MAINE PUBLIC DOCUMENTS

July 1, 1936 - June 30, 1938

STATE OF MAINE

TWENTY-SECOND BIENNIAL REPORT

OF THE

FOREST COMMISSIONER

1937-1938

STATE OF MAINE

January 25, 1939

To His Excellency, Lewis O. Barrows, Governor of Maine:

I have the honor to submit herewith my biennial report for the years 1937-1938.

WALDO N. SEAVEY,
Forest Commissioner.

CONTENTS

PERSONNEL

Forest Commissioner,
WALDO N. SEAVEY, Augusta

State Entomologist,
HENRY B. PEIRSON, Augusta

Assistant Entomologist,
ROBLEY W. NASH, Augusta

Field Entomologist,
AUBURN E. BROWER, Bar Harbor

Blister Rust Agent,
WALTER O. FROST, Augusta

District Blister Rust Agents,
HARRINGTON G. BRADBURY, Belfast
DANIEL S. CURTIS, North Bridgton
GUY H. KIMBALL, Auburn
JOHN M. WHITE, Waterville

District Supervisors,
GEORGE A. FAULKNER, Ellsworth
GEORGE H. GRUHN, Augusta
ROBERT G. STUBBS, Hallowell
HARRY G. TINGLEY, Island Falls
REX E. GILPATRICK, Augusta

Town Supervisor,
AUSTIN H. WILKINS, Augusta

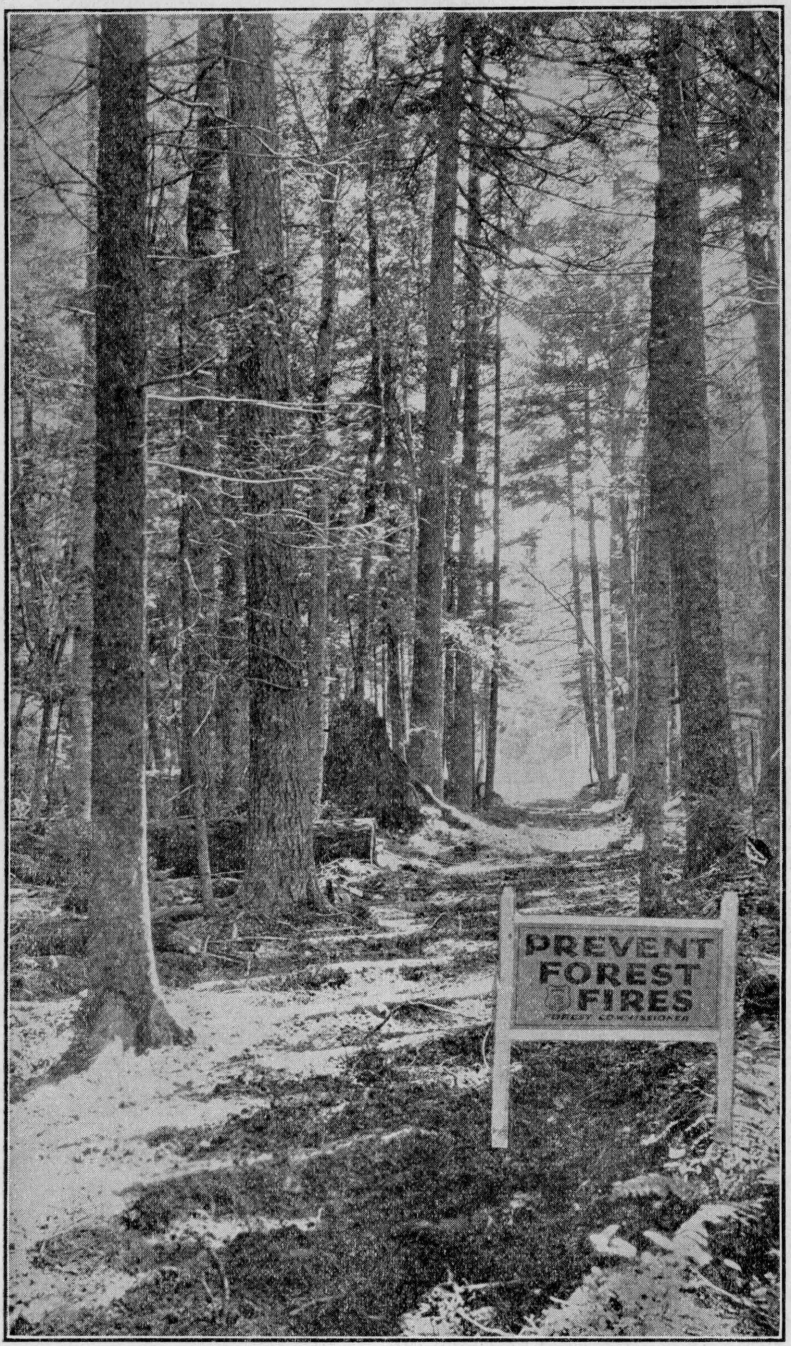
Air Patrol Pilot,
LIEUT. EARL F. CRABB, Farmingdale

Draftsman,
THADDEUS L. MARTIN, Augusta

Property Custodian,
PHILIP R. VIOLETTE, Augusta

Bookkeeper,
LILLIAN J. COLEMAN, Augusta

Stenographers,
BLANCHE L. VIOLETTE, Augusta
MABEL C. ROWELL, Augusta
VIOLETTE C. COTE, Waterville
LILLIAN E. TSCHAMLER, Augusta


PREVENT
FOREST
FIRES
FOREST COMMISSIONER

MAINE'S FORESTS

Maine's forests are its greatest asset. They are responsible for supporting its industries, regulating its stream flow, stabilizing its agriculture, harboring its inland fish and game, and attracting its visitors.

The total land area of our state is given as 19,462,301 acres, of which 16,269,464 acres is forest land. From this forest land is cut annually 225,000,000 board feet of lumber, 700,000 cords of pulpwood, and 500,000 cords of fuelwood. The men employed in these three industries alone receive $7,000,000 in wages, and over forty percent of the total railroad freight tonnage originating in Maine is composed of forest products. Thousands of recreationists are attracted to our state by its scenic and forest beauty.

The forests are deteriorating in quality and being depleted as a result of fire, insects, diseases, and cutting. Since Maine's present and future prosperity is inseparably bound up in the protection and perpetuation of its forests, it is essential that coöperation between state and private timberland owners be continued.

The following report on the protection of the forests from fire, insects, and diseases is submitted for your consideration.

APPROPRIATIONS AND ASSESSMENTS 1937 AND 1938

Forest Commissioner

For departmental activities in 1937-38 and 1938-39 the Eighty-eighth Legislature appropriated $30,835. On October 26, 1937, in order to balance the state budget the Legislature in special session by an emergency measure, authorized the Controller upon order of the Governor and Council to transfer to the general fund in the treasury a sum from the various funds appropriated for the different departments and institutions.

The regular appropriation for each of the two fiscal years had been budgeted but by this measure the sum of $2500 was deducted under Council Order No. 839 on October 29, 1937. The appropriation was budgeted among the different functions as follows:

	Appropriation	Reduction by Council Order	Appropriation after Reduction
Administration of Public Lands	$100	....	$100
Control of White Pine Blister Rust	6,500	$500	6,000
Entomology	11,300	1,000	10,300
General Forestry Purposes	6,695	500	6,195
State Forest Nursery	840	250	590
Salary and Clerk Hire	3,300	....	3,300
General Office Expenses	2,100	250	1,850
	$30,835	$2,500	$28,335

Coöperation in forest fire protection in the Organized Towns is carried on under General Forestry.

Maine Forestry District

Fire protection in the Forestry District is maintained by funds derived from the annual assessment made on property within the District. This is assessed at the rate of $2\frac{1}{4}$ mills on each dollar of valuation.

Assessment 1937	$133,499.47
Assessment 1938	133,879.46

Federal Coöperation

Under the Clarke-McNary Act for the calendar year of 1937 the Department received $43,196 from the Federal Government for coöperation in forest fire prevention, of which $13,000 was applied to coöperation in the Organized Towns, and the remaining $30,196 was used in the Maine Forestry District. For the calendar year of 1938, $44,781 was received, of which $13,000 was used for coöperation in fire protection in the Organized Towns, and the remaining $31,781 was used in the Maine Forestry District.

FOREST FIRE PROTECTION

MAINE FORESTRY DISTRICT

Maine Forestry District

Under Chap. 11, Sec. 68, R. S. 1930, an administrative district known as the "Maine Forestry District" was established and incorporated. The purpose of it was to provide for fire protection.

The fund derived from assessment on property in it is designated exclusively for this purpose. This fund has dropped from $181,396.98 assessed in 1932 to $133,499.47 in 1937, due to the general depreciation of real estate. The Federal allotment for state coöperation in fire protection under the Clarke-McNary Act, which was $52,965.00 in 1930, amounted to $44,781.00 in 1938.

Notwithstanding this reduction in funds available during the past few years, the District has closed its book for the past calendar year with a balance of $85,098.07, which is a gain of $10,000.00 over the previous year. The following pages contain an outline of the activities and accomplishments in the District which have not in any way been curtailed.

Seasons of 1937 and 1938

The fire season in 1937 was an average season in the District. It began with fires in southern Aroostook in April and closed with scattering fires in various parts of the District on October 18-19th. The months of May and June were favorable with the precipitation above normal. During July, August, and September the precipitation was one-quarter of an inch below normal with drying weather prevailing to such an extent that on August 31, upon recommendation of the Forest Commissioner, the Governor saw fit to proclaim a ban upon smoking in the woods and the building of all fires therein. This was continued in force until September 13th, when the improvement in conditions in the woods seemed to warrant lifting it.

Electrical storms were much more prevalent than common during the summer months of July, August, and September in central and southeastern Maine. The result was the number of fires attributed to lightning reached the all time high of 47 for this state. During September 3rd and 4th in southeastern Maine 12 fires were reported within an area of 12 miles square, which were the result of one severe storm.

This 1937 season closed the last of October. In course of the season's work there were no serious accidents or mortalities.

During the 1938 season there were in the District 2 to 3 inches more rain than during the last season of 1937. This was well distrib-

uted except for a dry period in early spring and another in the middle of October.

The first fires in 1938 were reported on April 24th and 26th in Penobscot County. Sixty-one of the 92 fires in the District occurred in May and June.

There were two periods of fire hazard. The first was from the 24th of April until May 8th. The second lasted from the middle of October until November. This latter period was bad in the counties of Oxford and Franklin, where fires threatened to spread over large areas. So on October 15th, the Governor upon recommendation of the Forest Commissioner placed a ban upon smoking and building fires out-of-doors in the woods in these two counties. This remained in force for 5 days, when it was removed as the result of improved conditions.

The last fires of record occurred on November 8th in western Maine, with which the season closed.

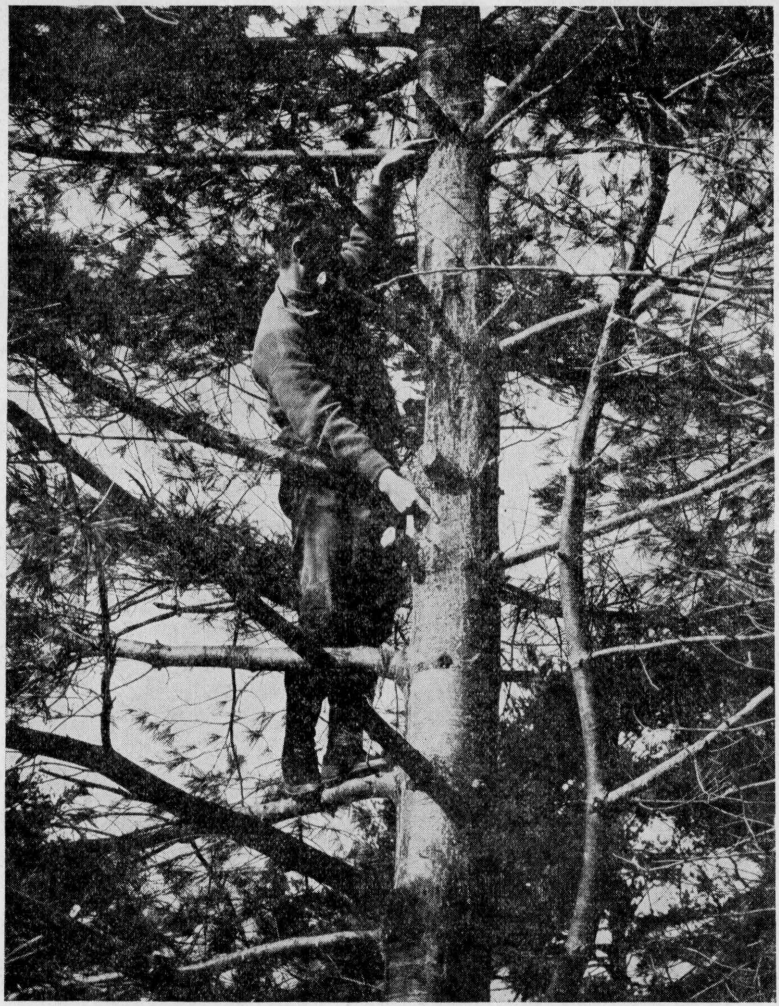
Comparison of Burned Area 1935-1938

1935	1936	1937	1938
14,473 acres	179 acres	1,358 acres	5,210 acres

In the course of administering large areas of forest land, the Federal Forest Service has established certain standards of fire protection as desirable and possible of attainment for different sections of the country. In the past eleven years, (1928 to 1938, inc.), the fire protection agencies in the entire state have attained a standard of 0.14%. That is an average of 21,000 acres of protected forest land was burned in the entire state. The standard proposed now for the state is 0.1%. In the District during the past year, the standard attained was 0.05% with 5,210 acres burned.

Travel in the Forestry District has doubled in the past four years and operating is now more extensive. While it will not always be possible to maintain the record of low averages attained during the past few years, it would seem reasonable that with our experienced personnel and with the facilities and equipment provided, we should improve upon our old records.

In the appendix of this report we have placed a chronology of fires and statistics.



White Pine Fatally Infected With the Blister Rust

This tree is about 45 feet tall and 13.3″ D.B.H. The blister rust canker on the main stem to which the man is pointing is 22 feet above the ground and 65″ long. The stem is nearly girdled and slightly constricted at the center of the canker. At this point the stem is 8½″ in diameter. The disease entered the stem from side branches at four different points. The upper portion of the tree above the canker is in a dying condition and many of the branches are dead or dying as a result of girdling by the rust.

Courtesy Bureau of Entomology & Plant Quarantine
U. S. Department of Agriculture

In Rangeley District, Harold W. York, who had worked as deputy and assistant chief warden since 1925, was appointed to succeed Frank C. King, who resigned in 1936. Mr. King had been chief warden for twenty-two years.

In Moose River District, George G. Nichols resigned after serving as chief warden for twenty-five years. He was succeeded by Arthur Holden, who had been a deputy since 1923.

Most of these experienced wardens which we have lost worked for the District in some capacity from the time that it was organized. It is with regret that we have seen them go. The new wardens are men who have served long apprenticeship in the woods in the districts where they are now chief wardens. This District is fortunate in securing them.

Lookout Stations

There are now 78 forest fire lookouts maintained by the Maine Forestry District. 77 are in the District, and one coöperatively owned and maintained, is situated in the Province of Quebec near the International Boundary. Of these, 65 are occupied full time throughout the fire season, and the remaining 13 emergency towers are occupied only during dangerously dry periods of the fire season.

In 1937, two steel towers were erected; one 36′ high on Boundary Bald Mt., Township 4, Range 3, Somerset County, and one 80′ high on Cooper Mt. in the Town of Cooper, Washington County. The steel for these towers came from the dismantled radio towers at Bar Harbor, given to this Department by the National Park Service.

Also, one 35′ tower of log construction, and built on 10′ concrete piers, was erected at Lake Frontiere, P. Q., Canada, near the International Boundary, and opposite Township 12, Range 17, W.E.L.S., Aroostook County.

The observatories on Deboulie and Squaw Mt. towers were rebuilt. Both had been struck by lightning.

In 1938, one 50′ steel tower was erected on Wesley Hill, replacing the old wooden tower which was blown over and destroyed. The steel for this tower was also from the old radio towers at Bar Harbor.

The observatory and tower on Coburn Mt. were rebuilt after it had been crushed by ice during the previous winter. A new watchman's camp was also built. The work was done with the assistance of the CCC.

Also, the observatory on Saddleback Mt. tower was rebuilt after it had been wrecked by the same cause.

Patrol

During the past fire season, 56 patrolmen were employed. When weather conditions permitted, these men were engaged in the construction of telephone lines, trails, camps, and cleaning up camp sites. They have also assisted in collecting spruce sawfly data.

These men usually patrol well travelled roads, fishing streams, and lakes in such areas that cannot effectively be covered by lookout stations; also, they are responsible for the upkeep of connecting telephone lines. They come in contact with the travelling public and are trained to carry on our educational program.

It appears that with the constant yearly increase in the number of people using our forests for recreational purposes that the number of patrolmen employed will have to be increased.

Pumps and Hose

The 5-gallon galvanized iron pack pump is still a very important item of our forest fire fighting equipment and the Department has purchased 340 during the past two years. We now have a total of 1,570 placed at strategic points throughout the Maine Forestry District.

This Department now owns and maintains 49 power pumps, of which 39 are Type "N", 4 cylinder, 4 cycle, water cooled; 7 are 2 cylinder, 2 cycle, water cooled; and 5 are Type "Z", 1 cylinder, 4 cycle, air cooled.

Four new pumps purchased during the last two years have been assigned to the following Districts: Moosehead, Seven Islands, Machias, and Allagash.

The Forestry District now owns 97,300 feet of $1\frac{1}{2}''$ fire hose. About 40,100 feet of this is cotton, rubber lined hose, and the remainder is the best grade of linen.

A total of 12,500 feet of new linen hose has been purchased during the last two years and distributed to the chief wardens.

Telephone Lines

The Forestry District now owns and maintains 2,308 miles of telephone line. This is an increase of 415 miles over mileage owned in 1936. The policy is to make permanent the important main lines, and improve by bushing out, checking splices, putting on new insulators, and change to metallic circuit other connecting lines.

During 1937, in the eastern section 27 miles of metallic pole line were constructed from the Airline Road, Township 30, to the Columbia

central office; 18 miles of metallic pole line from Princeton to Topsfield; and 9 miles of grounded tree line from 2nd Pistol Lake to No. 9 Camp on Passadumkeag Stream. Improvements were made on 30 miles of grounded tree line, and 30 miles were bushed out.

In the central section, ¾ mile of grounded pole line was constructed from Millinocket underpass north; 1½ miles of grounded tree line from Millinocket Lake to Mud Brook Dam; 2 miles grounded pole line from Abol Fork to Abol Hill; and ½ mile of grounded pole line along west side of Davidson Pond.

In the western section, 3 miles of grounded pole line were constructed from the chief warden's camp to the mouth of Daaquam River, and 2½ miles of grounded pole line from the new Lake Frontiere, P. Q., tower to LaCroix's office on gravel road.

In the southern section, 4 miles of metallic pole line were erected from Kingfield to Soule's Mills on the Mt. Abram line. 3 miles of metallic pole line were erected on Grafton flats.

During 1938, 14 miles of ground pole line were constructed in the northern section west from Ashland along the Great Northern Paper Company road toward Machias River, and 5 miles of grounded tree line from St. Francis River toward Estcourt. 100 miles of line were improved in this section and 50 miles completely bushed out.

In the central section, 12½ miles of metallic line were constructed from Millinocket storehouse to Grant Brook; 5 miles of grounded pole line from Camp Colby Forks to Camp Colby; 7½ miles of metallic pole line from Brownville storehouse to Arbo's; and 60 new poles were set along Grindstone line. Improvements were made on 29 miles of grounded tree line, and 95 miles were bushed out.

In the eastern section, 12 miles of grounded tree line were constructed from Greenfield to Myra; 4 miles of grounded tree line from Weir Pond to Lee Village; 2 miles of grounded tree line from Martin's Ridge to Narraguagus; and 9 miles of metallic pole line from Waite to Musquash Lake.

In the western section, 5 miles of grounded pole line were constructed from the mouth of Daaquam River, along northwest branch toward main St. John River; 15 miles of grounded pole line along the La Croix road; 2 miles of metallic pole line along Umbazooksus Railroad; and 1½ miles of metallic pole line from watchman's camp to Squaw Mt. lookout. Improvements were made on 85 miles of line and 125 miles were bushed out.

In the southern section, 12 miles of grounded pole line were constructed from Bingham to Sandy Stream Plantation. Improvements and repairs were made on 506 miles of telephone line in Oxford, Frank-

lin, and southern Somerset counties. The hurricane of September 21, 1938 passed over this area and put every line out of order. This work has been done this fall and all lines will be ready when the fire season opens next spring.

Airplanes

For the season of 1937 the Department acquired a new Beechcraft equipped with pontoons. This was flown for 250 hours in the course of departmental operations. On February 9, 1938 this plane was destroyed by a fire at Augusta. It was covered by insurance. After consideration, this loss was replaced with another Beechcraft.

During the past season, conditions were such that the plane was flown for only 200 hours. The cost of operating this plane in 1938 by the Department, including the items of gasoline, oil, maintenance, insurance, and pilot's salary and expenses was $4,108.57. This plane is now in first class condition and will be ready for use during the season of 1939.

