | July 1, 1941 |
| Wright, Byron M. | 32 Exchange St., Portland | 83 | | x | x | April 1, 1941 |

*Companies having licensed representatives.

The State Forest Nursery at Orono has produced approximately 100,000 three and four year old transplants annually. These have been sufficient to supply the public demands. However, under Agricultural Conservation regulations for 1940 special payments received by farmers for planting forest trees have caused an increase in the demand for planting stock greatly. The demand necessitated the purchase of trees in excess of the nursery's production. Purchases were made from the U. S. Soil Conservation Service and the Western Maine Forest Nursery.

Obligations for furnishing planting stock at nursery cost prices had to be fulfilled. Purchased stock was turned over to the user without receiving a full return. There may be a justification for the state to assist in reforestation of waste farm lands. Every effort will be made, however, to make the nursery self-sustaining.

The nursery also serves as a laboratory for the forestry students at the University of Maine. These students receive instruction in nursery practice and some are given employment. Professor R. I. Ashman of the Forestry Department faculty has supervision and serves creditably as manager of the nursery.

In 1939 and 1940 the seedbed area in the nursery was enlarged. Additional ground has been put under cultivation to take care of these seedlings when transplanted. If the present demand continues, additional stock will have to be purchased or stock in the state nursery pro-rated among the farmers who order.

Although reports are available for only part of the trees planted during 1939 and 1940 these reports indicate that the survival of all species excepting balsam fir is considerably better than 90%. Good results have been obtained in both spring and fall planting, although spring planting of the hard pines seems preferable.

One important development in 1939 and 1940 has been increased interest in planting of town lands. Hallowell and Hebron continued planting programs started several years ago and Troy and Alna planted 50,000 trees and 5,500 trees respectively in 1940.

There was an increase in the demand for white pine in 1939 and 1940 but due to the shortage of stock in Maine and elsewhere many substitutions were made.

The table given below shows the stock shipped during 1939 and 1940 with percentages by species:

| | 1940—283,000 trees | |
|----------------------|--------------------|------------|
| 1939—99,000 trees | % of Total | % of Total |
| Species | | |
| White Pine..... | 15.0 | 4.0 |
| Norway Pine..... | 23.0 | 26.0 |
| Scotch Pine..... | 3.0 | 4.0 |
| Jack Pine..... | 4.0 | 0.5 |
| White Spruce..... | 44.0 | 17.0 |
| Norway Spruce..... | 11.0 | 40.0 |
| Balsam Fir..... | | 8.0 |
| Misc. Hardwoods..... | | 0.5 |
| | 100.0 | 100.0 |

Since 1926, there has been quite a change in the number of commercial forest nurseries in Maine. Today there is only one left, which is in the western part of the state, and it is actively engaged in growing and selling of forest nursery stock.

Trees Planted in the State of Maine

| Species | 1939 | 1940 |
|--------------------|---------|---------|
| White Pine..... | 30,970 | 11,600 |
| Red Pine..... | 50,800 | 166,800 |
| Scotch Pine..... | 13,900 | 11,025 |
| Jack Pine..... | ..... | 1,100 |
| White Spruce..... | 70,525 | 124,605 |
| Norway Spruce..... | 10,575 | 113,420 |
| Red Spruce..... | 1,000 | ..... |
| Balsam Fir..... | ..... | 25,000 |
| Jap Larch..... | ..... | 600 |
| Total..... | 177,770 | 454,150 |

From the files of this office, a minimum of 16,000 acres has been set out to trees. It is difficult to estimate the total acreage of forest plantations in Maine as no survey has ever been made to determine the areas planted by other agencies and individuals.

Lunch Grounds are maintained throughout the state. There are 203 located at points convenient for public day, picnicking use. These are designated by statute as camp sites. Overnight use, how-

ever, is discouraged in view of the fact that fire protection is sought rather than the furnishing of recreational use. Fireplaces, open shelters, and sanitary facilities are available.