Coöperation with Province of Quebec

Following an agreement made in 1931 the Maine Forestry District wardens, located near that part of the International Boundary that separates the Province of Quebec from the State of Maine, exercise joint control and supervision of the burning of those slash areas adjacent to the boundary line with the Provincial wardens. Over 200 acres of slash were burned without having a single fire get out of control. This is a remarkable record when it is considered that the burning was done on over 100 different parcels of land.

The assistance given by our men on three fires that originated on the Canadian side of the boundary line undoubtedly prevented them from spreading into valuable timber in the State of Maine.

Special mention should be made here of the fine spirit of coöperation that exists between Maine and the Province of Quebec forest fire wardens in the handling of fire problems affecting forest lands adjacent to the boundary line.

Mr. Henri Kieffer, Chief of Forest Protection, Province of Quebec, and his two supervisors: Mr. Emile Bonneau of Tourville and Mr. Hormidas Roy of St. Prosper, have made a sincere effort to improve forest protection in this area and have always coöperated in a most commendable manner.

Camp Sites

There are 101 camp sites maintained by the Maine Forestry District. The Department acknowledges the fact that this number does not meet the demands of the travelling public, yet limited funds prevent our increasing this number any appreciable amount.

These sites are located near either a spring or a brook. Each area has been cleared of inflammable material, and in the center is a fireplace with a sheltered table nearby that will seat twelve people. Large metal signs along the highway indicate the location of these camp sites.

It has been observed that more and more people are using these camp sites, and it is hoped that they will continue to do so. It is our hope that eventually there will be very little need of kindling a fire outside of our camp sites.

In the appendix, there is a list of all camp sites maintained by the Maine Forest Service both in the Forestry District and the Organized Towns.

PRECIPITATION—1937-38

NORTHERN SECTION

	Allagash District		Madawaska District		Fish River District		Aroostook Waters District		No. 9 District	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
May	2.97	2.11	3.03	3.83	3.38	3.65	3.71	4.70	4.02	3.47
June	3.40	3.56	2.89	3.25	3.55	5.63	3.63	5.11	2.79	3.58
July	4.77	7.17	2.42	5.02	2.54	6.29	2.00	6.47	2.08	5.33
August	5.69	5.73	3.54	5.59	4.02	6.39	3.42	4.63	2.03	3.17
September	3.49	....	2.68	2.97	2.98	3.47	3.78	....	2.66	2.19
Totals	20.32	18.57	14.56	20.66	16.47	25.43	16.54	20.91	13.58	17.74

CENTRAL SECTION

	Katahdin District		Davidson District		Mattawamkeag District		East Branch District		Pleasant River District	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
May	5.75	4.70	4.20	4.16	3.76	3.94	4.74	4.71	4.10	4.23
June	4.31	5.26	4.57	5.85	4.03	4.66	4.59	4.60	6.49	4.06
July	2.29	5.11	2.24	6.19	2.45	4.42	1.61	6.89	3.54	4.97
August	3.49	6.30	2.28	4.32	3.35	2.90	3.62	4.91	2.78	3.81
September	2.28	3.84	2.30	4.65	3.27	4.61	2.88	4.58	2.87	6.05
October	1.66	3.40	1.88	2.63	1.63	3.03	2.20	2.77	1.71	2.49
Totals	19.78	28.61	17.47	27.80	18.49	23.56	19.64	28.46	21.49	25.61

EASTERN SECTION

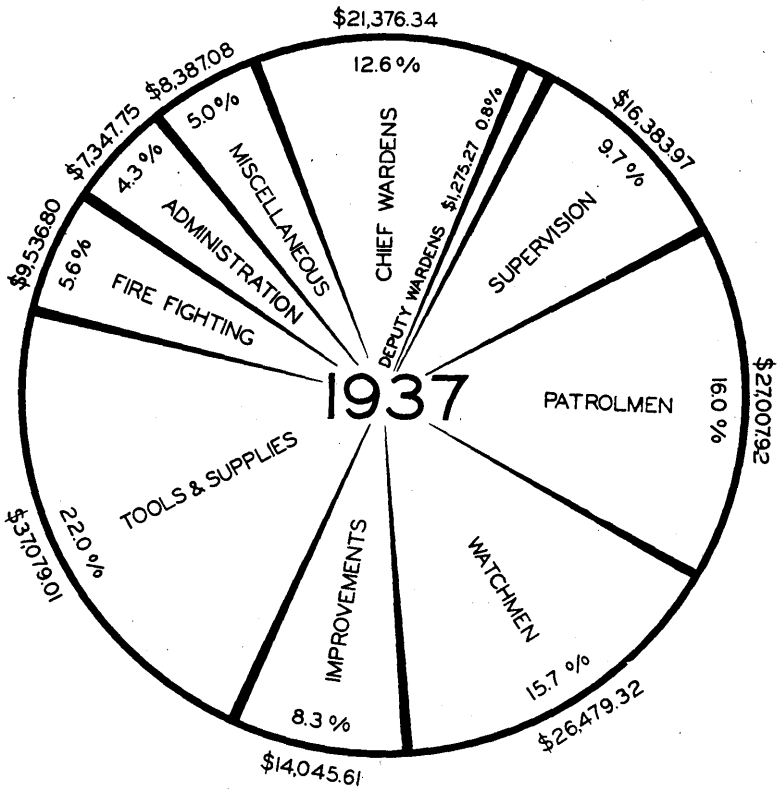
	Passadumkeag District		Musquash-St. Croix District		East Machias District		Machias District		Union River District	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
May	4.79	4.63	4.06	2.81	3.18	1.10	3.14	3.00	2.47	2.99
June	3.72	3.58	4.26	2.86	4.37	1.75	3.06	3.96	4.19	3.81
July	2.23	3.76	1.34	5.08	1.27	5.39	1.55	4.61	1.88	7.06
August	1.83	5.56	2.18	5.18	1.63	2.95	1.87	3.08	1.71	2.98
September	2.93	4.59	3.88	5.07	3.31	4.73	3.77	5.76	4.06	5.91
October	.73	....	1.08	....	1.35	....	.50	....	.97	....
Totals	16.23	22.12	16.80	21.00	15.11	15.92	13.89	20.41	15.28	22.75

SOUTHERN SECTION

	Dead River District		Parlin Pond District		Moose River District		Carrabassett District		Rangeley District Cupsuptic		Rangeley District Upton	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
May	6.03	4.50	6.05	4.40	3.52	3.89	7.10	3.40	5.49	2.45	5.74	2.55
June	3.90	5.23	4.17	4.61	3.91	4.82	4.80	2.70	3.71	3.60	4.19	2.80
July	3.00	3.98	2.05	3.65	3.50	3.94	2.15	8.50	3.08	5.94	1.88	7.82
August	2.63	2.95	2.80	2.79	2.51	2.69	3.30	3.40	3.04	2.22	2.42	5.24
September	3.19	6.04	4.36	5.80	4.87	5.53	5.60	7.55	3.29	8.07	3.45	7.62
October	3.18	1.53	6.28	2.14	4.42	2.06	6.70	2.20	4.02	1.90	4.13	2.14
Totals	21.93	24.23	25.71	23.39	22.73	22.93	29.65	27.75	22.63	24.18	21.81	28.17

WESTERN SECTION

	Upper St. John District		Musquacook District		Seven Islands District		Chamberlain District		Seboomook District		Moosehead District		Chesuncook District	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
May	3.47	2.96	....	3.21	4.53	2.28	3.78	3.70	3.79	5.39	4.63	3.45	3.70	4.07
June	4.45	3.61	4.58	3.91	3.66	3.15	3.30	3.46	3.28	4.80	4.66	4.53	4.15	4.96
July	4.29	4.28	5.85	5.01	4.05	6.01	3.18	6.42	2.54	4.66	2.48	7.67	3.27	6.61
August	5.48	8.03	4.95	7.59	3.60	5.25	3.18	5.29	3.51	4.18	1.62	4.91	3.01	6.61
September	5.33	3.94	3.49	6.76	4.24	4.93	2.46	5.23	2.90	4.46	2.53	4.97	1.83	4.40
October	....	1.42	3.15	1.82	3.75	1.83	4.60	2.04	....	....	....	....	6.31	....
Totals	23.02	24.24	22.02	28.30	23.83	23.45	20.50	26.14	16.02	23.49	15.92	25.53	22.27	26.65



TOTAL DISBURSEMENTS $168,919.07

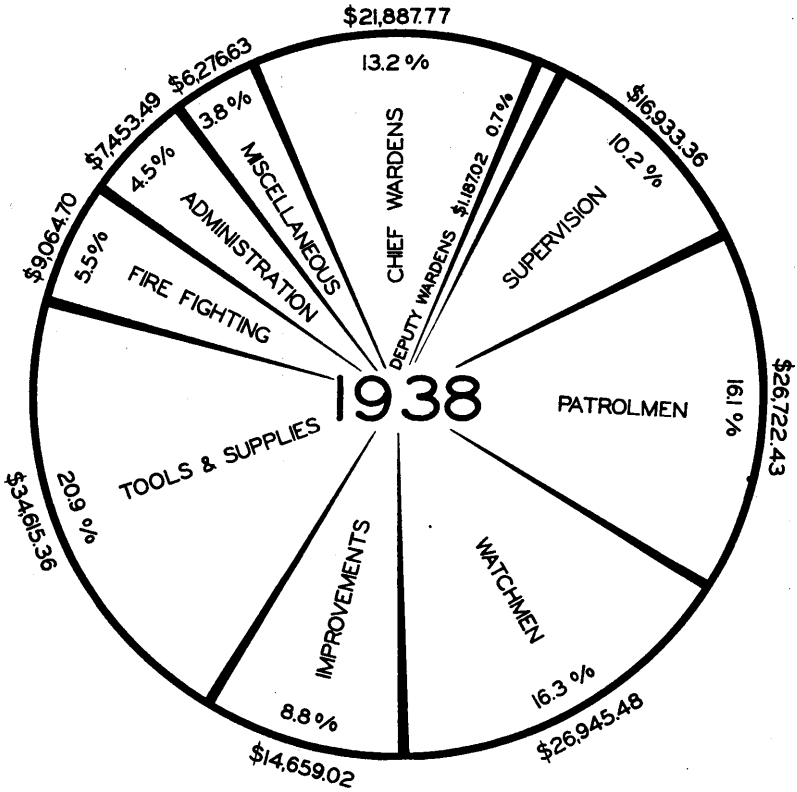
FINANCIAL STATEMENT
1937

Receipts		
Balance on hand January 1, 1937	$78,040.77	
1937 Assessment	133,499.47	
Federal Coöperation	30,196.00	
Miscellaneous	2,233.91*	
Total Receipts	$243,970.15	
Forestry District tax abated	37.80	
		$243,932.35
Disbursements		
Chief Wardens	$21,376.34	
Deputy Wardens	1,275.27	
Supervision	16,383.97	
Patrolmen	27,007.92	
Watchmen	26,479.32	
Improvements	14,045.61	
Tools and Supplies	37,079.01	
Fire Fighting	9,536.80	
Administration	7,347.75	
Miscellaneous	8,387.08	
		$168,919.07
		$ 75,013.28
Amount tied up in the closed State Trust Co		7,917.05
Balance on hand January 1, 1938		$ 67,096.23

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

EXPENDITURES BY WATERSHEDS 1937

	St. John	Penobscot	Kennebec	Andros-coggin	Machias	Totals
Chief Wardens	$6,342.48	$8,009.93	$3,934.70	$647.69	$2,441.54	$21,376.34
Deputy Wardens	600.00	131.75	75.00	156.95	311.57	1,275.27
Supervision	4,327.45	5,407.34	1,743.26	1,612.69	3,293.23	16,383.97
Patrolmen	8,597.68	8,811.41	3,977.64	2,628.75	2,992.44	27,007.92
Watchmen	6,899.25	8,883.71	5,141.61	1,614.00	3,940.75	26,479.32
Improvements	3,423.52	3,551.95	3,473.31	1,671.46	1,925.37	14,045.61
Tools and Supplies	7,791.61	8,662.84	7,043.79	5,691.70	7,889.07	37,079.01
Fire Fighting	2,803.97	2,751.43	2,313.36	435.00	1,233.04	9,536.80
Administration	1,484.27	1,478.37	1,458.37	1,458.37	1,468.37	7,347.75
Miscellaneous	2,414.42	2,507.72	1,342.37	911.45	1,211.12	8,387.08
TOTALS	$44,684.65	$50,196.45	$30,503.41	$16,828.06	$26,706.50	$168,919.07



TOTAL DISBURSEMENTS $165,745.26

FINANCIAL STATEMENT
1938

Receipts		
Balance on hand January 1, 1938	$75,013.28	
1938 Assessment	133,879.46	
Federal Coöperation	31,781.00	
Insurance on Airplane	8,193.79	
Miscellaneous	2,082.71*	
Total Receipts	$250,950.24	
Forestry District tax abated	106.91	
		$250,843.33
Disbursements		
Chief Wardens	$21,887.77	
Deputy Wardens	1,187.02	
Supervision	16,933.36	
Patrolmen	26,722.43	
Watchmen	26,945.48	
Improvements	14,659.02	
Tools and Supplies	34,615.36	
Fire Fighting	9,064.70	
Administration	7,453.49	
Miscellaneous	6,276.63	
		$165,745.26
		$85,098.07
Amount tied up in the closed State Trust Co.		7,308.15
Balance on hand January 1, 1939		$77,789.92

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

EXPENDITURES BY WATERSHEDS 1938

	St. John	Penobscot	Kennebec	Andros-coggin	Machias	Totals
Chief Wardens	$6,329.94	$7,589.28	$4,222.15	$917.89	$2,828.51	$21,887.77
Deputy Wardens	312.00	88.50	458.15	102.60	225.77	1,187.02
Supervision	5,156.80	5,177.92	1,681.94	1,612.18	3,304.52	16,933.36
Patrolmen	9,307.76	8,332.59	2,963.88	3,189.75	2,928.45	26,722.43
Watchmen	6,474.60	8,973.59	6,258.79	1,894.00	3,344.50	26,945.48
Improvements	2,753.64	4,709.18	3,042.90	2,038.87	2,114.43	14,659.02
Tools and Supplies	9,818.22	8,842.04	5,547.87	4,631.47	5,775.76	34,615.36
Fire Fighting	2,128.16	820.33	463.81	5,225.10	427.30	9,064.70
Administration	1,486.38	1,507.98	1,486.38	1,486.38	1,486.37	7,453.49
Miscellaneous	1,915.98	1,811.14	1,001.25	652.67	895.59	6,276.63
TOTALS	$45,683.48	$47,852.55	$27,127.12	$21,750.91	$23,331.20	$165,745.26

LOOKOUT STATIONS

Stations	Opened 1937	Opened 1938	Closed 1937	Closed 1938	No. Fires Reported 1937	No. Fires Reported 1938
Allagash Mt.	June 1	May 29	Oct. 9	Sept. 27	3	....
**Ayers Jct.	....	....	....	....	....	....
Aziscoos Mt.	June 3	May 18	Sept. 11	Sept. 3	1	2
Beetle Mt.	May 12	May 8	Oct. 3	Sept. 21	12	6
Bigelow Mt.	May 30	May 27	Oct. 21	Oct. 27	5	4
Boarstone Mt.	May 6	May 1	Oct. 2	Oct. 21	1	4
Boundary Bald	May 4	May 6	Oct, 9	Oct. 19	1	2
Burnt Mt.	May 29	May 8	Oct. 5	Sept. 17	....	2
Carr Pond Mt.	May 23	May 26	Sept. 14	Sept. 4	5	5
Clear Lake Mt.	June 20	June 12	Sept. 28	Sept. 14	4	1
Cooper Mt.	Apr. 20	Apr. 28	Oct. 5	Sept. 29	21	10
DeBoulie Mt.	June 12	May 26	Sept. 15	Sept. 14	1	8
Deer Mt.	June 14	June 19	Sept. 4	Aug. 31	9	1
Depot Mt.	May 14	May 20	Sept. 22	Sept. 13	11	2
Deasey Mt.	May 31	Apr. 28	Sept. 21	Sept. 14	27	18
Dill Ridge	May 11	May 9	Sept. 12	Sept. 17	9	5
**Doubletop Mt.	....	....	....	....	....	....
**Flagstaff Mt.	....	....	....	....	....	....
Green Mt.	June 2	June 8	Sept. 11	Aug. 31	....	....
Hardwood Mt.	May 3	May 22	Oct. 16	Oct. 19	2	....
Hedgehog Mt.	May 2	May 18	Sept. 30	Sept. 12	8	1
*Horse Mt.	....	....	....	....	....	....
Horseshoe Mt.	June 13	June 6	Sept. 20	Sept 12	5	2
Howe Brook	May 6	May 15	Sept. 25	Aug. 27	1	3
**Indian Hill	....	....	....	....	....	....
Kibbie Mt.	May 5	May 13	Oct. 8	Oct. 26	9	11
Kineo Mt.	May 23	May 1	Oct. 8	Oct. 24	4	7
†Lake Frontier, P.Q.	....	....	....	....	....	....
Lawler Hill	Apr. 30	May 7	Sept. 11	Oct. 21	26	21
Lead Mt.	May 2	May 4	Sept. 25	Aug. 31	17	4
Little Russell Mt.	May 25	May 8	Oct. 2	Aug. 27	1	....
Mattamiscontis Mt.	May 30	May 1	Oct. 4	Sept. 13	17	14
Mt. Abram	June 2	May 20	Sept. 28	Oct. 23	5	28
Mt. Chase	Apr. 30	May 3	Oct. 18	Oct. 21	24	12
Mt. Coburn	June 8	May 27	Oct. 26	Oct. 25	2	2
*Millinocket Tower	....	....	....	....	....	....
Mitchell Mt.	June 1	May 3	Sept. 25	Oct. 21	....	6
Moxie Bald	May 12	May 9	Oct. 25	Oct. 25	7	9
Musquacook Mt.	June 1	May 24	Sept. 4	Sept. 9	....	1
Musquash Mt.	May 4	May 8	Sept. 30	Sept. 17	7	3
No. 4 Mt.	May 7	May 1	Sept. 11	Sept. 17	4	3
No. 5 Mt.	May 23	May 14	Sept. 27	Sept. 19	3	11
No. 9 Mt.	May 4	May 1	Sept. 25	Sept. 24	5	15
Norway Bluff	May 24	May 25	Sept. 18	Sept. 12	14	11
**Nulhedus Mt.	....	....	....	....	....	....
Oak Hill	May 4	May 6	Sept. 13	Sept. 10	9	5
Old Spec Mt.	May 30	May 9	Sept. 11	Sept. 17	15	3
*Otter Lake Mt.	May 2	....	Aug. 25	....	2	....
Passadumkeag Mt.	May 23	May 7	Oct. 9	Sept. 17	13	1
Peaked Mt.	May 6	May 5	Oct. 3	Sept. 30	11	2
Pirate Hill	May 3	May 6	Oct. 2	Sept. 17	3	1
**Pleasant Pond Mt.	....	....	....	....	....	....
Pocomoonshine Mt.	May 1	May 5	Oct. 16	Sept. 16	25	11
Priestly Mt.	May 26	May 20	Sept. 28	Sept. 27	4	1
Ragged Mt.	May 6	Apr. 29	Oct. 2	Sept. 21	15	14
Rocky Mt.	May 9	May 11	Sept. 23	Sept. 17	4	5
Round Mt.	June 3	May 22	Sept. 25	Sept. 3	24	22
Saddleback Mt.	June 1	June 1	Sept. 15	Sept. 17	7	....
Schoodic Mt.	May 4	May 6	Oct. 8	Sept. 22	27	2
Snow Mt.	June 1	May 6	Oct. 11	Sept. 28	2	2

Stations	Opened		Closed		No. Fires Reported	
	1937	1938	1937	1938	1937	1938
Soper Mt.	June 14	June 5	Sept. 26	Sept. 27	2	....
Soubunge Mt.	June 9	June 12	Sept. 21	Sept. 14	6	1
Spencer Mt.	May 13	May 2	Oct. 25	Sept. 10	10	11
Spoon Mt.	May 13	May 10	Sept. 20	Sept. 12	5	3
Squa Pan Mt.	May 9	May 6	Sept. 18	Oct. 20	27	25
Squaw Mt.	May 4	Apr. 25	Oct. 9	Oct. 26	8	8
*Stockholm Mt.	July 22	June 1	Aug. 31	June 25	....	....
Three Brooks Mt.	May 6	May 7	Sept. 21	Sept. 1	7	12
Trout Mt.	May 8	May 1	Oct. 2	Oct. 24	11	10
**Tumbledown Mt.	....	....	....	....	....	....
Wadleigh Mt.	June 18	May 23	Sept. 21	Sept. 8	5	1
Washington Bald	May 17	May 10	Oct. 16	Oct. 7	3	....
*Wesley Mt.	....	....	....	....	....	....
**Whiting Hill	....	....	....	....	....	....
Whitney Hill	Apr. 30	Apr. 29	Sept. 25	Oct. 21	6	12
West Kennebago Mt.	June 1	June 1	Sept 11	Sept. 10	10	2
White Cap Mt.	June 5	May 8	Sept. 16	Sept. 13	11	8
Williams Mt.	May 5	May 12	Sept. 28	Oct. 22	....	....
Fires reported by watchmen					543	396
Fires reported by patrolmen					41	10
Total number of fires reported					584	406

*Emergency stations opened for a few days.

**Emergency stations not opened.

†Cooperatively owned and maintained, located in P. Q., Canada.

FIRE RECORD 1937

Location	Date	Acreage	Cause	Damage
Aroostook County				
Silver Ridge Pl.	Apr. 30	2	Lumbering	....
Hammond Pl.	Apr. 30	1	Smoking	$5.00
Molunkus	May 1	....	Smoking	....
Winterville Pl.	May 2	5	Smoking	15.00
T. 11, R. 4, WELS	May 2	2	Smoking	10.00
Winterville Pl.	May 2	5	Debris burning	10.00
T. 14, R. 6, WELS	May 3	3	Debris burning	15.00
T. 9, R. 5, WELS	May 3	8	Smoking	140.00
T. 2, R. 4, WELS	May 6	....	Smoking	....
Winterville Pl.	May 8	4	Debris burning	10.00
T. 20, R. 11 & 12, WELS	May 10	1	Campfire	5.00
Molunkus	May 25	....	Debris burning	....
T. 11, R. 4, WELS	May 30	5	Debris burning	25.00
Molunkus	May 30	3	Miscellaneous	15.00
Hammond Pl.	May 30	....	Debris burning	....
Molunkus	June 3	....	Debris burning	....
T. 15, R. 15, WELS	June 15	200	Smoking	1,000.00
T. 16, R. 6, WELS	June 16	30	Campfire	300.00
T. 14, R. 16, WELS	July 5	75	Smoking	1,375.00
T. 14, R. 16, WELS	July 10	....	Smoking	2.00
T. 11, R. 13, WELS	July 10	....	Lightning	....
T. 12, R. 7, WELS	July 19	1	Campfire	15.00
T. 11, R. 7, WELS	July 22	....	Smoking	7.00
T. 11, R. 7, WELS	July 23	21	Smoking	705.00
T. 9, R. 5, WELS	July 31	....	Debris burning	....
T. 16, R. 4, WELS	Aug. 10	....	Lightning	....
T. 7, R. 4, WELS	Aug. 23	3	Smoking	....
T. 10, R. 7, WELS	Aug. 24	....	Smoking	....
T. 9, R. 3, WELS	Aug. 24	....	Debris burning	....
T. 17, R. 3, WELS	Aug. 26	....	Smoking	....
T. 8, R. 5, WELS	Aug. 25	....	Campfire	....
T. 10, R. 7, WELS	Aug. 25	....	Smoking	....
T. 11, R. 10, WELS	Aug. 27	....	Lightning	....
Westmanland Pl.	Aug. 30	1	Smoking	5.00
T. 8, R. 4, WELS	Aug. 30	5	Campfire	....
T. 11, R. 4, WELS	Sept. 2	....	Smoking	100.00
Glenwood Pl.	Sept. 5	....	Miscellaneous	1.00
Macwahoc Pl.	Sept. 9	....	Smoking	....
Franklin County				
Perkins	June 6	....	Smoking	....
Davis	Aug. 19	1	Smoking	5.00
Perkins	Aug. 21	....	Smoking	....
Kibbie	Aug. 27	1	Smoking	5.00
Jerusalem	Oct. 18	....	Campfire	10.00
Dallas	Oct. 18	4	Smoking	25.00
Hancock County				
T. 9 & 10, S. D.	Apr. 30	100	Smoking	350.00
T. 22, M. D.	May 2	15	Smoking	75.00
T. 16, M. D.	May 3	100	Smoking	300.00
T. 16, M. D.	May 29	30	Smoking	20.00
T. 33, M. D.	July 9	....	Debris burning	....
T. 28, M. D.	July 24	....	Lightning	....
T. 3, N. D.	July 24	10	Lightning	100.00
T. 4, N. D.	July 24	1	Lightning	5.00
T. 4, N. D.	July 26	....	Lightning	....
T. 22, M. D.	Aug. 14	7	Campfire	325.00
T. 28, M. D.	Aug. 21	....	Lightning	....
T. 40, M. D.	Sept. 3	....	Lightning	....
T. 34, M. D.	Sept. 3	....	Lightning	2.00
T. 6, N. D.	Sept. 4	3	Lightning	15.00
T. 7, S. D.	Sept. 9	....	Railroad	....
T. 22, M. D.	Sept. 21	....	Smoking	8.00
Summit	Sept. 23	....	Debris burning	....
Oxford County				
Andover North Surplus	June 13	20	Lightning	100.00
Magalloway Pl.	Aug. 16	1	Smoking	25.00
Grafton	Aug. 17	....	Lightning	....
C. Surplus	Oct. 19	5	Campfire	175.00

Location	Date	Acreage	Cause	Damage
Penobscot County				
T. 6, R. 7, WELS	May 1	4	Smoking	....
Drew Pl.	May 30	1	Miscellaneous	....
Drew Pl.	June 1	1	Debris burning	5.00
T. 1, R. 7, WELS	June 2	....	Debris burning	....
T. 2, R. 8, WELS	June 5	2	Campfire	35.00
T. 1, R. 7, WELS	June 14	1	Campfire	5.00
Lakeville Pl.	July 9	....	Smoking	5.00
Lakeville Pl.	July 19	....	Campfire	5.00
T. 3, N. D.	July 22	....	Smoking	....
T. 3, N. D.	July 23	....	Smoking	....
T. 1, R. 7, WELS	July 23	....	Smoking	....
T. 7, R. 8, WELS	July 24	....	Lightning	....
T. 2, R. 7, WELS	July 24	16	Lightning	896.00
Indian No. 3	July 25	....	Smoking	....
T. 1. R. 7, WELS	July 28	....	Miscellaneous	....
T. 1, R. 7, WELS	July 29	....	Smoking	....
T. 1, R. 8, WELS	Sept. 2	....	Smoking	....
Drew Pl.	Oct. 18	3	Campfire	25.00
T. 3, N. D.	Oct. 18	25	Incendiary	....
Piscataquis County				
T. 7, R. 13, WELS	June 12	....	Lightning	....
T. 6, R. 9, WELS	June 21	1	Campfire	5.00
T. 4, R. 11, WELS	June 25	3	Campfire	15.00
T. 10, R. 9, WELS	July 5	....	Lightning	....
T. 7, R. 14, WELS	July 8	....	Lightning	....
T. 3, R. 12, WELS	July 12	....	Campfire	....
T. 2, R. 9, WELS	July 21	....	Campfire	....
T. 7, R. 12, WELS	July 24	....	Lightning	....
T. 8, R. 9, WELS	July 24	1	Lightning	10.00
T. 5, R. 11, WELS	July 24	....	Lightning	12.00
T. 5, R. 10, WELS	July 24	....	Lightning	....
T. 7, R. 9, WELS	July 24	....	Lightning	....
Barnard Pl.	July 25	....	Smoking	....
T. 7, R. 14, WELS	July 26	....	Lightning	....
T. 2, R. 11, WELS	Aug. 10	....	Lightning	....
T. 10, R. 11, WELS	Aug. 11	5	Lightning	300.00
T. 5, R. 13, WELS	Aug. 18	....	Lightning	....
T. B. R. 11, WELS	Aug. 18	....	Lightning	....
T. 10, R. 9, WELS	Aug. 27	....	Lightning	....
Spencer Bay	Aug. 27	....	Campfire	20.00
T. 2, R. 13, WELS	Aug. 29	1	Campfire	25.00
T. 4, R. 14, WELS	Sept. 3	....	Lightning	....
T. 1, R. 9, WELS	Sept. 4	....	Debris burning	....
T. 1, R. 9, WELS	Sept. 6	1	Campfire	18.00
Ledge Island, Moosehead Lake	Sept. 9	....	Campfire	10.00
Day's Academy	Sept. 9	....	Campfire	20.00
T. 2, R. 9, WELS	Sept.	....	Smoking	....
Little Squaw Mt.	Oct. 11	....	Smoking	....
Somerset County				
The Forks Pl.	May 11	20	Smoking	....
East Moxie	July 9	....	Smoking	10.00
Bald Mt.	July 26	....	Lightning	....
Lower Enchanted	Aug. 9	12	Smoking	60.00
Pierce Pond	Aug. 10	....	Lightning	....
Big Squaw Town	Aug. 23	1	Campfire	30.00
Pittston	Aug. 30	....	Smoking	....
Moxie Gore	Aug. 30	300	Campfire	1,800.00
Caratunk Pl.	Sept. 9	....	Lightning	5.00
Squaretown	Oct. 10	2	Campfire	25.00
Washington County				
T. 6, R. 1, NBPP	May 1	....	Campfire	....
T. 26, E. D.	May 2	20	Smoking	20.00
Indian Township	May 3	....	Smoking	....
Deblois	May 3	80	Miscellaneous	1,400.00
Northfield	May 4	50	Smoking	250.00
Indian Township	May 4	3	Debris burning	50.00
Marion	May 4	30	Smoking	150.00
Lambert	May 6	....	Smoking	....
Whiting	May 19	10	Incendiary	....
T. 24, & 25, M. D.	May 23	20	Smoking	20.00
Kossuth	May 30	1	Campfire	....
T. 6, N. D.	June 12	2	Lightning	15.00
Marion	July 3	....	Campfire	....
Whiting	July 8	65	Incendiary	100.00

Location	Date	Acreage	Cause	Damage
Codyville	July 11	....	Debris burning	....
Kossuth	July 29	....	Miscellaneous	....
No. 14 Pl.	July 29	....	Smoking	....
T. 19, M. D.	Aug. 16	....	Smoking	....
Northfield	Aug. 18	....	Smoking	1,000.00
T. 1, R. 1, T. S.	Aug. 27	....	Debris burning	....
T. 30, M. D.	Aug. 28	....	Smoking	....
T. 25, M. D.	Aug. 29	1	Smoking	500.00
T. 8, R. 4, NBPP	Aug. 29	....	Smoking	....
Whiting	Aug. 31	2	Incendiary	35.00
T. 29, M. D.	Aug. 31	....	Smoking	....
No. 21 Pl.	Sept. 1	....	Campfire	....
T. 30, M. D.	Sept. 3	....	Lightning	....
T. 30, M. D.	Sept. 3	....	Lightning	....
T. 30, M. D.	Sept. 3	....	Lightning	....
T. 37, M. D.	Sept. 3	....	Lightning	....
T. 36, M. D.	Sept. 3	....	Lightning	....
T. 37, M. D.	Sept. 3	....	Lightning	....
T. 29, M. D.	Sept. 3	....	Lightning	....
T. 36, M. D.	Sept. 3	....	Lightning	....
T. 36, M. D.	Sept. 3	....	Lightning	....
T. 6, N. D.	Sept. 3	....	Lightning	....
Plantation 21	Sept. 4	....	Lightning	....
T. 11, R. 3, NBPP	Sept. 8	....	Smoking	....
Whiting	Sept. 9	1	Campfire	5.00
Hinckley	Oct. 17	....	Campfire	....

FIRE RECORD 1938

Location	Date	Acreage	Cause	Damage
Aroostook County				
T. 3, R. 3, WELS	May 4	....	Smoking	....
T. 11, R. 7, WELS	May 5	25	Campfire	$15.00
E Pl	May 5	....	Debris burning	....
Molunkus	May 7	2	Smoking	25.00
T. 7, R. 5, WELS	May 7	1	Debris burning	5.00
Garfield Pl	May 9	2	Debris burning	5.00
T. C, R. 2, WELS	May 29	....	Incendiary	....
T. 17, R. 3, WELS	May 29	....	Smoking	....
T. 20, R. 11 & 12, WELS	June 2	1	Campfire	....
T. 4, R. 3, WELS	June 2	....	Campfire	1.00
T. 8, R. 4, WELS	June 2	80	Railroad	30.00
T. 17, R. 4, WELS	June 2	2	Smoking	5.00
T. 19, R. 11, WELS	June 6	3,500	Smoking	3,500.00
T. 16, R. 14, WELS	June 6	60	Debris burning	150.00
T. D, R. 2, WELS	June 12	7	Smoking	30.00
T. 9, R. 4, WELS	June 15	2	Railroad	50.00
T. 10, R. 3, WELS	June 15	60	Smoking	140.00
T. 10, R. 3, WELS	June 15	....	Smoking	....
T. B, R. 2, WELS	June 16	....	Campfire	....
T. C, R. 2, WELS	June 16	....	Smoking	....
T. 11, R. 7, WELS	Aug. 1	....	Debris burning	....
T. 7, R. 3, WELS	Aug. 3	....	Lightning	....
T. 10, R. 3, WELS	Aug. 9	....	Smoking	....
T. 11, R. 4, WELS	Oct. 12	....	Unknown	....
Franklin County				
Sandy River Pl	Apr. 27	2	Debris burning	....
Jim Pond	June 3	....	Smoking	....
Jerusalem	June 30	8	Smoking	40.00
Kibbie	June 30	....	Smoking	5.00
No. 6	Oct. 8	....	Smoking	....
Mass. Gore	Nov. 8	....	Smoking	....
Hancock County				
T. 7, S. D	June 5	3	Smoking	....
Oxford County				
Riley	Oct. 12	14	Smoking	70.00
Andover North Surplus	Oct. 13	360	Smoking	1,800.00
Penobscot County				
T. 8, R. 8, WELS	Apr. 24	....	Smoking	....
T. 1, R. 8, WELS	Apr. 26	....	Debris burning	....
T. 5, R. 7, WELS	May 4	....	Campfire	....
Stacyville	May 4	....	Smoking	....
Molunkus	May 9	75	Smoking	50.00
Indian No. 4	May 25	....	Smoking	....
T. 2, R. 9, NWP	June 24	....	Smoking	1.00
T. 4, R. 8, NWP	June 26	2	Smoking	3.00
T. 6, R. 7, WELS	Aug. 2	....	Lightning	....
T. 6, R. 7, WELS	Aug. 3	....	Lightning	....
T. 3, R. 8, WELS	Oct. 18	30	Smoking	....
Piscataquis County				
T. 1, R. 9, WELS	Apr. 30	....	Miscellaneous	....
T. 7, R. 9, WELS	May 5	....	Debris burning	....
T. 6, R. 9, WELS	May 7	....	Campfire	....
T. 2, R. 9, WELS	May 9	12	Campfire	25.00
Little Squaw Mt	May 16	5	Railroad	25.00
T. 7, R. 11, WELS	May 31	8	Smoking	100.00
T. 8, R. 10, NWP	June 4	2	Smoking	20.00
T. 7, R. 9, WELS	June 7	....	Lightning	....
T. 7, R. 10, WELS	June 7	....	Lightning	4.00
Big Squaw Mt	June 24	....	Smoking	....
Lily Bay	July 14	....	Lightning	10.00
T. 6, R. 10, WELS	July 23	....	Lightning	....
T. 7, R. 11, WELS	July 26	....	Lightning	....
T. 6, R. 13, WELS	Aug. 2	....	Lightning	....
T. 7, R. 10, WELS	Aug. 2	....	Lightning	....
T. 7, R. 10, WELS	Aug. 2	....	Lightning	....

Location	Date	Acreage	Cause	Damage
Somerset County				
T. 4, R. 17, WELS	May 5	2	Debris burning	5.00
Dennistown Pl.	May 8	....	Smoking	....
Lexington Pl.	May 28	1	Smoking	5.00
Hobbstown	June 7	....	Lightning	50.00
Highland Pl.	June 10	....	Smoking	....
Bigelow Pl.	June 15	2	Smoking	....
T. 8, R. 19, WELS	June 16	1	Debris burning	....
T. 3, R. 4, BKP, WKR	July 8	....	Miscellaneous	10.00
T. 3, R. 5, BKP, WKR	Sept. 1	....	Lightning	....
East Moxie	Sept. 6	....	Campfire	....
The Forks Pl.	Oct. 12	1	Smoking	5.00
Moxie Gore	Nov. 8	5	Smoking	....
Washington County				
Topsfield	Apr. 17	....	Smoking	3.00
Whiting	May 4	20	Incendiary	20.00
Indian Twp.	May 4	....	Smoking	3.00
T. 35, M. D.	May 4	150	Incendiary	150.00
T. 30 & 36, M. D.	May 5	640	Incendiary	1,280.00
Lambert Lake Pl.	May 6	....	Campfire	....
Codyville	May 6	3	Smoking	....
Marion	May 6	5	Incendiary	5.00
Cooper	May 9	60	Unknown	60.00
T. 8, M. D.	May 29	3	Smoking	....
No. 14 Pl.	May 31	3	Smoking	30.00
T. 1, R. 1, T. S.	June 1	1	Campfire	25.00
Northfield	June 2	11	Smoking	15.00
T. 6, R. 1, NBKP	June 2	1	Smoking	5.00
Edmunds	June 9	1	Incendiary	5.00
Northfield	June 22	2	Smoking	....
No. 2. Pl.	July 16	....	Smoking	....
Whiting	Aug. 17	....	Incendiary	....
T. 19, M. D.	Oct. 15	5	Smoking	....
T. 18, M. D.	Oct. 19	30	Smoking	30.00

SUMMARY OF FOREST FIRES FOR 1937-1938 BY MONTHS, COUNTIES AND CAUSES

	No. of Fires		Acreage		Damage	
	1937	1938	1937	1938	1937	1938
By Months:						
April	3	5	103	2	$ 355	$ 3
May	30	30	420	1,017	2,530	1,808
June	12	31	260	3,746	1,480	4,079
July	40	5	190	....	3,247	20
August	37	9	341	....	4,135	....
September	31	2	5	....	184	....
October	9	8	39	440	260	1,905
November	...	2	....	5	....	....
	162	92	1,358	5,210	$12,191	$7,815
By Counties:						
Aroostook	38	24	375	3,742	3,385	3,956
Franklin	6	6	6	10	45	45
Hancock	17	1	266	3	1,200	....
Oxford	4	2	26	374	300	1,870
Penobscot	19	11	53	107	976	54
Piscataquis	28	16	12	27	810	184
Somerset	10	12	335	12	1,930	75
Washington	40	20	285	935	3,545	1,631
	162	92	1,358	5,210	$12,191	$7,815
By Causes:						
Campfire	30	10	366	39	2,873	66
Debris burning	17	10	21	68	115	165
Incendiary	4	7	102	816	135	1,460
Lightning	45	13	58	....	1,460	64
Lumbering	1	...	2	....	....	....
Miscellaneous	6	2	84	....	1,416	10
Railroad	1	3	....	87	....	105
Smoking	58	45	725	4,140	6,192	5,885
Unknown	...	2	....	60	....	60
	162	92	1,358	5,210	$12,191	$7,815

MAINE FORESTRY DISTRICT 1938

	DISTRICT	SUBDIVISIONS OF DISTRICTS				PERSONNEL				PROPERTY INVENTORY								
		Unorganized Townships	Plantations	Towns	Total Acreage	Chief Wardens	Deputies	Patrolmen Linemen	Watchmen	Forest Fire Lookouts	Camps	Storehouses	Garages	Boathouses	Mileage Tel. Lines	Telephones	Camp Sites	Lunch Grounds
Northern	Allagash	26½	1	–	718,025		14	5	2	2	5	2	–	–	141	17	9	–
	Madawaska	7½	1	–	206,820		10	2	2	2	2	1	–	–	51	6	3	–
	Fish River	13	3	–	381,239		9	1	3	3	4	1	–	1	102	11	5	–
	Aroostook Waters	26½	2	–	676,306		20	4	5	5	7	1	1	1	144	19	9	–
	Number Nine	8	2	–	222,575		15	2	2	2	2	–	–	–	32	7	2	–
	Total	81½	9	–	2,204,965	5	68	14	14	14	20	5	1	2	470	60	28	–
Central	Mattawamkeag	12	3	–	345,600		14	2	3	4	3	2	2	–	87	15	3	6
	East Branch	18½	–	–	426,494		14	4	4	5	10	6	1	4	99	27	5	2
	Davidson	3	1	–	92,160		8	1	2	2	2	1	1	1	62	10	2	1
	Katahdin	13	–	–	299,502		11	3	2	3	4	1	1	2	86	19	3	5
	Pleasant River	12¼	5	–	403,140		9	2	3	3	4	1	1	–	69	16	1	–
	Division Equipment not issued	—	–	–	———		–	–	–	–	–	–	–	–	—	5	———	–
	Total	58¾	9	–	1,566,896	5	56	12	14	17	23	11	6	7	403	92	14	14
Eastern	Passadumkeag	8	4	–	291,093		17	2	2	2	3	1	1	1	99	13	4	–
	Musquash-St. Croix	10	3½	2	391,927		27	2	3	4	4	2	1	2	185	31	6	–
	East Machias	3½	1½	4	208,946		19	1	1	2	–	1	1	–	23	5	4	–
	Machias	11½	–	4	357,817		20	3	4	5	8	2	1	1	129	23	3	–
	Narraguagus-Union River	6½	2	–	194,916		12	1	1	1	3	–	1	–	112	17	3	–
	Total	39½	11	10	1,444,699	5	95	9	11	14	18	6	5	4	548	89	20	–
Southern	Carrabassett	4	–	–	89,986		3	–	1	1	1	–	–	–	28	8	4	–
	Rangeley	21½	5	–	604,199		21	6	5	5	6	1	–	–	121	16	10	37
	Dead River	11½	6	–	358,842		33	1	2	3	2	–	–	–	75	9	5	–
	Moose River	22½	2	–	415,496		16	1	4	5	6	1	–	–	112	22	4	–
	Parlin Pond	17	5	1	494,170		25	1	2	3	6	–	1	–	170	16	5	–
	Total	76½	18	1	1,962,693	5	98	9	14	17	21	2	1	–	506	71	28	37
Western	Seven Islands	14	–	–	326,661		3	3	1	1	5	–	–	–	83	11	–	–
	Upper St. John	14½	–	–	339,472		1	2	1	1	6	1	1	–	80	14	–	–
	Musquacook	14½	–	–	338,058		2	2	2	2	4	1	1	–	59	6	1	–
	Moosehead	19	–	–	383,979		17	1	4	4	4	–	–	–	45	8	3	1
	Seboomook	32	–	–	736,944		5	1	2	3	4	1	1	–	30	7	4	–
	Chesuncook	14½	–	–	326,118		3	1	2	3	3	1	1	–	34	7	3	–
	Chamberlain	15	–	–	356,881		3	2	2	2	4	1	–	1	50	9	–	–
	Total	123½	–	–	2,838,745	7	34	12	14	16	30	5	4	1	381	62	11	1
	GRAND TOTAL	379¾	47	11	10,017,998	27	351	56	67	78	112	29	17	14	2,308	374	101	52