The Farm Forestry program is conducted by the University of Maine Agricultural Extension Service through its fourteen county agents and the Extension Forester. Its field of work is woodland management and is confined to farmers and small woodlot operators. Forest products are a very important part of farming in Maine as farms have about two and one-half million acres of woodland which returns more farm income than any field crop except potatoes. More than one-half of Maine's farm land is woods. Close coöperation is maintained with the Maine Forest Service on problems that involve both management and fire control in farm areas, such as the 1938 hurricane, received the coördinated efforts of both.

Good forestry practices are taught through meetings, field demonstrations, and farm calls together with bulletins and news articles.

The project emphasized during 1939 and 1940 was farm woodlot management which deals with selective cutting and marketing. Through this practice farmers are encouraged to operate their woodlot as a crop, cutting the yearly growth rather than stripping their areas. Letters are sent out to farmers, giving market information. This includes new outlets for farm woodlot products as well as information on the established ones.

During the past two years farmers have been encouraged to use the special federal conservation allowances for forest tree planting. This affords an excellent opportunity to plant idle field and unused pasture to good forest trees rather than to have them grow up to gray birch or other low value trees.

Towns, especially in central Maine, have sizable acreages of abandoned farm lands which have become tax delinquent. Forest management seems to be the most logical use of these areas or perhaps their only use. A project was started in 1940 to help towns set up a town forest made up of these tax delinquent areas. It is a possible means of the local town, in part, solving its own land use problems.

During the early part of 1939 a large part of the Extension Forester's time was spent in close coöperation with the Maine Forest Service and the Northeastern Timber Salvage Administration. Meetings were arranged, early purchases advocated, and assistance given in the selection of log storages. Later, help was given to iron out some of the difficulties which arose from various activities connected with log purchases.

In addition to major activities, the Extension forestry program includes work with maple products producers on the care of their orchards and the manufacture of the products. 4-H clubs are assisted with their tree planting and other conservation programs. Since forestry is important in any land use program, the Extension Forester assists the various land use committees with their forestry suggestions. Information is obtained on new markets and uses of wood such as home burning sawdust stokers and new type stoves. Talks on forestry are given to service clubs, garden clubs, and wood products associations.

The following publications were made available for distribution:

Extension Circular No. 134—Planting Forest Trees

Extension Bulletin No. 233—Management of the Maine Farm Woods

A letter "Forestry Facts" was sent to farmers by county agents covering markets and new developments.

Benjamin C. Jordan Fund

The income from this fund is offered as prize money for the encouragement of proper cultivation of forest lands and subject to the following rules:

Rule 1. Each lot shall consist of one parcel of not less than ten acres in somewhat regular shape and shall be accurately surveyed and plotted.

Rule 2. The majority of said trees shall not be less than five feet nor more than thirty feet high and not less than five nor more than thirty years old when the prize is awarded.

Rule 3. Said forest may consist of any of the following kinds of trees, but other circumstances and conditions being equal, preference shall be given in the following order: White Pine, White Oak, Hickory, Chestnut, Hackmatack, White Ash, Yellow Oak, Red Oak, Bass, Hemlock, Spruce, Norway Pine, Pitch Pine, Cedar, Fir, Poplar, Birch, Maple, Beech, and Elm.

Rule 4. All competitors for the prizes shall file in the office of the State Forest Commissioner, their intention to compete, together with a correct and definite survey and plan of the lot and when such notice has been filed, said lot shall be eligible although the ownership may have been changed. During the period from January first, nineteen hundred and twenty-seven to December thirty-first, nineteen hundred

and thirty-one, all entries shall be made on or before June thirtieth, nineteen hundred and twenty-nine. Entries in contest periods on and after January first, nineteen hundred and thirty-two shall be made during the first year of the period.

Rule 5. Myself and heirs shall have the same right as others to compete for the prizes. The same lot cannot be entered in more than one contest.

Rule 6. In awarding prizes, other circumstances being equal, the following conditions shall be considered in the order named: (a) Right number of trees per acre. (b) Even distribution over whole lot. (c) Health and thriftiness of trees. (d) Adaptation of the varieties of trees to the soil in which they stand. (e) Uniformity of size of trees. (f) Size of trees. (g) Size of lot.

Three prizes shall be awarded once in five years in the amount of one hundred twenty-five, seventy-five, and fifty dollars.

Land Agent

In addition to administering forest protection in the Maine Forestry District and coöperating with the organized towns, the Forest Commissioner is in charge of the Land Office. This office has on record all deeds, plans, field notes of the State of Maine, before and after they separated from the Commonwealth of Massachusetts.

All deeds or grants given by Maine or Massachusetts are recorded; no matter whether large such as Bingham's Kennebec Purchase, or small lots in towns which have been surveyed and divided. Grants were given in many cases for road labor. Revolutionary War grants were made to veterans of either cash or land. Furthermore, the Land Agent was directed by legislative resolve to sell certain lands. Where the state sold large grants of several towns that were not surveyed into lots before the purchase, records such as field notes and plans are held by the owners. Plans and field notes concerning state-made surveys are on file and available for public reference. Information relative to coastal islands is on file showing acquisition, status, acreage, date of deed, etc. Field notes and plans of public lots which have been located are recorded. Records show whether or not the timber and grass rights have been sold. There are 401,410 acres of public reserved lots, of which the timber and grass on 325,958 acres has been sold.

In the Laws of Maine 1870, page 133, an act to promote immigration and to facilitate the settlement of the public lands was passed. Originally, T. 15, R. 3, W.E.L.S., Aroostook County, was settled by fifty colonists from Sweden under the direction of the Hon. W. W. Thomas, Jr., Commissioner of Immigration, July 23, 1870. It was organized into a plantation on April 6, 1876, and incorporated as a town on January 29, 1895. The Land Agent, by virtue of his authority, granted certain lots of land to the settlers of T. 15, R. 3, W.E.L.S. (New Sweden). Most lots in New Sweden were conveyed prior to its organization as a town. All remaining lots have been conveyed since the town was organized except lots 31 and 42. These lots are still held by the state.

Legislative statute names the Forest Commissioner as a member of the Farm Lands Loan Commission, the State Park Commission, and with the Commissioner of Inland Fisheries and Game and the Attorney General charged with the administration of Baxter State Park.

The Farm Lands Loan Commission was authorized in 1917 under the Farm Lands Loan act to have control of the investment of funds arising from the sale or lease of public lands on deposit at that time in the State Treasury. Loans from this fund are made on the security of agricultural lands for the purpose of assisting in the erection of buildings and clearing of land for agricultural purposes. The act was drawn up to assist in the rehabilitation after the war. During the years, some of the property has been taken over by the state through mortgage and foreclosure and requires management by the Commission.

In May, 1939, through a coöperative License and Agreement with the United States Department of Agriculture, 4 areas purchased and developed by the Soil Conservation Service were leased to the state for a long term of years. These areas, Bradbury Mt., Lake St. George, Mt. Blue, and Sebago Lake State Parks are operated for the recreational use and benefit of the general public. Forestry practices shall be of such character as to maintain the forest lands in a productive condition. The land shall also be maintained to effectuate a balanced wildlife population.

Inventory of Park facilities:

| | | |
|--|-------------|-----------------------|
| Bradbury Mt. State Park | 172 acres | Pownal |
| Headquarters building and parking space, spring water, 2 latrines, one open shelter, 5 fireplaces, and 9 picnic tables. Trail to summit— $\frac{1}{2}$ mile. | | |
| Lake St. George State Park | 3,793 acres | Liberty and Montville |
| Headquarters building and parking space, water and sunbathing beach, 300 feet, 15 tenting stalls, 5 trailer stalls, 25 picnic tables, 15 fireplaces, running spring water, boat and refreshment concessions. | | |
| Mt. Blue State Park | 4,821 acres | Weld and Avon |
| Headquarters and parking space, 4 Adirondack shelters, 1 parking overlook, fireplaces, 43 picnic tables, drinking water, bathing beach, bathhouse and recreation building, tenting and trailer area. | | |
| Sebago Lake State Park | 1,296 acres | Naples and Casco |
| Headquarters and parking area for 550 cars, ranger's cabin, wharf, 35 tenting stalls, 15 trailer stalls, 76 fireplaces, 103 picnic tables, 9 wells, 9 latrines, 3 Adirondack shelters, 1 open shelter, 1 saddle horse corral, 10 miles of trails, 5 miles of road, 4,500 feet of sandy beach, boat, and refreshment concessions. | | |