Maine Forestry District--Inventory Equipment for Fire Patrol and Control--Season 1938

	DISTRICT	Trucks	Trailers	Motor Boats	Boats	Canoes	Outboard Motors	Power Pumps	Fire Hose	Hand Pumps	Pails	Axes	Mattocks	Shovels	Wangan No. Men
Northern	Allagash	2	–	–	–	5	3	2	4,900	90	162	100	3	119	25
	Madawaska	2	1	–	2	1	2	1	2,450	46	72	42	12	70	25
	Fish River	1	–	–	–	5	2	2	3,450	44	71	64	30	72	—
	Aroostook Waters	2	–	–	1	4	3	2	4,450	68	122	84	72	113	12
	Number Nine	1	–	–	1	1	–	1	1,200	50	87	81	59	124	—
	Total	8	1	–	4	16	10	8	16,450	298	514	371	176	498	62
Central	Mattawamkeag	3	1	–	–	2	1	1	1,400	51	177	133	16	129	40
	East Branch	1	–	–	3	8	4	1	1,350	72	333	241	229	259	20
	Davidson	1	–	–	–	3	1	1	1,350	46	67	43	1	35	16
	Katahdin	2	–	2	2	3	1	2	3,000	103	111	105	9	98	40
	Pleasant River	2	–	–	–	1	1	2	2,600	56	104	76	8	75	25
	Division Equipment not issued	–	–	–	–	–	–	–	3,000	32	117	91	—	28	—
	Total	9	1	2	5	17	8	7	12,700	360	909	689	263	624	141
Eastern	Passadumkeag	1	1	1	1	2	2	2	4,100	42	65	91	78	100	30
	Musquash-St. Croix	3	3	2	–	5	2	3	7,200	64	64	91	28	75	30
	East Machias	1	1	–	–	2	–	2	5,450	49	74	33	65	222	15
	Machias	2	1	1	–	5	1	3	5,800	83	50	57	53	123	25
	Narraguagus-Union River	2	–	–	–	2	–	2	5,300	53	64	76	60	100	15
	Total	9	6	4	1	16	5	12	27,850	291	317	348	284	620	115
Southern	Carrabassett	1	–	–	–	–	–	1	1,550	34	153	47	66	97	—
	Rangeley	3	1	1	3	–	–	2	4,750	67	429	150	74	147	—
	Dead River	1	1	–	–	–	–	3	4,500	56	137	19	68	146	—
	Moose River	2	1	–	–	2	1	3	4,050	30	254	101	184	247	—
	Parlin Pond	1	–	–	1	1	–	4	5,950	63	160	95	75	176	—
	Total	8	3	1	4	3	1	13	20,800	250	1,133	412	467	813	—
Western	Seven Islands	2	–	–	–	4	1	3	3,650	91	83	44	9	68	—
	Upper St. John	2	–	–	–	2	4	2	3,200	79	92	63	20	216	30
	Musquacook	1	–	–	1	3	2	1	2,200	39	33	28	6	28	—
	Moosehead	1	–	–	1	1	1	2	4,800	36	88	97	35	100	—
	Seboomook	2	–	–	–	1	1	1	2,050	36	44	62	8	58	—
	Chesuncook	2	–	1	2	2	2	1	1,600	45	82	77	12	53	—
	Chamberlain	–	–	–	3	4	4	1	2,000	45	81	59	31	83	—
	Total	10	—	1	7	17	15	11	19,500	371	503	430	121	606	30
	GRAND TOTAL	44	11	8	21	69	39	51	97,300	1,570	3,376	2,250	1,311	3,161	348

INVENTORY 1938

Maine Forestry District — December 31, 1938

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Req'n 1939
1	Alidades	Each	76			1			75	
2	Augers	"	16		1	4			13	
3	Axes, D. B.	"	68		4	1		1	70	
4	Axes, Forestry	"	1311	61	74	93		32	1260	
5	Axes, S. B.	"	1023	42	119	212		10	920	
6	Baskets, Pack	"	40	17	6	3			43	
7	Beds	"	78			5		1	72	
8	Beds, Cot	"	74	2	1				75	
9	Bed Springs	"	152	5	7	8			151	
10	Binoculars	"	69	5	5	4			70	
11	Bits	"	80			5			75	
12	Bit Braces	"	17			1		1	15	
13	Blankets, Heavy	"	370	32	22	6		5	381	
14	Blankets, Medium	"	774	28	46	27		10	783	
15	Blow Torches	"	20			2			18	
16	Boats	"	23		1	3			21	
17	Boat Oars	Pair	20	1	1	4			17	
18	Brooms	Each	92	14	39	23		1	107	
19	Brushes, Paint	"	86	19	44	57		2	71	
20	Branding Irons	"	8						8	
21	Cable Chains	Feet	12						12	
22	Cable, Lead	"	190		20	210				
23	Cable, Submarine	"	4200		250	1700			2750	
24	Caulking, Boat	Lbs.	10			10				
25	Canoes	Each	64	4	8	3			69	
26	Canoe Paddles	"	109	16	25	11		3	120	
27	Canoe Poles	"	46	4		3		1	42	
28	Cans, Gasoline	"	157	12	29	31		1	154	
29	Cans, G. I.	"	35	4	7	5		1	36	
30	Cant Dogs	"	82	2	4	4		1	81	
31	Chairs	"	196	6	10	1			205	
32	Chisel, Cold	"	22	2	4			3	23	
33	Chisel, Wood	"	25			1			24	
34	Crowbars	"	9	3	3				12	
35	Draw Shaves	"	15						15	
36	Drills, Rock	"	7					2	5	
37	Drills, Steel	"	33						33	
38	Emery Wheels	"	4			2			2	
39	Faucets	"	51		2	3			50	
40	Field Glasses	"	17	1		3			14	
41	Files	"	48	25	84	80			52	
42	Flags	"	67	13	8	17		1	57	
43	Flatirons	"	17	3				2	15	
44	Fly Sprayers	"	22	7	10	3			29	
45	Funnels	"	49	9	13	5		3	54	
46	Grease	Lbs.	59½	54	115	63		3½	108	
47	Grease Guns	Each	33		4	2			35	
48	Grinders, Bench	"	5						5	
49	Grinders, Electric	"								
50	Grindstones	"	30	1	1			1	30	
51	Hammers, Claw	"	87	2	11	7		3	88	
52	Hammers, Blacksmith	"	4	1	1	1			4	
53	Hammers, Sledge	"	11		3				14	
54	Handles, Axe	"	179	71	155	102		32	200	
55	Handles, Cant Dog	"	3	2	5	2			6	
56	Handles, Crosscut	"	134	8	12	5		2	139	
57	Handles, Mattocks	"	26	6	8	3			31	
58	Handles, Shovel	"	9	36	54	10			53	
59	Hose, Canvas Pack	"	8	7	13				21	
60	Hose, Coupling Repair Kit	"	16						16	
61	Hose, Hand Pump	"	102	51	163	131			134	
62	Hose, Linen I.P.T.	Feet	52650	4000	6000	1150		300	57200	
63	Hose, Nozzles	Each	112	4	8	8		4	108	
64	Hose, Rubber Lined H.T.	Feet	11250						11250	
65	Hose, Rubber Lined I.P.T.	"	32000		50	3200			28850	
66	Hose, Spanners	Each	163	32	42	16		5	184	
67	Hose, Suction	Feet	736	44	26	10			752	
68	Hose, Suction Strainers	Each	46	1	3				49	
69	Hose, Washers	"	149	200	182	35		36	260	

This column for use in Chief Warden's Inventory.

Complete Requisitions not available at this date.

INVENTORY 1938 (Continued)

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Req'n 1939
	KITCHEN UTENSILS									
70	Baker Sheets	Each	227	10	15	26		2	214	
71	Baking Pans	"	111	4	5	11		2	103	
72	Basins	"	549	11	49	36		26	536	
73	Bean Pots	"	65	7	20	9		4	72	
74	Biscuit Cutters	"	38	10	14	5		1	46	
75	Bowls	"	196	53	29	35		2	188	
76	Bread Pans	"	89	7	7	10		4	82	
77	Bread Toasters	"	35	1	7	2		3	37	
78	Bread Knives	"	22	6	9	2		1	28	
79	Broilers	"	16	1	3	1		1	17	
80	Butcher Knives	"	97	10	14	2		1	108	
81	Can Openers	"	79	5	17	3		1	92	
82	Coffee Pots	"	78	3	11	5		3	81	
83	Colanders	"	8	7	6	3			11	
84	Cups	"	628	30	69	31		15	651	
85	Dish Pans	"	127	6	21	11		1	136	
86	Double Boilers	"	45	9	20	5		1	59	
87	Doughnut Cutters	"	30	7	3				33	
88	Egg Beaters	"	44	5	10	4		1	49	
89	Forks	"	1176	21	108	48		6	1230	
90	Fry Pans	"	221	2	21	5		4	233	
91	Griddles	"	14		3			1	16	
92	Kettles	"	171	9	37	8		11	189	
93	Kettle Covers	"	112		31	11		5	127	
94	Knives, Table	"	1184	24	112	65		4	1227	
95	Meat Grinders	"	7	7	1			1	7	
96	Mixing Bowls	"	74	6	3	4		7	66	
97	Mixing Spoons	"	93	4	15	1		2	105	
98	Mops	"	55	7	17	5		1	66	
99	Paring Knives	"	31		14	1		1	43	
100	Pitchers	"	58	9	12	2		3	65	
101	Plates	"	1793	54	101	44			1850	
102	Salt and Peppers	"	142	11	23	11		3	151	
103	Saucers	"	286	42	42	19		9	300	
104	Sieves, Flour	"	76	7	12	2		1	85	
105	Soup Ladles	"	25	7	9	2			32	
106	Spoons	"	1596	87	158	46		16	1692	
107	Strainers	"	24	6	2				26	
108	Sugar Bowls	"	26	6	3	2		1	26	
109	Tea Kettles	"	102	3	11	21		1	91	
110	Tea Pots	"	87	1	10	11			86	
111	Wash Basins	"	116	1	12	8		1	119	
112	Wash Boards	"	60	8	12	6			66	
113	Wash Boilers	"	40	13	13	8			45	
114	Wash Tubs	"	63	8	15	7			71	
115	Water Pails	"	195	20	22	26			191	
116	Lamps	"	188	7	11	28		3	168	
117	Lamp Chimneys	"	133	13	35	15		2	151	
118	Lanterns	"	171		46	28			189	
119	Lantern Globes	"	90	6	38	15			113	
120	Machetes	"	5		5				10	
121	Mattocks	"	1353		34	75		1	1311	
122	Mattresses, Double	"	95	10	26	19		3	99	
123	Mattresses, Single	"	101	4	6	9		2	96	
124	Mirrors	"	64	7	14	2		3	73	
125	Motor Boats	"	8		1	1			8	
126	Motor Brackets	"	24	1	2				26	
127	Motors, Inboard	"	5						5	
128	Motors, Outboard	"	40	1	3	4			39	
129	Oakum	Lbs.	345	75	250	540			55	
130	Oil	Gals.	198		814½	729			283	
131	Oil Cloth	Yds.	68	75	38½	48½		9¼	48½	
132	Oil Measures	Each	28	3	7	1			34	
133	Oil Pumps	"	3						3	
134	Padlocks	"	191	9	41	16			216	
135	Pails, Canvas	"	723	60	97	25		9	786	
136	Pails, Galvanized	"	2843	76	127	290		90	2590	
137	Paint	Qts.	104½	194	630	597¼		18¼	119	
138	Pick Axes	Each	24	1	3				27	
139	Pillows	"	210	22	13	6		1	216	
140	Pillow Cases	"	189	51	9	46		1	151	

This column for use in Chief Warden's Inventory.

Complete Requisitions not available at this date.

INVENTORY 1938 (Continued)

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Req'n 1939
141	Pipe, Iron	Feet	1352	8	105	42			1415	
142	Planes, Carpenter	Each	18	1	1				19	
143	Post Hole Bars	"	17	2	6				23	
144	Post Hole Shovels	"	13	3	4	1			16	
145	Pumps, Hand	"	1451	178	179	54		6	1570	
146	Pumps, Power	"	52	1	1	2			51	
147	Pumps, Tire	"	24		6	3		2	25	
148	Pumps, Water	"	7	1					7	
149	Rakes, Garden	"	33	4	10	4		1	38	
150	Reels, Wire	"	17	3		4			13	
151	Roofing	Rolls	11¼	3	81½	79¼		¾	12¾	
152	Roof Jacks	Each	57	2	9	7			59	
153	Rope, Manilla	Feet	987		907	467		92	1335	
154	Saws, Buck	Each	59	6	17	10		1	65	
155	Saws, Crosscut	"	108	6	9	9		2	106	
156	Saws, Hack	"	12	12	7	6			13	
157	Saws, Hand	"	44	1	3	4			43	
158	Saw Filing Sets	"	9	3	5	1			13	
159	Screen Cloth	Yds.	77	66	18	43		6	46	
160	Screw Drivers	Each	105	3	11	3		2	111	
161	Scythes, Bush	"	90	5	16	10		2	94	
162	Scythes, Grass	"	50	10	15	11		2	52	
163	Scythe Stones	"	45	5	24	13			56	
164	Shellac	Qts.	8	20	27½	29½			6	
165	Shovels, Forestry	Each	1922	30	119	63		21	1957	
166	Shovels, L. H. R. P.	"	138	12	37	11			164	
167	Shovels, D. H. R. P.	"	1125		24	99		10	1040	
168	Siamese Connections	"	39		1	1			39	
169	Solder	Lbs.	18	10	12	5¼			24¾	
170	Soldering Irons	Each	15		1				16	
171	Snaths, Bush	"	52	3	9	8			53	
172	Snaths, Grass	"	42	2	6	7			41	
173	Snow Shoes	Pairs	18		1	1			18	
174	Spark Plugs	Each	59	42	259	203		15	100	
175	Staples	Lbs.	32½	53	131	123½		12	28	
176	Steel Squares	Each	23			3			20	
177	Stoves, Cook	"	90	1	6	5			91	
178	Stoves, Heater	"	28		2	2			28	
179	Stove Backs	"	5	13	16	11			10	
180	Stove Dampers	"	12	4	6	5			13	
181	Stove Grates	"	3	3	11	6			8	
182	Stove Pipe Dampers	"	52	5	13	7			58	
183	Stove Pipe Galvanized	Joints	195	21	56	38			213	
184	Stove Pipe Tin	"	117	24	28	41			104	
	Telephone Equipment									
185	Batteries	Each	155	446	1032	999		60	128	
186	Brackets, Wood	"	2083	2060	386	1328			1141	
187	Call Bells	"	58	1	4	4			58	
188	Coils	"	45		16	23			38	
189	Comealongs	"	45	1	5	1			49	
190	Connectors, Bridging	"	8		167	89		3	83	
191	Cords	"	16		16	14			18	
192	Desk Sets	"	59		1	1			59	
193	Extension Bells	"	25		5	3		1	26	
194	Friction Tape	Roll	12	8	35	30½		7	9½	
195	Fuses	Each	343	36	255	261		10	327	
196	Ground Rods	"	111	37	10	8		16	97	
197	Insulated Wire	Feet	2197	860	3300	2732			2765	
198	Insulators, Glass	Each	3265	2500	314	1627			1952	
199	Insulators, Split	"	6089	1750	3100	3895		6	5288	
200	Lineman's Climbers	"	82	1	4	8		1	77	
201	Line Leak Testers	"	6			1			5	
202	Pliers	"	141	7	13	13		3	138	
203	Protectors	"	188	27	30	25		2	191	
204	Protector Blocks	"	247	32	81	116		17	195	
205	Protector Carbons	"	231	172	169	115			285	
206	Receivers	"	15	5	7	12			10	
207	Ringers	"	41	4	8	16			33	
208	Safety Belts	"	25	1	5	1		1	28	
209	Sleeves, Splicing	"	731	450	3840	2372		65	2134	
210	Sleeve Tools	"	5	1	3				8	
211	Switches	"	142	33	66	43		13	152	

This column for use in Chief Warden's Inventory.

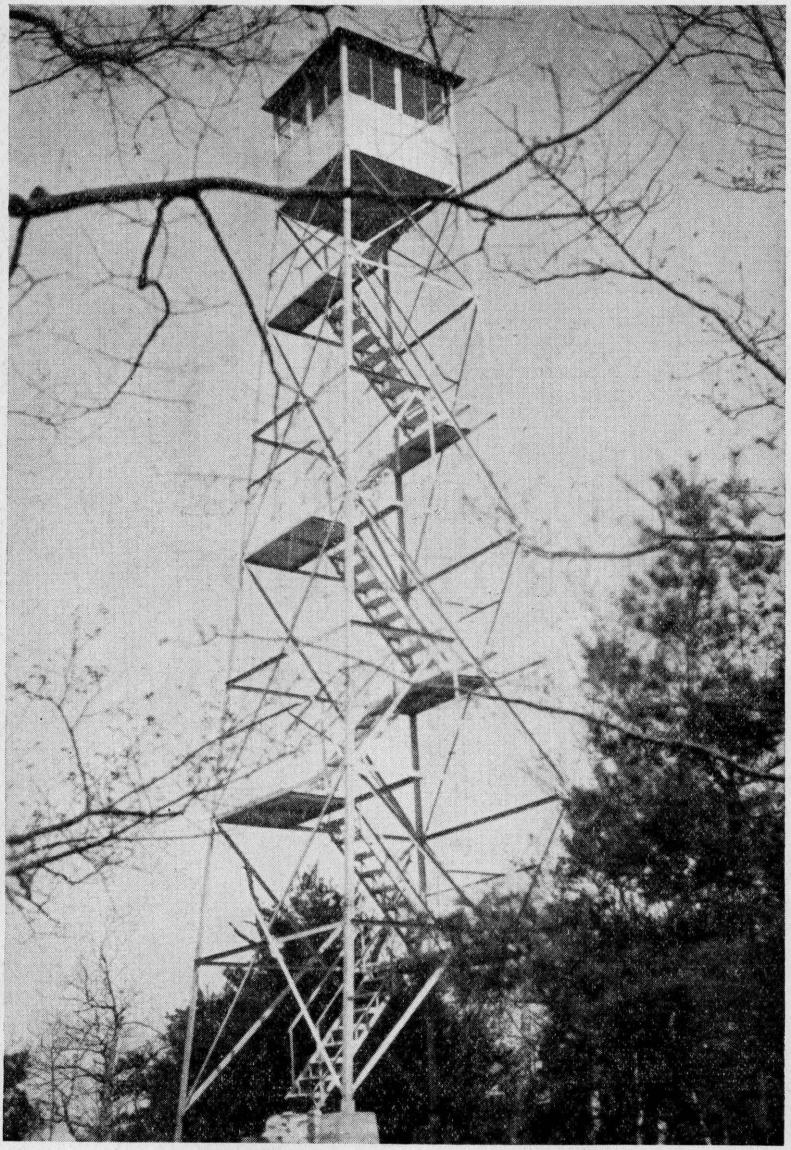
Complete Requisitions not available at this date.

INVENTORY 1938 (Concluded)

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Req'n 1939
212	Test Sets	Each	42	1	1	3	This column for use in Chief Warden's Inventory.	1	39	Complete Requisitions not available at this date.
213	Transmitters	"	8		3	1			10	
214	Wall Sets Complete	"	320	7	2	7			315	
215	Wire, Copperweld	Miles	5½	1	1	1½			5	
216	Wire Galv. No. 10	Coils	21	10	2¼	11			12¼	
217	Wire Galv. No. 12	"	112½	68	119	153			78½	
218	Wire Splicers	Each	135		2	10		4	123	
219	Tarpaulins	"	30			1		1	28	
220	Tents, Shelter	"	27	2					27	
221	Tents, Wall	"	22	4	1				23	
222	Tire Chains	Pairs	22	2	3	4			21	
223	Tires, Auto	Each	14	17	54	47			21	
224	Tower Tables	"	67						67	
225	Trailers	"	11		2	2			11	
226	Tree Pruners	"	15						15	
227	Trucks	"	43	1	8	7			44	
228	Trunks	"	14						14	
229	Tubes, Inner	"	16	12	58	58			16	
230	Varnish	Qts.	2½	12	11½	10		2	2	
231	Vises, Bench	Each	5	1	1				6	
232	Wangan	Men	348						348	
233	Wrenches, Monkey	Each	27		4			1	30	
234	Wrenches, Pipe	"	15	1	2	1		1	15	
235	Wrenches, S	"	40					1	39	
236	Wrenches	"	77		3				80	
	Miscellaneous Articles									
237	Clocks	"	11		2	3			10	
238	Cross-arms	"	58	60	64	116			6	
239	Dippers	"	806		58	22		9	833	
240	Guages, Rain	"	51			2			49	
241	Glasses, Water	"	61		14	14			61	
242	Levels	"	7			1			6	
243	Pans, Dust	"	29	1	3	2			30	
244	Pins, Rolling	"	39		1	1		3	36	
245	Sheets, Bed	"	64	6	4	10			58	
246	Tables	"	52		5	2		1	54	
247	Thermometers	"	54		1	1		1	53	
248	Towels	"	131		11	28		6	108½	
249	Turpentine	Qts.	1½			1				
250	Ambroid	Can			4	4				
251	Batteries, Automobile	Each	1		5	6				
252	Batteries, Hot Shot	"			7	5			2	
253	Batteries, Test Set	"	1		36	23			14	
254	Braces & Bolts	"	392		216	368			240	
255	Braces & Bolts (long)	"	138		54	92			100	
256	Gasoline, Tanks and Pumps	"			8				8	
257	Hack Saw Blades	"	4		24	24			4	
258	Pins	"	255		216	368			103	
259	Turnbuckles	"			8	8				

FOREST FIRE PROTECTION

ORGANIZED TOWNS



Mt. Agamenticus Lookout, Town of York, York County
Erected in 1934; 47 ft. high; elevation of mountain 692 ft.

ORGANIZED TOWNS

An effective system of forest fire protection for the Organized Towns still continues as one of the major problems to be given careful study by state forestry and town officials. Efforts to establish such a system require time in order to insure a definite plan which will be workable for all coöperating agencies. Nine years ago marked the beginning of uniting interests to set up a program of forest fire protection. During this period, many experiments were tried out, problems mastered, and other existing situations well on the way towards a solution.

To review this work is the purpose of this report, and to suggest recommendations which it is believed will be progressive steps towards perfecting the forest fire organization in the Organized Towns. It should be clearly understood that the State Forestry Department has not nor does it intend to take away or relieve the selectmen, assessors, or fire chiefs of any authority or responsibility on forest fires. The entire set-up is essentially a working, coöperative agreement between the state and towns.

Seasons of 1937 and 1938

With the many discussions and comparisons of fire seasons there stands out one factor which is particularly significant of the eastern and southern counties of Maine in relation to other sections of the state. This factor is a question of soil. In these sections, large areas are made up of a loose, sandy composition which permits the quick evaporation and absorption of snow and rain. This condition brings about an early fire season, which in some of the past years was a month in advance of the rest of the state. It has not been uncommon for early spring fires in April and the first of May to be going in Eastern and Southern Maine, while sufficient snow is still in the northern woods to permit good lumbering operations. Fire statistics bear out this statement, and it is especially true for the springs of 1937 and 1938.

1937

This fire season was characterized by a peculiar geographical situation. At different periods between July and September the woods became very dry. These periods of drought seemed to be prevalent only along the coastal towns and did not extend very far inland. Most of the fires occurred in this seacoast belt. Then by the latter part of August state-wide forest fire conditions became

critical. By Governor's Proclamation the open season on fishing throughout the state was suspended and it prohibited all smoking or the building of any and all fires out of doors in the woods. This ban went into effect August 31 and was not lifted until September 13.

1938

This season differed somewhat to that of 1937. In the spring of each year there is a period of one to two weeks where the previous year's dead leaves, grass, twigs, and brush quickly dry out before the new, green vegetation starts to come up. Such a condition opened the fire season of 1938. The result was a large number of spring surface fires. For the most part these did not get established into the ground, but simply flashed over the top of the surface. However, later field reports showed that sufficient heat was created to kill most of the tree growth caught in the path of the flames.

In May there were three fires and one in June which reached major proportions. The heavy loss on all these fires was the destruction of fast growing second-growth softwoods. The Waterford fire of one hundred acres was tragic because three dwellings and some live stock were quickly consumed. A high wind left the fighters utterly helpless to save any of the property.

The rest of the season continued normal until October, at which time conditions again became critical. The circumstances leading up to this hazardous period were very unusual in the history of the state. On September 21, a hurricane struck western Maine with such velocity that whole stands of forest growth were wind-thrown. This storm affected thirty towns severely and forty to a lesser degree in Androscoggin, Cumberland, Franklin, Kennebec, Oxford, and York counties. Based on reports from boards of selectmen, it was estimated that approximately 150,000,000 board feet of timber was wind-thrown, of which 90% was white pine. Of this total volume, approximately 60% can be considered merchantable.

This down timber created a situation which might later develop into a bad fire hazard problem. All available agencies were immediately thrown into action on an intensive schedule of fire hazard reduction work. In a remarkable short time great progress was made in which blocked roads were cleared, telephone and power communications reëstablished, safety strips constructed around down-timbered lots, tops of trees lopped off, and the slash piled in safe places to be burned later in the season. At this moment of writing, it is expected that this work will continue into the spring and summer of 1939, at

which time it is feared the fire hazard will be at its greatest. By October 15 sufficient alarm was felt for the safety of the forests in this hurricane area that by Governor's Proclamation a ban was placed on Oxford and Franklin counties. This ban suspended the open season on hunting and prohibited all smoking or the building of any and all fires out of doors in the woods from October 15 to October 20.

Comparison of Fire Statistics for 1937 and 1938

No. of Fires		Acreage		Damage	
1937	**1938**	**1937**	**1938**	**1937**	**1938**
100	81	4,355	10,929	$18,023	$25,706

By comparison there were less fires in 1938 than in 1937, yet a greater acreage was burned over with a corresponding greater damage. It is a coincidence that in May there were 37 fires for each of the two years. The higher acreage figure in 1938 is attributed to several fires which burned over big areas of pitch pine—scrub oak plains land with little appreciable damage. The damage figure for the same year includes estimates on the loss of several dwellings, live stock, quantities of cut pulpwood, logs, and other forest products. A more detailed account of the 1937-38 fire statistics is to be found at the end of this Organized Town report.

It should be understood that no attempt has been made to determine or even estimate the scenic loss resulting from fires which have left ugly scars upon the landscape for years to come. As Maine continues to be the vacationland for thousands of summer people to enjoy her lakes, streams, and forests, the aesthetic loss by forest fires becomes more apparent.

It appears significant to mention here that in 1891 by "An Act to Create a Forest Commission for the Protection of Forests" selectmen of towns were required to report all forest fires of more than an acre to the Forest Commissioner. In earlier years the record of fires is not complete. Some sent in reports while others did not. Since the inauguration of the county fire warden system in 1930 a better record has been kept of fires occurring in the Organized Towns. In 1937 the blank form for reporting fires was changed. A more detailed account is required and it is possible to better analyze the statistics.

In the appendix of this report there is an interesting chronology of forest fire statistics. Comparisons can be made between fires in the Maine Forestry District and the Organized Towns over a long period of years.

Forest Area

Formerly the accepted figure of forest land in the Organized Towns was estimated to be about 5,000,000 acres. In 1934-35, the Maine State Planning Board made two independent studies of the area of Maine. Based on this board's careful computation of all existing data, a new figure of 6,398,000 acres of forest land was determined for 492 towns, cities, and plantations. This should not be construed as the total forest acreage for the Organized Towns, as eight other towns receive fire protection under the Maine Forestry District set-up. The big increased figure is the result of a reclassification of lands which is made up of abandoned farm lands reverting to forest growth, small farm woodlots, woodlands pastured and unpastured, and tracts of land containing timber in sufficient quantity to permit lumbering operations. Approximately 80% of these areas receive some form of forest fire protection.

One essential need for better protection of these timbered lands is the preparation of maps which would show the different types of forest growth. Such maps would be of great value to the watchmen as a supplement to more accurately locate fires and possibly determine their seriousness. Areas of cutting operations could also be plotted on these maps.

Forest Fire Districts

A. Fire districts with warden service.

In the Organized Towns eight forest fire districts, with lookout towers, have been established since 1930, each under the supervision of a county fire warden. The size of each district is not determined by watersheds or ownerships, but rather by the number of fires occurring each year and the quickness with which a warden can travel over roads to the limits of his territory before the arrival of a fellow warden. Each year some district areas are changed as accessibility becomes more apparent to one warden or another. If funds become available, it is planned to establish another district in southern Oxford County. The hurricane of September 21, 1938 and the accompanying fire hazard warrants this addition.

Statistics have not been fully compiled for this report, but from the files of the, now discontinued, State Planning Board it will be possible to determine a total acreage figure by towns for each district. When this compilation has been made, the information should be valuable as a record of lands in need of protection against fire.

B. Fire districts without warden service.

In addition to the fire districts under the supervision of county wardens there are fire or tower districts without any warden service. There are seven of these and the size of each is dependent upon the visibility under normal conditions.

Not all of the Organized Towns receive tower or warden service. The remaining areas are sections in which the fire hazard is not very great. For the most part, the land division is 50% agricultural and 50% forested.

County Fire Wardens

Prior to 1930, the lack of proper supervision on forest fires prompted the Forestry Department to coöperate with the towns on this problem. It was not a question of the unwillingness of men to work, but one of lack of experience in forest fire fighting. The ability to handle men and exercise sound judgment are essential qualities for a capable forest fire warden. With this in mind, the Department inaugurated the county fire warden system.

After nine years of service, the work on forest fire suppression has been very commendable. These coöperating state-paid wardens have in no way taken away any authority from the local municipal officials. It is very gratifying to see the confidence that towns have placed in these wardens to handle and supervise fires.

As another progressive step in this warden service, the Department last year sent out a Certificate of Appointment to all boards of selectmen with the volunteer request that the names of the warden printed on each be appointed a deputy fire warden for that town. The response to this plan for the first year was approximately a 90% return. This was beyond expectation and shows the good spirit of coöperation between the state and towns in forest fire protection.

The work of the wardens has undoubtedly done much to ease the cost burden of the towns. This is particularly true in the free services of the wardens and the use of their equipment. Each warden is equipped with hand tools sufficient to outfit a crew of 30 to 40 men. As funds permit, power pumps and hose are gradually being distributed to each warden. Two wardens already have this heavier fire equipment. In addition, there is kept at Augusta for emergency use a truck loaded with hand tools and a power pump. Several times during the seasons of 1937 and 1938 this truck was called out to augment the forces of the wardens and to assist on fires where there was no warden service.

There still appears to be a misunderstanding among many as to the difference between a fire ward and a fire warden. These are two distinct jobs. The fire ward confines his work to dwelling fires and the fire warden to fires in the woods. The appointment and duties of a fire ward are clearly defined in a little pamphlet prepared by the State Insurance Department, and similarly defined are the appointment and duties of a deputy fire warden in a little manual issued by the Maine Forest Service.

The work of the county fire wardens is not wholly restricted to fire fighting. Other activities include posting of fire warnings, investigating slash violations, assisting in brush and slash disposal, checking on portable sawmill operations, visiting boys' and girls' summer camps, attending exhibits and displays, and coöperating in other general forestry problems. It is interesting to note that the eight county fire wardens travel approximately 100,000 miles each season in attending to their various duties.

Lookout Towers

There are fourteen lookouts in the Organized Towns. These are located on various peaks throughout the forested areas and constitute the backbone of the system by which forest fires are quickly detected and reported to the proper authorities. The territories overlooked by these towers overlap each other, and in many instances the watchmen have successfully triangulated on fires.

In some other states, tower visibility studies have been made. To increase the efficiency of fire detection, a similar study would be welcome for some of the towers in the Organized Towns. It is surprising to realize the acreage which is hidden from view because of intervening hills. In the event of a bad fire starting in one of these "blind spots" a visibility study for that tower would undoubtedly be extremely helpful.

In order for the watchmen to report fires to proper authorities, it is essential that a list of names and telephone numbers by towns be made out for each tower. These lists are prepared each spring from questionnaires sent to all towns after town meeting. The response to these blanks has been very satisfactory.

In 1938, the State of Maine for the use of its Forestry Department came into possession, by gift, of a twenty acre tract of land on top of Pleasant Mountain in the Town of Denmark, Oxford County, from the Appalachian Mountain Club. On this mountain top the Department has a sixty foot lookout which was erected in 1920.

HISTORY OF LOOKOUT TOWERS IN THE ORGANIZED TOWNS

Name of Tower	Location	County	Year Tower Erected	Material	Height of Tower	Type of Climb	Elevation of Mountain	Approach to Tower
1. *Agamenticus Mt.	York	York	1934	All steel	47 Ft.	Stairs	692 Ft.	½ mile by foot
2. Ossipee Mt.	Waterboro	York	1918	Steel with wooden cabin	24 Ft.	Ladder	1050 Ft.	½ mile by car ½ mile by foot
3. Blackstrap Hill	Falmouth	Cumberland	1931	All steel	47 Ft.	Stairs	505 Ft.	¼ mile by car
4. Mt. Ararat	Topsham	Sagadahoc	1931	All steel	47 Ft.	Stairs	255 Ft.	½ mile by car
5. Mountain Hill	Jefferson	Lincoln	1931	All steel	47 Ft.	Stairs	493 Ft.	½ mile by car
6. Frye Mt.	Montville	Waldo	1931	Steel with wooden cabin	14 Ft.	Ladder	1140 Ft.	2 miles by car ½ mile by foot
7. Dedham Bald Mt.	Dedham	Hancock	1921	All steel	60 Ft.	Stairs	1261 Ft.	1 mile by foot
8. Green Mt.	Effingham	Carroll, N. H.	1922	Steel with wooden cabin	47 Ft.	Stairs	1907 Ft.	3 miles by foot
9. Kelley Mt.	Brighton Pl.	Somerset	1925	Steel with wooden cabin	50 Ft.	Ladder	1700 Ft.	3 miles by foot
10. May Mt.	Island Falls	Aroostook	1920	Steel with wooden cabin	47 Ft.	Ladder	Unsurveyed	¾ mile by foot
11. Mt. Blue	Avon	Franklin	1931	All steel	47 Ft.	Stairs	3187 Ft.	4 miles by car 2 miles by foot
12. Mt. Zircon	Milton Pl.	Oxford	1921-22	Steel with wooden cabin	60 Ft.	Ladder	2240 Ft.	3¾ miles by foot
13. Chase Hill	Canaan	Somerset	1931	All steel	47 Ft.	Stairs	780 Ft.	½ mile by car ½ mile by foot
14. Pleasant Mt.	Denmark	Oxford	1920	Steel with wooden cabin	48 Ft.	Ladder	2007 Ft.	1½ miles by car 3 miles by foot
15. Bear Mt.	Hartford	Oxford	1934	Steel with wooden cabin	40 Ft.	Ladder	1207 Ft.	2 miles by car

*The original tower was erected in 1918, but was dismantled in 1934 and erected on Bear Mt.

Telephone Lines

There are approximately twenty-two miles of ground and metallic telephone lines in the Organized Towns owned and maintained by the Forestry Department. All of these run to the lookout towers, and for the most part are of typical tree line construction. Considerable work is done each year in bushing out the undergrowth to keep the lines clear.

The old Ossipee line of two miles was completely taken down and new wire strung over a more direct line through the woods.

The old Pleasant Mountain line of three miles was replaced with a copper metallic circuit.

On Mt. Blue two new miles of metallic circuit lines were constructed. This is a hook-up with a farmer's line which will enable the watchman to contact many in rural sections who previously have been hard to reach. With two telephone service companies' lines running to this tower, the surrounding towns should now receive better fire protection.

General repairs were made on all the other lines. The most radical change of construction work was the replacing of old wire connections with a new type of single tube sleeve. This new sleeve makes a better connection and improves the line service.

Roads and Trails

In the Organized Towns the Forestry Department either by lease or private permission maintains a right of way over approximately $18\frac{1}{2}$ miles of foot trails and $5\frac{1}{2}$ miles of small truck trail roads. All these distances of foot trails and roads are approaches to the lookout towers.

The problem of maintenance has not been too great. A good drainage system has been the great saving in the costs of repair construction work. The care and maintenance of these trails and roads is important because of their great public use. Each year thousands of people visit the lookout towers by foot and car.

Storehouses

One important addition to the forest fire protection system in the Organized Towns was the construction of two storehouses. One is located in Jefferson and available for service to Knox and Lincoln counties, and the other is in Lyman and available for service to York County. These storehouses are centrally located, and will serve as

an office headquarters—equipment base for two county fire wardens. The size of construction is twenty-four feet square. In each there is adequate space for an office, storage of a truck, work shop, and storage of hand tools overhead.

In addition, the Forestry Department acquired, by gift, from the Soil Conservation Service a truck storehouse in the Montville Development area. This structure will serve admirably as a headquarters-storehouse for the warden in Waldo County.

Property and Fire Fighting Equipment

Since the inauguration of the county fire warden system in 1930, the state has built up an investment in the Organized Towns which in the form of property, tools, and supplies amounts to $150,000.

Organized Town Property Inventory

Towers	14	Rain Shelters	9
Mileage Tel. Lines	22	Camp Sites	37
Watchman's Camps	5	Lunch Grounds	23
Storehouses	3	Tower Site	20 A.

Two years ago a new system of taking inventory was introduced with the result that a more accurate and complete account of property records has been made. In the back part of this report there is listed a complete record of all fire fighting equipment together with supplies for the year ending 1938.

As the county fire wardens become more and more responsible for supervising forest fires in the towns, it will be necessary to increase their equipment. Also, with three new storehouses it will be possible to take better care of the hand tools and heavier equipment already on hand, and to make additions as situations demand.

Camp Sites and Lunch Grounds

A recent highway survey shows a decided increase in the volume of traffic over the main road system in southern Maine. Many of the travelers, tourists, sportsmen, and picnic and trailer parties, in the course of their trips, stop at wooded places to eat. Since the inauguration of the CCC, efforts have been made to accommodate these parties, and at the same time insure their visits against forest fires. To date, there are thirty-seven camp sites and twenty-three lunch grounds located along the main highways in the Organized Towns.

A complete list of these sites will be found in the appendix of this report, together with a similar list for other sections of the state.

Forest Fire Coöperating Agencies

Forest fire protection in the Organized Towns is far reaching and includes the coöperation of many agencies. It is sufficiently important to mention a few of them because through their united efforts a better forest fire organization has been the result.

A. New Hampshire.

Of special interest is the coöperation of the New Hampshire Forestry Department. In 1920, a forty-eight foot steel tower was erected on Cedar Mountain in Parsonsfield, Maine. Then in 1922 this tower was dismantled and erected on Green Mountain in the town of Effingham, N. H. This new site gave a better commanding view of the towns bordering the Maine-New Hampshire line. New Hampshire pays the watchman's salary during the first half of each fire season and Maine the last half. Each spring a list of proper authorities to call in the event of fires occurring in the Maine towns is furnished this tower. This coöperative arrangement has proved to be very satisfactory and will undoubtedly be extremely valuable for the season of 1939 as a result of the hurricane of September 21, 1938, and the accompanying fire hazard.

B. Railroads.

In the State of Maine there are ten railroad companies operating over 1,949.21 miles of main track. A good portion of this track mileage runs through forested areas in the Organized Towns. In the last ten years statistics show that the number of fires, acreage burned, and damage caused have been less than one-half of one per cent. This notable record speaks well for the precaution taken by railroad companies to prevent forest fires.

Each year one company makes a canvass of slash violations along its right of way and sends a report to the Forest Commissioner. Any violations are carefully checked by the county fire wardens. In this manner many fire hazards are checked or eliminated.

For the most part, railroad companies have been careful to examine the spark arrestors and ashpans of their locomotives.

During critical times, railroad cars are available to patrol the main tracks.

C. Maine Fire Chief's Association.

This association has a large membership, and has fully cooperated with the Forestry Department. Through their courtesy an

invitation has always been extended to this office to either provide a speaker or attend the quarterly meetings. This Department appreciates these invitations as it affords an excellent opportunity to discuss openly and frankly the forest fire problems in each of the fire chief's respective towns or cities. Many helpful suggestions have resulted from these meetings.

D. Boys' and Girls' Camps.

An excellent plan was inaugurated two years ago by various camp directors and the Maine Development Commission with the Forestry Department coöperating to establish a junior guide examination. At the end of each camp period, examinations were held on subjects pertaining to woodcraft and general conservation. Before the camps opened, a week's conference was held at Camp Blazing Trail in Denmark for those directors, leaders, and councillors who cared to attend. One of the days was devoted to forestry, and this Department furnished a speaker and displayed exhibits. It is believed that much good will be accomplished from this plan, because of the opportunity to promote and stimulate forest conservation among the young boys and girls.

E. C.C.C.

During the past two years the C.C.C. has done much to ease the cost burden of the towns in forest fire suppression work. On several fires of major proportions the work of the C.C.C. crews was invaluable. In addition to this work, fire hazards were reduced or eliminated; storehouses, camp sites, lunch grounds, telephone lines, and trails and woods roads constructed. These fire prevention measures have added much to the forest fire protection organization in the towns. It is reasonably assured that the services of the C.C.C. will be available to June 30, 1940.

Other coöperating agencies were the Maine Forestry District, National Guard, Coast Guard, State Police, Fish and Game Department, W.P.A., local volunteer fire departments, clubs, associations, concerns, and many private individuals.

New England Summer Forest Fire Conference

In 1935 the New England Section of the Society of American Foresters promoted the idea of an annual summer forest fire conference rotating around the New England States. This idea has met with huge success.