In addition to the above properties and facilities, there was made available to the Commission considerable equipment for its use in operating and maintaining the parks. This equipment included 9 pieces of automotive equipment, 2 road graders, snow plows, office equipment, fire fighting equipment, and many useful tools.

| | | |
|--|-----------|--------------|
| Aroostook County State Park | 100 acres | Presque Isle |
| $\frac{1}{2}$ mile ski trail with 620 ft. vertical drop, 1 cable sled ski tow, 1000 ft., 1-600 ft. toboggan chute, 1 warming hut, and 1 custodian's cabin. | | |

The estimated value of the lands and facilities of the parks has been conservatively estimated at one-half a million dollars.

Coöperation in maintenance and operation was received from the Soil Conservation Service in the use of their foreman on these parks from one to three months, and from N.Y.A. for furnishing life guards at Sebago Lake State Park during the season of 1939.

The Baxter State Park is being acquired by Ex-Governor Percival P. Baxter for presentation to the State of Maine. 106,615 acres have now been purchased, of which about 30,000 acres have been deeded to the state. The tract includes Mt. Katahdin and the surrounding scenic area in Townships 3, 4, and 5, Ranges 9 and 10. The area will furnish a much needed recreational use in addition to forest and wild-life sanctuaries.

The Maine State Forest Commissioner, in having membership on the Northeastern Forest Research Advisory Council, maintains a direct contact with the U. S. Forest Service Experiment Station maintained for forest research in New England. The active personnel of this station investigates, through study, problems of timberland management and culture for dissemination to the profession and all interested in forest resources.

Forest Regulation

President Roosevelt, on March 14, 1938, in a message to the 75th Congress, pointed out some aspects of our forest problem and the need for a protection, the obtaining of a sustained yield through regulation, and the extension of public ownership.

A joint committee was appointed from this Congress and set up to find facts as a basis for Congressional action. Hearings were held in various sections of the country. Although New England was included in the schedule, time was spent without the looked for hearing. Through the determination of New England interest, however, a hearing was granted in Washington and held during January of 1940. Report is to be made April 1, 1941.

The Forest Commissioner, E. F. Jones of the Great Northern Paper Company, E. W. Spaulding of the Dead River Company, James W. Sewall, Consulting Forester of Old Town, were among those present from Maine; and F. Ardine Richardson, Master of the State Grange, sent a paper for the committee records. He stated that a farm forestry program will meet with general approval provided the program is based upon private ownership. Federal policies can be carried out within the state by duly recognized agencies already functioning with the obligation of administration continuing in the Land Grant College and the Maine Forestry Department.

Witnesses present pointed out that Maine forests were in a productive condition and that forest protection was receiving major consideration.

The U. S. Forest Service recommended a forestry program, stating that private ownership held three-fourths of the Nation's forest land. "Because also of lack of management and of past and current abuse, and despite the real progress of the past decades, it constitutes the major forest problem in the United States. The first and major part of the action program centers, therefore, on those private lands."

The Chief of the U. S. Forest Service stated in his report to the Secretary of Agriculture on August 31, 1940:

1. That public coöperation and aid to private owners of forest land should be continued and increased by the states or their political sub-divisions, and by the Federal Government directly or through the states.

2. That the base for public coöperation and aid should be widened.

3. That private owners should also be expected to meet their obligations and coöperate by putting reasonable forest practices into effect on their own lands under such public controls as will insure that these practices are followed.

He further stated in regard to public regulation that efficiently administered public control as advocated by the Forest Service would (1) stop destructive practices on privately owned forest land, (2) stop deterioration on such lands and forests, and (3) keep them reasonably productive.