The first conference was held in 1935 in Connecticut; 1936 in Maine; 1937 in Massachusetts, and 1938 in New Hampshire. Con-

ditions in southern New Hampshire are similar to those in southern Maine. Thus, the conference in 1938 was especially beneficial to the Maine county fire wardens who attended.

The idea of this annual conference is to see what the other New England States are doing in forest fire protection. Attendance at these meetings has been good when one considers the distance some of the delegations have had to travel. Most of the wardens return home with a feeling of having learned something new or useful in fire protection which could be adaptable to their own state.

Conclusion

After nine years of intensive work, it is felt that a sound system of forest fire protection has now been established in the Organized Towns. The county fire wardens and lookout towers form the basis upon which this organization functions and expands.

Each year new problems come up and a possible solution must be worked out for them. For the seasons 1937 and 1938 just passed several suggestions have been made which if adopted will greatly increase the efficiency of fire protection.

It is apparent that there is a definite need for a series of sectional spring meetings with boards of selectmen, assessors, and fire chiefs. Similar sectional spring meetings are held annually for the timberland owners in the Maine Forestry District. If these meetings were held, there would be an excellent opportunity to discuss forest fire problems and map out a schedule for each season.

Rather than wait till the end of the season to discuss problems with the county fire wardens, it seems advisable to hold monthly meetings. Each warden has some situation or experience which might be helpful to the other men. By frank discussion a possible solution of a problem might be found before the season ends.

There also appears to be an urgent need for a school of instruction on how to fight forest fires. It is realized that no two fires are alike, but certain fundamental plans of attack are common to all. A better knowledge of the behavior of fire under various conditions would be very helpful on suppression work. The United States Forest Service, for one of its regions, has published a fire control handbook. A similar, but modified, handbook could be prepared for Maine.

At this school of instruction a mock forest fire drill could be held and each step carefully analyzed. A careful study of the facts of past fires would also be very instructive.

There is always the need of additional funds to increase the personnel, purchase more fire fighting equipment, and construct more property, such as towers, telephone lines, storehouses, watchmen's camps, etc.

It is felt that the present system of forest fire protection in the Organized Towns is very satisfactory.

It should be appreciated that the present forest fire organization in the Organized Towns is a growing system which as it progresses will some day adequately protect all the forest lands against the ravages of fire.

ORGANIZED TOWNS

Financial Statement

1937

Receipts		
Balance on hand January 1, 1937	$12,042.59	
1937-38 Appropriation	6,695.00	
Federal Coöperation	13,000.00	
Miscellaneous	1.08	
Total Receipts	$31,738.67	
1937-38 Appropriation reduced	500.00	
		$31,238.67
Disbursements		
County Wardens (salary)	$5,212.00	
" " (expense)	1,721.22	
Watchmen (salary)	6,013.26	
" (expense) (telephone)	356.52	
Supervisor (salary)	2,700.00	
" (auto mileage expense)	620.60	
" (expense)	340.94	
Equipment	1,110.93	
Improvements	866.40	
Miscellaneous (insurance, publicity, etc.)	175.24	
		19,117.11
Balance January 1, 1938		$12,121.56

(Expense of fire fighting by the towns—$8,808.01)

ORGANIZED TOWNS
Financial Statement
1938

Receipts			
Balance on hand January 1, 1938		$12,121.56	
1938-39 Appropriation	$6,695.00		
Reduced	500.00		
		6,195.00	
Federal Coöperation		13,000.00	
Miscellaneous		25.17	
Total Receipts			$31,341.73
Disbursements			
County Wardens (salary)		$5,767.50	
" " (expense)		1,505.60	
Watchmen (salary)		6,328.11	
" (expense) (telephone)		365.54	
Supervisor (salary)		3,000.00	
" (auto mileage expense)		712.25	
" (expense)		373.36	
Equipment		1,896.54	
Improvements		1,291.43	
Miscellaneous (insurance, publicity, etc.)		218.10	
			21,458.43
Balance January 1, 1939			$9,883.30

(Expense of fire fighting by the towns—$3,973.95)

LOOKOUT STATIONS IN THE ORGANIZED TOWNS

Stations	Opened		Closed		No. Fires	
	1937	1938	1937	1938	1937	1938
‡Agamenticus Mt.	Apr. 30	Apr. 27	Oct. 6	Oct. 23	38	22
‡Bear Mt.	May 1	Apr. 26	Sept. 25	Oct. 24	17	24
‡Blackstrap Mt.	May 2	Apr. 24	Sept. 25	Oct. 23	36	53
Chase Hill	May 3	Apr. 25	Sept. 25	Sept. 22	25	9
Dedham Bald Mt.	Apr. 30	Apr. 26	Sept. 30	Sept. 18	68	21
Frye Mt.	May 4	Apr. 26	Sept. 30	Sept. 18	27	17
*Green Mt.	Apr. 26	Apr. 14	Oct. 3	Nov. 18	10	7
†‡Kelly Mt.	May 5	May 3	Oct. 10	Oct. 24	6	13
May Mt.	June 8	May 3	Oct. 17	Oct. 20	—	4
Mt. Ararat	Apr. 28	Apr. 21	Sept. 30	Sept. 18	174	183
Mt. Blue	June 3	May 2	Oct. 11	Sept. 30	13	13
Mountain Hill	May 1	Apr. 24	Oct. 1	Sept. 18	97	57
‡Ossipee Mt.	May 2	Apr. 22	Oct. 6	Oct. 23	28	27
‡Pleasant Mt.	May 5	Apr1 26	Sept. 30	Oct. 23	26	21
‡Zircon Mt.	June 3	May 2	Oct. 1	Oct. 23	9	15
					574	486

*In New Hampshire but owned by the Maine Forestry Department.
†Privately Owned.
‡These towers were reopened for a brief period of seven to ten days in October and closed on October 23 and 24, 1938.

FIRE RECORD 1937

Location	Date	Acreage	Cause	Damage
Androscoggin County				
Durham	May 3	100	Smoking	$100.00
Durham	June 25	10	Smoking	20.00
Durham	July 18	10	Smoking	20.00
Durham	July 26	2	Lumbering	5.00
Turner	Aug. 9	2	Smoking	10.00
Leeds	Aug. 15	5	Smoking	75.00
Aroostook County				
Sherman	May 3	3	Debris burning	.....
Bancroft	May 3	180	Railroad	682.00
Cumberland County				
Brunswick	May 2	2	Miscellaneous	.....
Standish	May 3	50	Smoking	200.00
Otisfield	May 4	320	Debris burning	1,550.00
Brunswick	July 23	2	Smoking	15.00
Scarboro	July 23	7	Smoking	.....
Falmouth	Aug. 11	20	Lightning	100.00
Brunswick	Aug. 18	4	Smoking	.....
Brunswick	Aug. 19	3	Smoking	.....
Brunswick	Sept. 5	200	Smoking	.....
Hancock County				
Hancock	May 2	40	Smoking	75.00
Bucksport	May 3	7	Smoking	35.00
Hancock	May 3	15	Smoking	150.00
Trenton	May 4	15	Debris burning	20.00
Surry	Aug. 14	3	Smoking	10.00
Dedham	Aug. 25	30	Smoking	100.00
Surry	Aug. 29	10	Smoking	25.00
Kennebec County				
Waterville	May 3	52	Debris burning	40.00
Augusta	May 3	50	Smoking	75.00
Augusta	Sept. 2	3	Smoking	15.00
Sidney	Sept. 15	12	Smoking	60.00
Sidney	Sept. 15	5	Brush burning	20.00
Manchester	Sept. 10	40	Brush burning	100.00
Vassalboro	June 2	2	Railroad	10.00
Knox County				
Appleton	May 31	8	Miscellaneous	340.00
Thomaston	May 3	70	Railroad	50.00
St. George	Aug. 14	25	Smoking	75.00
Warren	Aug. 25	1	Campfire	10.00
Lincoln County				
Nobleboro	Apr. 28	4	Smoking	20.00
Cushing	May 3	25	Debris burning	.....
Waldoboro	May 3	2	Debris burning	.....
Bremen	Aug. 13	150	Lumbering	400.00
Newcastle	Aug. 28	5	Railroad	.....
Oxford County				
Rumford	July 6	....	Smoking	350.00
Rumford	July 9	....	Smoking	400.00
Andover	July 22	18	Smoking	75.00
Penobscot County				
Clifton	May 3	10	Debris burning	50.00
Clifton	May 4	35	Smoking	30.00
Springfield	June 17	3	Incendiary	25.00
Millinocket	July 22	....	Smoking	.....
Corinth	Aug. 29	4	Smoking	40.00
Mattawamkeag	Sept. 4	1	Smoking	5.00
Piscataquis County				
Abbot	Sept. 7	1	Unknown	10.00
Sagadahoc County				
Topsham	Apr. 27	18	Railroad	40.00
Bowdoinham	May 2	20	Railroad	60.00
Richmond	May 3	30	Debris burning	.....
Richmond	May 3	60	Debris burning	150.00
Bowdoinham	May 4	20	Debris burning	50.00

FIRE RECORD 1937 (Concluded)

Location	Date	Acreage	Cause	Damage
Phippsburg	May 11	3	Smoking	15.00
Topsham	June 16	2	Railroad	.....
Topsham	July 20	2	Smoking	10.00
Phippsburg	July 27	3	Smoking	30.00
Phippsburg	Aug. 8	300	Campfire	600.00
Phippsburg	Aug. 13	300	Smoking	5,500.00
Somerset County				
Concord	May 1	20	Miscellaneous	50.00
Waldo County				
Lincolnville	May 11	5	Debris burning	15.00
Washington County				
Jonesport	May 2	1	Unknown	5.00
Crawford	May 2	4	Campfire	10.00
Robbinston	May 3	3	Smoking	.....
Calais	May 3	2	Smoking	10.00
Calais	May 4	4	Smoking	20.00
Jonesport	May 23	10	Smoking	.....
Trescott	May 29	5	Smoking	25.00
Jonesport	May 29	....	Unknown	.....
Columbia	May 30	75	Smoking	100.00
Jonesboro	June 13	....	Incendiary	.....
Steuben	July 11	1	Unknown	5.00
Addison	July 21	3	Unknown	45.00
Cutler	July 23	....	Smoking	.....
Baileyville	July 24	7	Smoking	153.00
Harrington	July 27	1	Smoking	5.00
Rogue Bluff	July 29	2	Unknown	10.00
Whitneyville	Aug. 8	3	Unknown	15.00
Baring	Aug. 11	3	Smoking	.....
Lubec	Aug. 15	1	Smoking	20.00
Baileyville	Aug. 17	200	Smoking	1,498.00
Trescott	Aug. 21	5	Smoking	160.00
Dennysville	Aug. 24	2	Railroad	10.00
Pembroke	Aug. 26	1	Smoking	5.00
Charlotte	Aug. 29	3	Smoking	15.00
Crawford	Aug. 30	1	Campfire	5.00
Princeton	Aug. 31	2	Campfire	25.00
Charlotte	Sept. 2	....	Campfire	.....
Baring	Sept. 4	4	Lightning	25.00
Cutler	Sept. 10	2	Smoking	.....
York County				
Hollis & Limington	Apr. 25	400	Debris burning	.....
Parsonsfield	May 1	25	Debris burning	100.00
Biddeford	May 2	3	Debris burning	15.00
Waterboro	May 2	1	Smoking	5.00
Biddeford	July 26	1200	Smoking	3,600.00
Waterboro	Aug. 15	2	Smoking	.....
No. Kennebunkport	Aug. 26	25	Smoking	200.00
No. Kennebunkport	Sept. 7	5	Campfire	25.00

FIRE RECORD 1938

Location	Date	Acreage	Cause	Damage
Androscoggin County				
Durham	Apr. 28	2	Smoking	75.00
Aroostook County				
Haynesville	June 13	....	Campfire	.....
Castle Hill	June 16	15	Incendiary	75.00
Bancroft	June 28	2	Miscellaneous	10.00
Cumberland County				
Scarboro	Apr. 7	35	Debris burning	50.00
Casco	Apr. 20	15	Debris burning	.....
Brunswick	May 2	30	Debris burning	.....
New Gloucester	May 3	2500	Smoking	1,800.00
South Portland	May 3	20	Debris burning	10.00
Gray	May 4	10	Unknown	50.00
Gray	May 4	3	Unknown	10.00
Standish	May 5	5	Debris burning	75.00
Casco	May 5	1	Smoking	15.00
Freeport	Aug. 29	2	Smoking	85.00
Standish	Sept. 3	5	Smoking	20.00
Franklin County				
Dixfield	Apr. 27	10	Smoking	20.00
Strong	May	1	Smoking	1.00
Avon	May	5	Smoking	25.00
Hancock County				
Bucksport	May 4	105	Campfire	508.00
Winter Harbor	May 9	50	Debris burning	1,000.00
Kennebec County				
China	Apr. 10	6	Smoking	400.00
Litchfield	Apr. 24	55	Debris burning	3,030.00
Litchfield	May 4	2	Miscellaneous	1,100.00
Litchfield	May 9	7	Debris burning	15.00
Pittston	May 19	7	Smoking	10.00
Litchfield	Nov. 5	5	Smoking	6.00
Knox County				
Union	May 8	45	Debris burning	50.00
Georgetown	Nov. 5	1	Smoking	.....
Lincoln County				
New Castle	Apr. 28	10	Smoking	20.00
Dresden	May 5	150	Debris burning	825.00
Jefferson	May 5	20	Smoking	60.00
Jefferson	July 26	13	Debris burning	.....
Oxford County				
Paris	Apr. 26	40	Debris burning	150.00
Hartford	Apr. 28	10	Debris burning	50.00
Waterford	May 2	100	Miscellaneous	3,600.00
Lovell	May 2	35	Campfire	220.00
Oxford	May 3	10	Smoking	100.00
Albany	June 7	5	Smoking	25.00
Milton Place	Aug. 27	100	Lightning	200.00
Denmark	Oct. 17	7	Smoking	.....
Norway	Nov. 5	1	Smoking	10.00
Penobscot County				
East Millinocket	May 1	....	Unknown	.....
Medway	May 4	4	Smoking	6.00
East Millinocket	May 5	....	Smoking	.....
Bradley	May 5	105	Debris burning	250.00
Millinocket	May 5	....	Smoking	.....
Millinocket	May 5	1	Railroad	.....
Passadumkeag	Nov.	....	Smoking	.....
Piscataquis County				
Atkinson	Apr. 26	200	Incendiary	150.00
Sagadahoc County				
Bowdoin	Apr. 24	40	Smoking	40.00
Topsham	Apr. 24	5	Debris burning	50.00
Topsham	June 2	1	Miscellaneous	.....
Topsham	June 9	2	Smoking	10.00

FIRE RECORD 1938 (Concluded)

Location	Date	Acreage	Cause	Damage
Somerset County				
Jackman	Apr. 26	....	Smoking	.....
New Portland	June 6	50	Lightning	150.00
Waldo County				
Winterport	Apr. 24	3	Debris burning	10.00
Belfast	Apr. 26	40	Smoking	.....
Searsport	Apr. 27	25	Debris burning	30.00
Lincolnville	Apr. 27	5	Debris burning	30.00
Belmont	May 5	15	Brush burning	10.00
Palermo	May 6	50	Debris burning	100.00
Belmont	June 1	500	Incendiary	7,118.00
Stockton	Aug. 10	1	Smoking	.....
Washington County				
Cutler	May 5	37	Smoking	32.00
Pembroke	May 5	52	Smoking	130.00
Perry	May 9	8	Smoking	40.00
York County				
Hollis	Apr. 20	700	Incendiary	.....
Shapleigh	Apr. 20	27	Smoking	.....
Lyman	Apr. 23	1	Debris burning	5.00
Biddeford	Apr. 24	45	Debris burning	.....
Cornish	Apr. 26	3	Smoking	15.00
Wells	Apr. 27	125	Lumbering	100.00
Buxton	Apr. 27	3	Smoking	.....
Sanford	Apr. 27	1	Campfire	5.00
York	May 2	75	Lumbering	325.00
Limington	May 4	90	Brush burning	50.00
Sanford	May 4	500	Incendiary	1,500.00
Hollis	May 4	4000	Incendiary	.....
Shapleigh	May 5	750	Smoking	1,850.00
Shapleigh	May 5	15	Debris burning	.....
Sanford	Oct. 13	5	Smoking	.....

SUMMARY OF FOREST FIRES FOR 1937-1938 BY MONTHS, COUNTIES AND CAUSES

	No. of Fires		Acreage		Damage	
	1937	1938	1937	1938	1937	1938
By Months:						
April	3	25	422	1,406	$ 60	$4,230
May	37	37	1,244	8,808	4,032	13,767
June	5	8	17	575	55	7,388
July	17	1	1,258	13	4,723	....
August	27	3	1,110	103	8,898	285
September	11	1	273	5	260	20
October	..	2	....	12	....	....
November	..	4	....	7	....	16
	100	81	4,355	10,929	$18,023	$25,706
By Counties:						
Androscoggin	6	1	129	2	$230	$75
Aroostook	2	3	183	17	682	85
Cumberland	9	11	608	2,626	1,865	2,115
Franklin	..	3	....	16	....	46
Hancock	7	2	120	155	415	1,508
Kennebec	7	6	164	82	320	4,561
Knox	4	2	104	46	475	50
Lincoln	5	4	186	193	420	905
Oxford	3	9	18	308	825	4,355
Penobscot	6	7	53	110	150	256
Piscataquis	1	1	1	200	10	150
Sagadahoc	11	4	758	48	6,455	100
Somerset	1	2	20	50	50	150
Waldo	1	8	5	639	15	7,298
Washington	29	3	345	97	2,166	202
York	8	15	1,661	6,340	3,945	3,850
	100	81	4,355	10,929	$18,023	$25,706
By Causes:						
Brush Burning	16	24	1,015	834	$2,110	$5,790
Campfire	7	4	313	141	675	733
Incendiary	2	6	3	5,915	25	8,843
Lightning	2	2	24	150	125	350
Lumbering	2	2	152	200	405	425
Miscellaneous	3	4	30	105	390	4,710
Railroad	8	1	299	1	852	....
Smokers	53	35	2,508	3,570	13,351	4,795
Unknown	7	3	11	13	90	60
	100	81	4,355	10,929	$18,023	$25,706

INVENTORY 1938

Organized Towns — December 31, 1938

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Requisition for 1939
1	Alidades	Each	13						13	
2	Augers	"								
3	Axes, D. B.	"								
4	Axes, Forestry	"	30	12	9	1		3	35	3
5	Axes, S. B.	"	48	21	19	4		9	54	15
6	Baskets, Pack	"								
7	Beds (Double Deck)	"	4						4	
8	Beds, Cot	"	1						1	
9	Bed Springs	"								
10	Binoculars	"	13			1	2		10	3
11	Bits	"								
12	Bit Braces	"								
13	Blankets, Heavy	"	2						2	
14	Blankets, Medium	"	4						4	
15	Blow Torches	"								1
16	Boats	"								
17	Boat Oars	Pair								
18	Brooms	Each	21	1	4	5			20	6
19	Brushes, Paint	"	16	22	20	21		1	14	13
20	Branding Irons	"								
21	Cable Chains	Feet								
22	Cable, Lead	"								
23	Cable, Submarine	"								
24	Caulking, Boat	Lbs.								
25	Canoes	Each								
26	Canoe Paddles	"								
27	Canoe Poles	"								
28	Cans, Gasoline	"	4						4	
29	Cans, G. I.	"								
30	Cant Dogs	"								
31	Chairs	"	3						3	2
32	Chisel, Cold	"								
33	Chisel, Wood	"	1						1	
34	Crowbars	"								
35	Draw Shaves	"								
36	Drills, Rock	"			1				1	
37	Drills, Steel	"								
38	Emery Wheels	"								
39	Faucets	"	1	1					1	1
40	Field Glasses	"	5	1					5	1
41	Files (Wood Rasps)	"		7	5				5	2
42	Flags	"	22	12	10	14			18	4
43	Flatirons	"								
44	Fly Sprayers	"								
45	Funnels	"		1						
46	Grease	Lbs.								10
47	Grease Guns	Each								1
48	Grinders, Bench	"								
49	Grinders, Electric	"								
50	Grindstones	"								
51	Hammers, Claw	"	13	8	5			1	17	2
52	Hammers, Blacksmith	"								
53	Hammers, Sledge	"		1						
54	Handles, Axe	"	22	39	33	38		1	16	24
55	Handles, Cant Dog	"								
56	Handles, Crosscut	"	6	8	6				12	2
57	Handles, Mattocks	"								
58	Handles, Shovel	"								
59	Hose, Canvas Pack	"								
60	Hose, Coupling Repair Kit	"								
61	Hose, Hand Pump	"								
62	Hose, Linen I.P.T.	Feet	2100	1000	1300			200	3200	
63	Hose, Nozzles	Each	5	1	1				6	6
64	Hose, Rubber Lined H.T.	Feet								
65	Hose, Rubber Lined I.P.T.	"	800		1000	300		150	1350	3800
66	Hose, Spanners	Each	6	10	14				20	24
67	Hose, Suction	Feet	30		10				40	60
68	Hose, Suction Strainers	Each	2						2	3
69	Hose, Washers	"								

INVENTORY 1938 (Continued)

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Requisition for 1939
	Kitchen Utensils									
70	Baker Sheets	"	3		1				4	
71	Baking Pans	"	1						1	
72	Basins	"	12						12	
73	Bean Pots	"								
74	Biscuit Cutters	"								
75	Bowls	"	2						2	
76	Bread Pans	"								
77	Bread Toasters	"								
78	Bread Knives	"								
79	Broilers	"								
80	Butcher Knives	"	2						2	
81	Can Openers	"	1						1	
82	Coffee Pots	"	3						3	
83	Colanders	"								
84	Cups	"	12						12	
85	Dish Pans	"	2						2	
86	Double Boilers	"	2						2	
87	Doughnut Cutters	"								
88	Egg Beaters	"								
89	Forks	"	11						11	
90	Fry Pans	"	2		1				3	
91	Griddles	"								
92	Kettles	"	3						3	
93	Kettle Covers	"	1						1	
94	Knives, Table	"	12						12	
95	Meat Grinders	"								
96	Mixing Bowls	"	1						1	
97	Mixing Spoons	"	3						3	
98	Mops	"	2						2	
99	Paring Knives	"	1						1	
100	Pitchers	"								
101	Plates	"	12						12	
102	Salt and Peppers	"	2						2	
103	Saucers	"	11						11	
104	Sieves, Flour	"	2						2	
105	Soup Ladles	"								
106	Spoons	"	16						16	
107	Strainers	"								
108	Sugar Bowls	"								
109	Tea Kettles	"	3			1			2	
110	Tea Pots	"	1						1	
111	Wash Basins	"	2						2	
112	Wash Boards	"	2						2	
113	Wash Boilers	"	1						1	
114	Wash Tubs	"	1						1	
115	Water Pails	"	3						3	
116	Lamps	"	7						7	
117	Lamp Chimneys	"								
118	Lanterns	"	24	33	34	8		7	43	20
119	Lantern Globes	"								
120	Machetes	"								
121	Mattocks	"	78	29	19	1		2	94	10
122	Mattresses, Double	"								
123	Mattresses, Single	"	6	2	1	2			5	
124	Mirrors	"								
125	Motor Boats	"								
126	Motor Brackets	"								
127	Motors, Inboard	"								
128	Motors, Outboard	"								
129	Oakum	Lbs.								
130	Oil	Gals.	41¾	150	195	154½			82¼	190
131	Oil Cloth	Yds.	1						1	18
132	Oil Measures	Each	2	5	5				7	
133	Oil Pumps	"								
134	Padlocks	"	31	3	7			1	37	
135	Pails, Canvas	"	13	43	3			1	15	
136	Pails, Galvanized	"	79	52	41	6		13	101	34
137	Paint	Qts.		88	68	53	4		11	68
138	Pick Axes	Each	1						1	

INVENTORY 1938 (Continued)

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Requisition for 1939
139	Pillows	"								
140	Pillow Cases	"								
141	Pipe, Iron	Feet		120						156
142	Planes, Carpenter	Each								
143	Post Hole Bars	"								
144	Post Hole Shovels	"								
145	Pumps, Hand	"	125	38	39	29		10	125	32
146	Pumps, Power	"	2	1	1				3	2
147	Pumps, Tire	"								
148	Pumps, Water	"								
149	Rakes, Garden	"	16	1	4	3			17	4
150	Reels, Wire	"								
151	Roofing	Rolls								
152	Roof Jacks	Each								
153	Rope, Manila	Feet	130	180	190	155		25	140	195
154	Saws, Buck	Each	2	3	1			1	2	1
155	Saws, Crosscut	"	3	4	3				6	1
156	Saws, Hack	"								
157	Saws, Hand	"	3	14	4			1	6	6
158	Saw Filing Sets	"								
159	Screen Cloth	Yds.								
160	Screw Drivers	Each		2						3
161	Scythes, Bush	"	8	4	3			1	10	1
162	Scythes, Grass	"	3	2	2	1		1	3	1
163	Scythe Stones	"								
164	Shellac	Qts.								
165	Shovels, Forestry	Each	116	57	55	14		9	148	24
166	Shovels, L. H. R. P.	"	1			1				
167	Shovels, D. H. R. P.	"								24
168	Siamese Connections	"	3	1	1				4	2
169	Solder	Lbs.								2
170	Soldering Irons	Each								1
171	Snaths, Bush	"	6	4	5			1	10	1
172	Snaths, Grass	"		1	1				1	
173	Snow Shoes	Pairs								
174	Spark Plugs	Each								
175	Staples	Lbs.								
176	Steel Squares	Each								
177	Stoves, Cook	"	3						3	
178	Stoves, Heater	"	1						1	
179	Stove Backs	"								
180	Stove Dampers	"								
181	Stove Grates	"								
182	Stove Pipe Dampers	"								
183	Stove Pipe Galvanized	Joints								
184	Stove Pipe Tin	"	2	2	5	3			4	
	Telephone Equipment									
185	Batteries	Each	12	42	41	53				41
186	Brackets, Wood	"	111	200	236	105		15	227	25
187	Call Bells	"		1						1
188	Coils	"								
189	Comealongs	"								
190	Connectors	"	11	1					11	
191	Cords	"								
192	Desk Sets	"	2	1					2	2
193	Extension Bells	"								
194	Friction Tape	Roll	2	33	13	12		1	2	18
195	Fuses	Each		16						16
196	Ground Rods	"								
197	Insulated Wire	Feet	50	700	700	500			250	150
198	Insulators, Glass	Each	128	218	438	69		21	476	50
199	Insulators, Split	"	466	100	924	281		110	999	25
200	Lineman's Climbers	"	10	1	1		1		10	
201	Line Leak Testers	"								
202	Pliers	"	13	3	2			4	11	6
203	Protectors	"								
204	Protector Blocks	"								
205	Protector Carbons	"								
206	Receivers	"								
207	Ringers	"								
208	Safety Belts	"		1	1				1	

INVENTORY 1938 (Concluded)

No.	Article	Unit	Inventory 1937	Requisition for 1938	Received 1938	Broken or Used	Trans. or Loaned	Unaccounted for	Inventory 1938	Requisition for 1939
209	Sleeves, Splicing	"	115	74	78	28			165	50
210	Sleeve Tools	"								
211	Switches	"	1			1				1
212	Test Sets	"	1						1	
213	Transmitters	"								
214	Wall Sets Complete	"	4	1			1		3	1
215	Wire, Copperweld	Miles								
216	Wire, Galv. No. 10	Coils								
217	Wire, Galv. No. 12	"	4	10	10	1½			12½	11
218	Wire Splicers	Each								
219	Tarpaulins	Each	8	4	3	2			9	1
220	Tents, Shelter	"								
221	Tents, Wall	"								
222	Tire Chains	Pairs			3				3	
223	Tires, Auto	Each		16	27	27				19
224	Tower Tables	"	13						13	
225	Trailers	"								3
226	Tree Pruners	"	2						2	
227	Trucks	"	8		1	1			8	1
228	Trunks	"								
229	Tubes, Inner	"		16	27	27				19
230	Varnish	Qts.								
231	Vises, Bench	Each								
232	Wangan	Men								
233	Wrenches, Monkey	Each		1						1
234	Wrenches, Pipe	"								
235	Wrenches, S	"								
236	Wrenches	"								
	Miscellaneous Articles									
237	Kits, First Aid	Each		3	11				11	1
238	Supply Tanks	"	7	1	2		1		8	2
239	Wheelbarrows	"	1	2	2				3	
240	Tool Boxes	"	6	4	4				10	1
241	Thermometers	"	11	12	1	5		1	6	10
242	Rain Gauges	"	5	2					5	
243	Red Lead	Qts.		4	24	24				
244	Linseed Oil	"		34	12	12				9
245	Turpentine	"		2	11	10			1	9

INSECT CONTROL

Insect Control

Climatic conditions during the past two years have continued favorable to the increase of insects. Although snow has not been deep, there has been a fairly steady coverage during the winter months. The springs have been relatively late so that once warm weather has set in there has been no cold periods to destroy insects which might have emerged. The greater part of the damage to forest areas has come from foreign insect pests which have invaded the state. Each year sees an increase in the number of inquiries and requests for assistance. Many of these requests, which should be answered by personal calls, have to be handled through correspondence.

Coöperation from timberland owners has been freely given, both in the way of finances and in supplying men. Several of the companies are making a point of surveying their own lands for insect trouble and keeping this office informed of the results. Coöperation from the fire warden force has been exceptionally fine. During the 1938 season, over 450 reports were received from the wardens on spruce sawfly conditions alone. These reports formed the basis for parasite releases. The majority of the nearly thirty-nine million parasites liberated were distributed in the field by the wardens.

The work of the Bar Harbor laboratory has proved of great value. New and better methods of control are continually being worked out. New sprays are tried out under Maine conditions so that the Department is in a position to advise individuals correctly. Parasites of a number of different forest insects have been reared, and studied in the field. The interchange of parasites working in one part of the state into other infested regions has been continued.

Surveys to collect data on distribution and damage being done by the more important forest insects such as European Spruce Sawfly, Yellow-headed Spruce Sawfly, Balsam Woolly Aphid, Beech Scale, and Birch Leaf Miner have been made. A number of sample plots for yearly examinations have been established.

The usual examination for tree surgeons was held. This law continued to be of real public benefit. As in the past, the real weakness has been the lack of funds to properly supervise the work.

FOREST INSECTS

There have been heavy infestations of quite a number of forest insects during the past two years. The advent of new foreign insects calls for strong control measures.

(1) **Balsam Woolly Aphid (Adelges piceae).** Groups of dead and dying fir are still quite noticeable in many sections of Maine. Red topped fir will usually be found to have white masses of these insects on the trunk. Along the coast the typical injury is stunting and swelling of branches, bringing about a more gradual death. Sample plots show that the insect is about holding its same level of abundance.

(2) **Beech Scale (Cryptococcus fagi).** This foreign invader is continuing to kill large amounts of beech in eastern and central Maine. The white, felt-like masses on the trunks of the trees are in reality large numbers of the insects which live by sucking the sap from the tree. The insect is followed by a fungus disease which rapidly kills the trees. In 1938, over eleven hundred acres of beech were scouted on the Acadia National Park. Thirty-seven infestations were located, mapped, and control measures planned for. A lime sulphur spray at a dilution of five to one hundred was applied to 1,027 trees. This required 4,475 gallons, and a check on results showed the project to be very successful. This project was carried on in coöperation with the National Park Service.

(3) **Birch Case Bearer (Coleophora salmani),** which was first discovered on Mt. Desert Island, has spread to several localities on the mainland and in 1937 was found as far east as Cutler.

(4) **Birch Leaf Mining Sawfly (Phyllotoma nemorata).** This European insect is gradually being brought under control. Parasites have been released in most sections of the state where white birch abounds. Fairly heavy infestations still occur in the Kennebec Valley.

(5) **Forest Tent Caterpillar (Malacosoma disstria).** A heavy outbreak of this insect occurred in the poplar stands east of Moosehead Lake. These outbreaks are invariably brought under control by native parasites.

(6) **Hemlock Looper (Ellopia fiscellaria).** The outbreak of this insect on Mt. Desert Island is continuing, but was not so severe this year. Some spraying has been resorted to.

(7) **Larch Case Bearer (Coleophora laricella).** Considerable larch has been killed by this insect, particularly in the older stands. During 1938 the outbreak which had been severe for a number of years had greatly subsided.

(8) **Larch Sawfly (Lygaeonematus erichsoni).** No outbreaks of this insect were reported in Maine although it is becoming adundant in some sections of the Northeast. The last outbreak of this insect brought about the death of practically all of the larch in the state. Laboratory experiments carried on in 1938 gave from a thirty to fifty per cent control through use of the cocoon parasite **Microplectron fuscipennis** which is being raised to combat the European spruce sawfly. The habits of the two insects are similar so that use of this parasite may prove of considerable value when outbreaks do occur.

(9) **European Spruce Sawfly (Diprion polytomum).** A detailed survey of this very serious insect pest is contained in this report.

(10) **Yellow Headed Spruce Sawfly (Pikonema alaskensis).** This new invader, sometimes called the Alaskan or red-headed spruce sawfly, is proving very destructive to spruce plantations in many sections of the state. Some of these plantations have already been practically entirely destroyed. The Augusta Water District sprayed a number of their plantations in 1938 with practically complete control. In 1937, Mr. Nash made a study of this insect and a report on this will be published in the Journal of Economic Entomology this year.

(11) **Black-headed Budworm (Peronea variana).** This insect attacks spruce, fir, and hemlock, feeding on the foliage much the same as the spruce budworm. The caterpillars are pale green with black head. They feed first on the buds. When full grown they are about one-half inch long. Noticeable damage has occurred on Mt. Desert Island.

(12) **Eastern Spruce Bark Beetle (Dendroctonus piceaperda).** Severe outbreaks of this insect have occurred in several sections of the Rangeley region where a large amount of spruce has already been killed. It is felt that most of this damage could have been prevented if early reports on the outbreaks had been received. Following defoliation by the spruce sawfly, which will leave many trees in a weakened condition, new outbreaks may be expected. In a similar way, areas of blow-down spruce will act as breeding areas for the bark beetle.

(13) **Spruce Needle Miners (Taniva albolineana** and **Epinotia nanana**) have both been prevalent along the coast.

(14) **Ratzeburg's Spruce Pest (Enarmonia ratzeburgiana)** has caused considerable damage to spruce on Mt. Desert Island, kill-

ing the tips of the branches. Experimental spraying has given some measure of control but is not considered satisfactory yet. There is real need of further work on this insect.

(15) **Red Pine Sawfly (Neodiprion sp.).** A very heavy outbreak of an unknown sawfly was found defoliating red pine in Passadumkeag in 1937. Native parasites were swarming in this area in 1938, and some of these are being studied for possible use against the European spruce sawfly.

(16) **Pine Needle Miner (Paralechia pinifoliella).** Widespread outbreaks of this insect have occurred in pitch pine stands in several sections of the state. Where these stands had a particularly high value, such as around camps and in park areas, considerable spraying has been done. Lead arsenate, four pounds; nicotine sulphate, one pint; and miscible oil, two gallons; to each one hundred gallons of water has proved very effective.

(17) **Scotch Pine Weevil (Hypomolyx piceus)** was found destroying a Scotch pine plantation in Castine. This is the first time this insect has been found in Maine and an effort to eradicate it is being made.

(18) **Balsam Gall Midge (Cecidomyia balsamicola).** This insect, which forms galls at the base of the needles causing the foliage to drop off in the fall, was so prevalent in one section of Maine the harvesting of Christmas trees was discontinued.

(19) **Birch Sawfly (Hylotoma pectoralis).** This yellowish, red headed sawfly larva was very abundant at Portage, Maine, on white birch.

(20) **Strawberry Root Weevil (Brachyrhinus ovatus).** Severe damage to seedling pine in two forest nurseries was reported. Stems of trees were girdled near the ground level.

SHADE TREE PESTS AND CARE

The interest shown by the public in the care of shade and ornamental trees remains high, as is indicated by the varied and numerous requests for help concerning insects, diseases, and general tree care. The severe wind, in southern Maine the hurricane, of September 21, 1938, caused severe injury to many valuable shade trees, either uprooting the trees or causing severe breakage of limbs.

(a) **Insects:** The maple and oak twig pruner **Hypermallus villosus** was very heavy through central Maine, causing the dropping

to the ground of large twigs. The cottony maple scale **Pulvinaria vitis** was common in some areas. Aphids on birch and elm were very common, causing quantities of honeydew to form on the branches and on objects below the trees. A rather unusual insect from eastern Maine was the birch web-worm **Acrobasis betulella** which webs the leaves together. The insects make fairly hard, oval cocoons. Another uncommon insect was the butternut woolly worm **Monophadnus caryae** defoliating butternut and Japanese walnut. The false caterpillars are covered with a white flocculent coating. The fall webworm **Hyphantria cunea** was common on birch, elm, and willow; the last two trees were also commonly infested with the spiny elm caterpillar **Vanessa antiopa.** The elm leaf beetle **Galerucella xanthomelaena** in the past two years increased in intensity. It was common through York County and at Saco and Hallowell very abundant. Unusually heavy dropping of small elm twigs occurred in central Maine, which was due to the girdling of such twigs by the gypsy moth **Porthetria dispar.** The spring and fall canker worms **Paleacrita vernata** and **Alsophila pometaria** caused severe defoliation of elm and other trees in Kennebunk, Kezar Falls, Lovell, Wiscasset, Bangor, and Brewer. The yellow, black-spotted larvae of the mountain ash sawfly **Pristiphora geniculata** continued to be abundant at various places over the state. On pine, the most common pest was the pine needle scale **Chionaspis pinifoliae.** The satin moth **Stilpnotia salicis** again has become severe and was especially bad at such scattered places as Livermore Falls, Augusta, Madison, and Pittsfield. Ornamental spruce continued to be commonly injured by the spruce gall aphids. The imported willow leaf beetle **Plagiodera versicolora** severely injured willows in coastal towns of York County.

(b) **Diseases:** Much attention has been given to the possibility of finding the Dutch elm disease **Graphium ulmi** but as yet no trace of this serious disease has been found in the state. Maple wilt **Verticillium sp.** continues to be the most severe disease of maples and the hardest to combat. Control measures should be started as soon as the wilting appears. The cytospora disease of ornamental spruce and especially blue spruce is noticed quite often. The parasitic plant, dwarf mistletoe, **Razoumofskya pusilla** is common and causing much injury to coastal spruce on Monhegan and other islands off the coast and at Pemaquid and South Bristol. Ornamental evergreens were commonly injured by winter kill or winter drying through southern and central Maine during the winter of 1936-1937.

(c) **Shade Tree Care:** The general repair and care of shade trees were the cause of many calls during the past two years. All calls were given personal attention insofar as possible and at least detailed correspondence carried on to the satisfaction of the parties involved. As in the past, there were some cases in which recommendations were made toward reaching just settlements where valuable shade trees were claimed to be injured by automobiles, gas, electricity, or chemicals.

FLOWER GARDEN AND GREENHOUSE INSECTS

The lilac leaf miner **Gracilaria syringella** continued to be abundant, injury being caused to privet and lilac foliage. Nicotine sulphate alone or in mixture with arsenate of lead controls this pest if sprayed on when mines are small and before rolling of the leaves begin. The gold-smith or tortoise beetles **Deloyala clavata** and **Metriona bicolor** were very abundant on morning-glory and Chinese lantern. Adults of the white-lined sphinx moth **Celerio lineata** were observed abundantly hovering around flowers and were commonly confused as being an unusual humming-bird. The larvae of various other sphinx moths were common on various plants. The salt-marsh caterpillar **Estigmene acraea** was noted in one area feeding on gladiolus. The sawfly **Macremphytus intermedius** was feeding abundantly on dogwood both years. The coloration of the larva changes from a plain grayish-white color with a powdery appearing coating in the early stages to a yellowish-green color with many prominent black spots in the later stages, the head being always black. Snails were common at Bar Harbor, causing injury to plants during the night. Reports of the Japanese beetle **Popillia japonica** as being heavy in Portland were received.

MARKET GARDEN INSECTS

The seed corn maggot **Hylemyia cilicrura** was unusually injurious to vegetable seeds in the ground in the spring of 1937, corn and beans being particularly injured. The large amount of injury was undoubtedly tied up with the cold, damp weather of that period. Inquiries on the Mexican bean beetle **Epilachna corrupta** continued to be abundant. The large tomato hornworms were generally common in both years while the dull gray to brown squash bugs **Anasa tristis** were unusually abundant in 1938. Large flights of the army worm moth **Cirphis unipuncta** occurred in late August 1937 and April 1938. Army worm caterpillars did much damage to crops, especially in 1938. Other flights of moths observed in numbers were those of the corn ear worm **Heliothis obsoleta** and the cut worm **Feltia venerabilis** in September. Inquiries on other insects included the

imported currant worm **Pteronidea ribesii,** the imported cabbage worm **Ascia rapae,** and the striped cucumber beetle **Diabrotica vittata.**

HOUSEHOLD AND STORED PRODUCT INSECTS

The usual large number of inquiries were received concerning cockroaches, bed-bugs, house flies, clothes moths, carpet beetles, silver fish, powder post beetles, bean weevils, and rice weevils. The elm leaf beetle and strawberry root weevil were commonly obnoxious in entering houses for hibernation. The large, black, carpenter ants were commonly injurious to building timbers; while the small Pharoah's ant **Monomorium pharaonis** and the thief ant **Solenopsis molesta** often invaded kitchens. The red-legged ham beetle **Necrobia rufipes** over-ran one place; and an unusual case came to hand where a species, probably **Dermestes caninus,** closely related to the larder beetle, was very abundant. No source of food could be found for either pest, the insects appearing to be in the partitions from which they invaded the rooms. The red spider beetles **Mezium americanum** feeding in furs, and the confused flour beetle **Tribolium confusum** were common. Cat and dog fleas were abundant in many places. The season of 1938 found mosquitoes and black flies unusually numerous over an extraordinary length of time. Reports were received of mosquitoes being very bothersome on unseasonal warm days well into the fall; black flies were out feeding on warm days in October in northern Maine.

TREE SURGERY

The tree surgery law, which has been in effect since 1933, provides for examination and certification of any party advertising, soliciting, or contracting to improve or protect trees. Examinations are held at least once a year. During 1937 the number of applications received after the regular examination made it necessary to hold another exam. The regulations require that a properly licensed man be responsible for treatments recommended and applied for each job.