The U. S. Forest Service believes Federal regulation necessary but are willing to compromise with the states on certain conditions. Such a plan in part would be dependent upon:

1. That states shall have the opportunity to administer regulation, with a reasonable but definite period of 5 to 7 years within which to pass state legislation and apply it.

2. That the Federal Government shall contribute on a 50-50 basis to the cost of such state administration.

3. That state legislation and standards of enforcement shall be satisfactory to the Federal Government, with mandatory provision that Federal financial assistance in regulation be withdrawn if enforcement proves unsatisfactory.

4. That if requested by a state to do so, or if after the formative period the state does not undertake it or does not attain satisfactory standards, the Federal Government shall be authorized to administer enforcement within such state or states.

5. That the Federal Government shall have discretionary authority to withhold other forest coöperative funds, in whole or in part, from any state which after the formative period does not satisfactorily administer or coöperate in regulation.

6. That instead of being uniform, necessary silvicultural and other measures shall be:

(A) Adapted to and vary with local situations and conditions on the ground;

(B) As evolutionary in their development as forest landowner opinion, public opinion, and other conditions permit.

7. That full opportunity shall be assured to forest-land owners directly concerned to:

(A) Participate, along with representatives of public, agricultural, labor, and other interested groups, through advisory boards, in formulating specific requirements which shall be subject to approval by designated and responsible governmental agencies.

(B) Appeal, through nongovernmental boards or other channels, for review and reconsideration of such requirements.

8. That authority of and administrative action by the Federal Government shall be exercised by or through the Secretary of Agriculture.

These matters will be discussed with landowners, pulpwood operators, and manufacturers of forest products.

It is hoped, and it is recommended, that Maine will work out its own forest regulation problems. Apparently the Forest Service is agreeable to a several year period in which to give opportunity for making definite plans. This can be brought about through the concerted action of the land owners in making approved plans for regulation, in which they will have the cooperation of the Forest Commissioner and the help of the Maine Forest Service.

MAINE'S FIRST LOOKOUT STATION

By ELMER CROWLEY, Atlas Plywood Corp.
Greenville, Maine

Complying with the request of Mr. Rendall, Forest Commissioner of the State of Maine, I am herein recording my recollections of the events leading up to the establishment of the Big Squaw Mt. forest fire lookout station, which was the first of its kind established in Maine.

My first acquaintance with the lack of forest protection and fire prevention in the Moosehead Region and the big woods resulted from the numerous fires in the early summer of 1903. It had been an exceptionally dry spring. Fires were prevalent, many of them along the railroads and near villages. In fact, Greenville Village was seriously threatened at one time. Some of these fires were started by sparks from the trains. One in particular was set near Tarratine, and burned and destroyed between three and four hundred acres of good timber.

I was engaged in the spring of 1903 to survey the area burned by the Tarratine fire on timber land owned by M. G. Shaw Lumber Company. I devoted all the summer to this type of work, and most of the time I was engaged by this concern in surveying and estimating the areas that had been burned during the spring of 1903.

Up to that time there had been very little improvement in the method of detecting and fighting forest fires. The chief instruments used for fighting fires were hoes, shovels, axes, and pails. These fires were generally discovered by some patrolman who had a definite beat in the township in which he was located, his services being paid for by the land owners. In some cases a lot of most valuable time would be lost before the man could reach a telephone and report a fire. Also, more and more slash had been accumulating as lumber operations had increased until the land owners were getting seriously concerned about the possibility of forest fires wiping out their entire holdings. Thus, I was early impressed with the menace of forest fires.

After the completion of my survey and estimate work in 1903, I was employed as forest engineer by the M. G. Shaw Lumber Company, whose woods operations were handled by William Shaw. I was employed for one year beginning in June 1904.

I arrived in Greenville soon after graduating from the University of Maine. The next day I went to a lumber camp on the south side of Big Squaw Mountain Township. A summer logging operation was then being carried on by means of an overhead cable way, which I

understood was the first to be used in this vicinity. After looking the machine over, we traveled northward along the tableland of Big Squaw Mountain lying easterly of the summit. On our return trip, Mr. Shaw suggested that we go to the top of the mountain, which we did. I will never forget the impression that this view made on me, it being my first trip to the top of a mountain of any considerable size. It was a beautiful, June morning with a clear sky and a gentle, north-westerly wind. After we had rested, Mr. Shaw pointed out the various objects which we could see from the mountain. I can recall his pointing out the Milliken Farm, the Corner Farm, Indian Pond, Moxie Mountain and Pond. Also, to the south was Shirley mill with smoke visibly issuing from the sawmill stack. Twenty-six miles to the south we could see smoke coming from the sawmill stack at Guilford. At Greenville we could see another sawmill, and while sitting there we noticed a train coming through Misery Notch. We could easily follow this by the smoke of the train.

It was then that the thought occurred to me and on the instant I asked Mr. Shaw if this would not be a good place for a forest fire watchman. I expressed my opinion that one man on the mountain could do more and better work from this point of vantage than 100 men traveling through the woods, and while I visualized some of the larger features I recall that I said in $\frac{1}{2}$ hour a man could get down to the nearest telephone and get word down to Greenville. The only remark that Mr. Shaw made about my suggestion was that he thought a man hurrying down the mountain to report a fire would probably break his neck before he reached the 'phone.

The subject was not further brought up until late in the summer. I was then working on a plan for improvement to the skidding machine. Mr. Shaw came into the drafting room and instead of looking at the plan as he often did, to see how it was developing, he stepped a few feet away and said nothing. I looked at him and noticed a quizzical expression on his face. He said, "Crowley, I don't know but that was a pretty good idea." Naturally I inquired what he was talking about and he replied, "Putting a man on Squaw Mountain to watch for forest fires. I have talked with W. J. Lannigan and Payson Viles and they thought it would be worthwhile trying. It is too late in the season to do anything this year, but do you think you can work it up before next year's fire season?"

Before the next spring I got together as good maps as I could, reduced them to a common scale, attempted to assemble them with Squaw Mountain in the center. I soon found that it would be neces-

sary for me to go up the mountain and get further data as the puzzle did not fit together as it should. In preparation, I made a pencil sketch of the territory surrounding Squaw Mountain with Squaw Mountain in the center. I had a table made approximately 32 x 36 inches. On the bottom of this I fastened a two inch pipe flange. I got access to a woodworking shop and made an alidade of pine wood fastened together with screws. After this was in readiness, I went to a camp on Squaw Mountain and started out the following morning for the top of the mountain. I erected the table, made corrections and oriented a map for the watchman.

At that time there was no trail up the mountain. It was a warm day in the latter part of May or early part of June. I took about a three foot section of 2" pipe in one hand and the table under the other arm and started for the top of the mountain with a pack sack over my shoulder. My equipment consisted of a plug drill hammer, three drills to allow for breakage, an extra flange to be fastened to the ledge, tar paper for map shelter, a Stilson wrench, screw driver, and a piece of pine wood. In addition to the pencil sketch, I also had a bottle of water and a luncheon. I soon found that in climbing the mountain with no trail I would need more than just my feet. To relieve one hand I screwed the pipe into the flange under the table and carried it the rest of the way over my shoulder like an umbrella.

After arriving at the top of the mountain, I drilled holes in the ledge, drove the pine plugs into the holes, and secured the flange to the ledge with screws into the wood. I then took my observations. The first problem was to locate my position on the map. This I had to do by trial and error. I found that if I oriented the map so that a certain object was at the right place and then sighted another object it would sometimes show that they were not relatively located on the map. I returned to Greenville and made a hasty tracing, expecting to make a more finished plan after further observations.

I had been cautioned not to go to too much expense as none of the landowners were willing to contribute to the cost of making the map and the station, nor to the paying of a watchman. Mr. Shaw thought it was worth trying and the M. G. Shaw Lumber Company would defray expenses, which it did for the first season. In looking over my records, I find that the total cost of installation of the fire stations, exclusive of the telephone lines, generally ran between \$50 and \$60 each. It really was not a money making scheme, but we wished to put it over.

While discussing the question of lookout man, I had become acquainted with a young man who had just been graduated from Greenville High School. William Hilton, now Vice-President of the Great Northern Paper Company, was the man and was watchman on this mountain from 1905 to 1908. He was anxious to get together a little money to go to college. I knew he was interested in engineering so I encouraged and persuaded him to attend the Univeristy of Maine, which later he did. As soon as his school closed we went up to the top of Big Squaw Mountain, taking with us the crude handmade alidade and an old pair of field glasses. We used a map I had made with concentric circles, each representing five miles distance from Squaw Mountain lookout station. These were to assist the watchman in estimating distances from the tower to the fire. After reaching the top, we oriented the map and I instructed the watchman. I told him in noting a smoke to place the edge of the alidade on the map at a pin point marking the location of Squaw Mountain and while holding it in this position sight at the fire. In the absence of a range finder he was to pick out a known object, possibly the same distance from the mountain as the fire, and by the aid of the concentric circles swing this distance to intercept the edge of the alidade thus giving him the location of the fire.

My original idea for establishing this tower had been to eliminate the lost time between the detection of the fire and its being reported. Nevertheless, I was still forcing the watchman to hurry several miles to a telephone in order to report a fire seen from his station. It was only natural that the next step would be to extend the telephone line to the top of the mountain. This was done, and we now figured we were ready for business.

A short time later the watchman reported a fire to the west of Squaw Mountain giving the location as near the southwest corner of Ten Thousand Acre Tract. A crew was sent in from a nearby station with orders to put out the fire at the point reported by the watchman. The next day the crew returned and reported that there was no fire near the place that the watchman reported. We called the lookout watchman, told him what the crew had reported, and asked him if he could still see smoke. His reply was very emphatic and positive. He said, "I am looking at the smoke of that fire, and after rechecking my calculations and bearings I still insist that the fire is located near the southwest corner of Ten Thousand Acre Tract." Mr. Shaw said, "Crowley we believed in this watchman business, we went ahead and established it, now we have got to have confidence in it. I say we

should send the crew back with instructions to scour the area near the southwest corner of Ten Thousand Acre Tract, and tell them not to come back until they find the fire." This was done, and the next day we received word that lightning had started a fire in a pine stub. It had burned off, had fallen to the ground before they arrived, and spread over about one-half acre. It was being fanned by a northwest wind with a bad slash area nearby. It was on the point of going places when the crew arrived. In short time it was under control, and the crew admitted that the watchman had located the fire accurately. Our venture had been put to the test and had come through with flying colors.

Up to that time about one-half dozen people really believed in this method of forest fire detection. A short time after this other fires were reported by the watchman with the same degree of accuracy. This served to inform many landowners that a new method had arrived for locating forest fires, and we soon received numerous inquiries from them about the cost of establishing lookout stations.

In 1905 Mr. Payson Viles of Augusta wanted a map drawn and a watchman established on Bigelow Mountain. Mr. Sullivan Newton of Jackman wanted same for Attean Mountain, Mr. Chapman of Milo wanted same for White Cap Mountain. I drew the maps for those towers during that year, and the ones for Kineo Mountain and Spencer Mountain in the next year or two. It was far easier to make a tower map for other mountains as from my previous observations I could make a plan by triangulation so that the latter maps were more accurate and better finished. The basic layout of tower maps used today differs but little from the original maps.

We know that this was the first station established in Maine, and have always supposed that it was the first in this country. While there is no question that it has been instrumental in conserving our timber lands, its rapid adoption was due chiefly to the careful and painstaking work of its first watchman. Lookout towers have become the eyes of the service. Upon their effectiveness in detecting and reporting promptly all forest fires depends to a large extent the success of the entire forest protection work.

In 1909 this work was taken over by an Act of the State Legislature when the Maine Forestry District Law was passed. The pioneer forest protection work done by individual landowners has been incorporated in the present protection system that has functioned so efficiently since that time. I have watched its development, and believe that it is now the most perfect protection system that has yet been devised.

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