During the past two years the license of one man has been revoked by the tree surgery board. Two men have been convicted in court and fined for practicing without a license. The value of the law continues to show up in the elimination of incapable and unscrupulous men. The Maine Arborists Association held a very educational and well attended meeting in the fall of 1937, there being over eighty tree men present.

The list of licensed men follows:

LICENSED TREE SURGEONS

Name	Address	License No.	Licensed to Do			License Expires
			Spraying	Pruning	Cavity Work	
Abbot, Chester	York Village	115	x			July 1, 1939
Abbott, William F.	Wells	95	x		x	July 1, 1939
Aborn, Willard G.	Upland Way, Barrington, R. I.	77	x	x	x	Apr. 1, 1939
Aldrich, Leon	Pond St., Westwood, Mass.	130		x	x	Apr. 1, 1939
Amalia, Karl	22 Forrest St., Manchester, Mass.	75	x	x	x	Apr. 1, 1939
Aycock, Thomas W.	105 Lowell St., Peabody, Mass.	96	x	x	x	Apr. 1, 1939
Barnes, Carl S.	14 Reed St., Lexington, Mass.	97	x	x	x	Apr. 1, 1939
*Bartlett, F. A. Tree Expert Co.	64 Pine St., Ellsworth					
Benner, Alfred L.	Mountain Road, Rockland	98	x	x	x	July 1, 1939
Benson, Orrin	12 Weymouth St., Brunswick	1		x	x	July 1, 1939
Bettinger, Lawrence R.	330 Forest Ave., Portland	99	x	x	x	Apr. 1, 1938
Billings, Ralph E.	Falmouth Foreside, R.F.D. 4, Portland	2	x	x	x	July 1, 1939
Bishop, John A.	Perry	116		x		July 1, 1939
Bissler, C. H.	330 Forest Ave., Portland	91	x	x	x	Apr. 1, 1939
Bixler, J. E.	44 Danforth St., Jamaica Plain, Mass.	79	x	x	x	Apr. 1, 1939
Bolick, C. B.	330 Forest Ave., Portland	117	x	x	x	July 1, 1939
Boothby, Earl C.	Limerick	100	x	x	x	Apr. 1, 1939
Brown, Clyde	Liberty, c/o Charles Robinson	62	x	x	x	Apr. 1, 1939
Brown, Douglas	330 Forest Ave., Portland	118	x		x	July 1, 1938
Burnham, Ernest J.	304 Lowell St., Reading	72	x	x	x	Apr. 1, 1939
Butland, Blair	528 Ocean Ave., Portland	84		x	x	Apr. 1, 1939
Campbell, Leland	East Corinth	119		x	x	July 1, 1939
Capen, Burton M.	18 Atlantic St., Portland	65	x	x	x	Apr. 1, 1939
Chalmers, C. C.	330 Forest Ave., Portland	120		x	x	July 1, 1939
Cherry, Edward	330 Forest Ave., Portland	131		x	x	Apr. 1, 1939
Churchill, Murray	Crouseville	3	x	x	x	July 1, 1939
Conant, George L.	31 Portland St., Portland	132	x	x	x	Apr. 1, 1939
Cole, Ralph	330 Forest Ave., Portland	121		x	x	July 1, 1938
*Davey Tree Expert Co.	330 Forest Ave., Portland					
Deering, George	Brooks	94		x	x	Apr. 1, 1939
Dodge, A. W.	795 Memorial Drive, Cambridge, Mass.	5	x	x	x	July 1, 1939
Dow, Horace	Bar Harbor	6	x	x		July 1, 1939
Edney, Louis C.	Main St., Searsport	7		x	x	July 1, 1939
Ellis, Gerald	Main St., No. Anson	133		x	x	Apr. 1, 1939
Engle, S. P.	330 Forest Ave., Portland	122		x	x	July 1, 1938
Feehan, Joseph	20 Third St., Bangor	134	x	x	x	Apr. 1, 1939

Feighery, Francis	15 Walker St., Pawtucket, R. I.	123	x	x	x	July 1, 1939
Franke, Wm. A.	30 Cameron St., Brookline, Mass.	66	x	x	x	Apr. 1, 1939
Frost, George	23 Linden St., Malden, Mass.	101		x		Apr. 1, 1938
*Frost, H. L. and Higgins Co.	20 Mill St., Arlington, Mass.					
Gilley, Howard	Route 6, Augusta	124		x		July 1, 1938
Goodall, George W.	47 Bradley St., Portland	32	x	x	x	July 1, 1939
*Goodall Tree Expert Co.	32 Exchange St., Portland					
Goodwin, John B.	9 Pleasant St., Waldoboro	8		x		July 1, 1939
Grant, Arnold G.	R.F.D. 2, Cumberland Center	87		x	x	Apr. 1, 1939
Grass, Samuel C.	Washington Ave., Lincoln	38		x	x	July 1, 1939
Griffiths, Stephen L.	16 Columbia St., Augusta	67	x	x	x	Apr. 1, 1940
Hamel, Lewis	13 Church St., Westbrook	33	x	x	x	July 1, 1939
Harmon, Walter	Winn	40	x	x	x	July 1, 1939
Harriman, Stephen E.	Wilder District, Kennebunkport	102	x	x	x	Apr. 1, 1939
Hicks, Robert M.	3 Highland Ave., South Paris	41	x	x	x	July 1, 1939
Higgins, E. W.	20 Mill St., Arlington, Mass.	135	x	x	x	Apr. 1, 1939
Irons, Maynard A.	4 Belmead Road, Portland	43		x	x	July 1, 1939
Jackson, Robert D.	121 Westbrook St., Portland	11	x	x	x	July 1, 1939
Jameson, John H.	125 Norway Road, Bangor	12	x	x	x	July 1, 1939
Jose, Thomas H.	Johnson Road, Gorham	34	x	x	x	July 1, 1939
Keene, Roy D.	20 Mill St., Arlington, Mass.	56	x	x	x	Apr. 1, 1939
Kezar, Thomas F.	255 Main St., Sanford	13	x	x	x	July 1, 1939
King, Roland L.	32 Factory St., Skowhegan	14		x	x	July 1, 1939
Koos, Earl S.	Pleasant St., Wolfeboro, N. H.	144		x	x	Apr. 1, 1939
Ledger, E. J.	330 Forest Ave., Portland	136	x	x		Apr. 1, 1939
Leighton, Nathaniel	Falmouth, R.F.D. 4, Portland	103		x	x	Apr. 1, 1939
Linnell, Rodney	Peru	125		x	x	July 1, 1939
*Lucas, John, Tree Expert Co.	Turner St., Auburn					
Lyden, James	Main St., Westbrook	80	x	x	x	Apr. 1, 1939
Lyden, Wm. A.	21 Brackett St., Portland	104		x	x	Apr. 1, 1939
Maddocks, Royden K.	49 Moody St., Portland	46	x	x	x	July 1, 1939
Maddox, Elmer L.	E. Monmouth, Route 1, Winthrop	19		x	x	July 1, 1939
Marin, Alton	115 Oak St., Lewiston	137		x		Apr. 1, 1939
McCarthy, Charles	15 Market Lane, Brunswick	20		x		July 1, 1939
McClaine, E. L.	4 Maple St., Camden	105	x	x	x	Apr. 1, 1939
McClure, J. A.	330 Forest Ave., Portland	138	x	x	x	Apr. 1, 1939
McInnis, James V.	R.F.D. No. 8, South Brewer	71		x	x	Apr. 1, 1939
McIsaac, Hugh	Bar Harbor	54	x	x		Oct. 1, 1939
McSherry, Thomas F.	Fryeburg	52	x	x	x	Oct. 1, 1939
Messer, Albert R.	126 Parker St., Brewer	47		x	x	July 1, 1939
Miller, Harry J.	330 Forest Ave., Portland	93	x	x	x	Apr. 1, 1939
Miller, William	Ocean Drive, Bar Harbor	55	x	x		Apr. 1, 1939
Moody, Charles F.	374 Beach St., Saco	139		x	x	Apr. 1, 1939
Mores, Carl D.	852 Ocean Avenue, Portland	98	x	x		July 1, 1939
Moroir, Philip L.	115 Middle St., Lewiston	140		x	x	Apr. 1, 1939
Morong, George A.	35 Spring St., Gardiner	126	x	x	x	July 1, 1938
*Munson-Whitaker Co.	9 Fellsway East, Malden, Mass.					
Nealley, Charles	64 Pine St., Ellsworth	70	x	x	x	July 1, 1939
*New England Forest Service Inc.	75 Federal St., Boston, Mass.					
*New England Tree Expert Co., Inc.	545 Smithfield Ave., Pawtucket, R. I.					

*Companies having licensed representatives.

LICENSED TREE SURGEONS—Concluded

Name	Address	License No.	Licensed to Do			License Expires
			Spraying	Pruning	Cavity Work	
Oatway, Hubert	22 Child St., Augusta	141	x	x		Apr. 1, 1939
Ogilvie, Elmer E.	17 Ripley St., Malden, Mass.	106	x	x	x	Apr. 1, 1939
O'Neill, Ollo W.	Woodland	68		x	x	Apr. 1, 1939
O'Shea, Robert S.	R.F.D. 3, Box 18A, Amherst, Mass.	24	x	x	x	July 1, 1939
Parsons, Wm. E.	9 School St., Bar Harbor	127		x		July 1, 1938
Peeke, Leslie A.	28 Spofford St., Newburyport, Mass.	82		x	x	Apr. 1, 1939
Peterson, Earl W.	c/o Mr. Ellis, R.F.D. 7, Veazie	59	x	x	x	Apr. 1, 1938
Pimpare, Leo	263 Pleasant St., Marblehead, Mass.	86		x	x	Apr. 1, 1939
Post, Charles L.	330 Forest Ave., Portland	107	x	x	x	Apr. 1, 1939
Quinn, Albert	249 Rankin St., Rockland	74	x	x	x	Apr. 1, 1939
Ralston, Frederick	19 Rector Road, Mattapan	108		x	x	Apr. 1, 1939
Riff, J. Lyman	260 Brackett St., Portland	109	x	x	x	Apr. 1, 1939
Riley, John E.	120 Sheridan Ave., Medford, Mass.	110		x	x	Apr. 1, 1939
Robarts, Myron	135 Washington St., Camden	50	x	x	x	July 1, 1939
Robbins, Lester	Cumberland Center, c/o A. Hawkes	25	x	x	x	July 1, 1939
Robinson, Carl D.	R.F.D. 1, Palermo	111	x	x	x	Apr. 1, 1939
Rodick, Kenneth	35 Grant St., Ellsworth	26	x	x	x	July 1, 1939
Roy, Edward	330 Forest Ave., Portland	90	x	x	x	Apr. 1, 1939
Ryerson, Erlon	R.F.D. 1, Cumberland Center	78	x	x	x	Apr. 1, 1939
Safstrom, Alfred J.	11 Grove St., Augusta	44		x	x	Apr. 1, 1939
Shand, Charles L.	4 Ash St., Bar Harbor	58		x	x	Apr. 1, 1939
Sherman, Robert C.	48 Harpswell St., Brunswick	27		x	x	July 1, 1939
Skillin, Alexander	Falmouth Foreside, R.F.D. 4, Portland	28	x	x	x	July 1, 1939
Smith, Clarence L.	40 Cobb St., Portland	81	x	x	x	Apr. 1, 1939
Stackhouse, Arthur	92 Congress St., Portland	88		x	x	Apr. 1, 1939
Stevens, John H.	High St., R.F.D., Sanford	114			x	Apr. 1, 1938
Stuart, Edward B.	44 Winter St., Dover-Foxcroft	85		x	x	Apr. 1, 1939
Tamke, H. J.	545 Smithfield Ave., Pawtucket, R. I.	73	x	x	x	Apr. 1, 1939
Taylor, Curtis	Houlton	89	x	x	x	Apr. 1, 1939
Waltman, George C., Jr.	51 Bolton St., Portland	112		x	x	Apr. 1, 1939
Warren, Robert	185 High St., Portland	113		x	x	Apr. 1, 1939
Watson, John J.	330 Forest Ave., Portland	92	x	x	x	July 1, 1938
Watson, Myles S.	Newington, N. H.	69	x	x	x	Apr. 1, 1939
Weldon, Larry	256 Main St., Sanford	129		x	x	July 1, 1938
West, Harry V.	27 Pine St., Gorham	76	x	x	x	Apr. 1, 1939
Wheaton, Archie	Passadumkeag	143		x	x	Apr. 1, 1939
*White & Franke Inc.	30 Cameron St., Brookline, Mass.					
White, Howard M.	27 Chapel St., Augusta	29	x	x	x	July 1, 1939
White, J. Cooke	20 Mill St., Arlington, Mass.	53	x	x	x	Oct. 1, 1939
Whitschey, Joseph	52 Forest St., Bar Harbor	142		x	x	Apr. 1, 1939
Woodrow, Gerald F.	763 Congress St., Portland	63	x	x	x	Oct. 1, 1939
Woodworth, Kenneth	North Whitefield	128		x	x	July 1, 1939
Wright, Byron M.	48A Bramhall St., Portland	83		x	x	Apr. 1, 1939

*Companies having licensed representatives.

PUBLICATIONS, LECTURES, AND EXHIBITS

Information to the public on the care of ornamental plants and on control of insects and diseases has been put out in the form of newspaper articles. The portable insect mounts on various insects and their life histories and injuries have been exhibited at fairs and club gatherings. Instruction in forest entomology has been given to the students at the University of Maine winter forestry camp at Princeton. A large number of lectures on insects and diseases has been given before schools and clubs.

The following publications have been prepared:

(1) **"Forest Trees of Maine,"** H. B. Peirson. A revision—and the sixth edition of this popular publication. It has many added interesting notes and changes for accuracy.

(2) **"The European Spruce Sawfly in Maine,"** H. B. Peirson. Maine Forest Service Circular No. 3, 4 pages, 1 colored plate, 1937. A popular account of this new pest, and a revision of the 1936 circular.

(3) **"The Yellow-headed Spruce Sawfly (Pikonema alaskensis Rohwer) in Maine."** Life-history, host plants, habits, damage, and control of this native insect. In print—to appear in Journal of Economic Entomology, Volume 32, either February or April 1939, 9 pages, 1 plate, by Robley W. Nash.

THE EUROPEAN SPRUCE SAWFLY

H. B. PEIRSON and R. W. NASH

TABLE OF CONTENTS

History of Outbreak

The widespread outbreak of the European Spruce Sawfly (**Diprion polytomum Htg.**) is probably the greatest threat that the forests of Maine have ever faced. The destruction of Maine's spruce will not only seriously affect the pulp and paper industry but it will have far reaching effects on the lumber industry, freight tonnage, woods labor, summer camp and sporting business, and general taxation.

This sawfly is known to occur throughout middle and north Europe where it has long been recognized as a defoliator of spruce but not as a serious pest. The first outbreak of the sawfly in America was discovered on the Gaspé Peninsula in the fall of 1930. In 1931 it was found that 2500 square miles were seriously infested. This heavily infested area has increased by about one thousand square miles a year in the Gaspé. The outbreak is now widespread through Quebec, practically all of New Brunswick, and portions of Nova Scotia and Ontario. In the United States, the entire spruce area of Maine is infested. Severe outbreaks occur in New Hampshire and Vermont, and light infestations in Connecticut, Massachusetts, and New York.

In Maine the outbreak has increased rapidly since the sawfly was first found here in 1931 at Bar Harbor by A. E. Brower, who also collected it on the summit of Mt. Katahdin in 1932 and observed on July 9, 1934 large numbers of adults flying over the summit of Katahdin coming from the direction of the Gaspé Peninsula. Indications are that the insect spread by wind for early collections were largely on mountain tops.

During 1932, 1933, and 1934 isolated collections were made but no real outbreak was found. In 1935 members of the Maine Forest Service and the Federal Bureau of Entomology found larvae present in numbers in localized areas in northern Maine. Surveys made in 1936 by the Maine Forest Service and land owners brought to light new areas of infestation. In 1937 a group of Federal entomologists from the New Haven laboratory worked in conjunction with the Maine Forest Service in making a detailed survey of sawfly conditions in northern Maine. The results of this survey showed the sawfly to be increasing at an alarming rate. A similar survey was made by the CCC along the coast from St. George to Southport which showed the sawfly to be present throughout this area.

Early in 1936 a circular on the spruce sawfly was published and distributed to wardens and land owners. In 1937 a reprint of the 1936 circular and an additional circular showing the result of surveys carried on in Maine were prepared and distributed. During 1935, 1936, and 1937 parasites were released in Maine. In May, 1937,

initial breeding work was started in Maine. In September of the same year the first large scale collection of cocoons was carried on. Shortly after this, the first funds for sawfly control work were made available by the Governor and Council.

Spruce Sawfly Committee

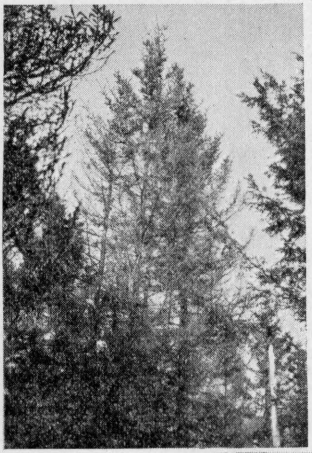
In the spring of 1938 the subject of control was brought up at meetings of land owners held at Augusta, Bangor, Calais, and Houlton. At these meetings a spruce sawfly committee was formed—made up of representative timberland owners. It was the purpose of this committee to (1) coöperate with the forestry department as to control methods, (2) to assist in obtaining funds to carry on the work, and (3) to keep land owners in their vicinity informed of the work.

The committee consists of the following members:

George D. Bearce, Bucksport
W. L. Cobb, Calais
L. J. Freedman, Great Works
E. R. Hendrick, Chisholm
William Hilton, Bangor
S. S. Lockyer, Berlin, N. H.
Roy Phillips, Ashland
James Pierce, Houlton
Earl Spaulding, Bangor
Blaine S. Viles, Augusta

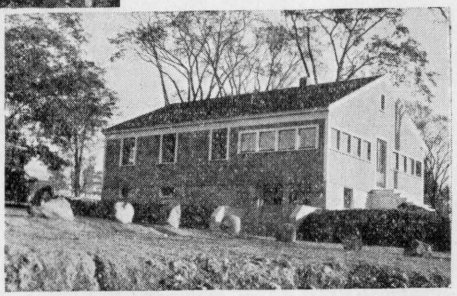
Life History of Sawfly

The European Spruce Sawfly is a defoliating insect, the larvae of which feed on the foliage of all species of native and many exotic spruce. In the vicinity of Bar Harbor the adult flies appear the latter half of May. These are about the size of house flies, black with yellow markings, and with four transparent wings. Males are very rare. The unmated females lay an average of forty-five eggs each. These are laid singly in slits cut in the needles. The eggs hatch in about seven days. The small, green larvae feed first on the old growth needles and later on the new growth. As they increase in size five white, longitudinal, narrow lines appear on the body. The larval stage lasts from thirty-five to forty days. When the larvae become full grown they go into the duff and spin oval, brown, tough cocoons in which they transform into the flies which appear about July twenty-fifth. This transformation in the cocoon requires about ten days. The complete life cycle at Bar Harbor is about two months. A second generation of larvae feeds until about September first. At Bar Harbor there is a partial third generation. The winter is spent as full grown larvae in cocoons. In Quebec there is one generation, in Connecticut three. There is considerable overlapping of generations as flies may appear at any time during the summer season.

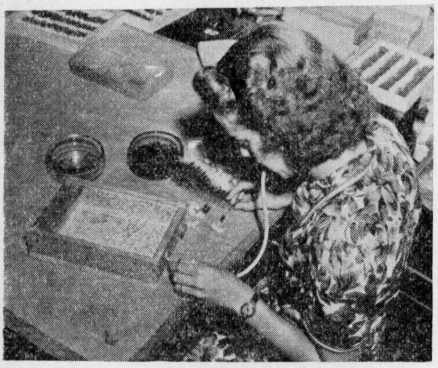


Defoliated Spruce

Workers in U. of M. Laboratory



New Augusta Laboratory



Loading Vials

Releasing Parasites

Some of the hibernating larvae may remain in the cocoon stage for as long as five years. A high percentage of the insects appear to be in the ground throughout the season. At Portage, in northern Maine, the first flies emerged June seventh in 1938.

Host Trees

All species of spruce appear to be subject to attack. In Quebec the white and black spruce appear to be favored, in Maine, New Hampshire, and Vermont the red is equally favored. In Connecticut, Norway spruce plantations are heavily infested. Ornamental varieties, such as the Koster and Blue spruce, are severely attacked. In heavily infested areas, spruce of all ages and sizes are attacked. The intensity of the infestation is apparently not affected by either type or site.

Control Measures

The widespread presence of the sawfly throughout Maine has eliminated all possibility of control through spraying, dusting, or cutting of infested stands. At present there seems to be little chance of control through forest management as all forest types seem to be equally affected.

Climatic Conditions

Balch, in the Canadian Entomologist for February 1936, gives some interesting data on effects of extreme temperatures and rainfall. He states: "Temperature below 0° F. kills a percentage of the hibernating larvae, which increases with the lowering of the temperature until it is 100 per cent at around −18° F." . . . "The feeding stages can survive 16° F." . . . They are "equally able to withstand our highest temperatures . . . as high as 100° F. were recorded near Fredericton . . . Prolonged cold rains will kill newly hatched larvae but rain has not been found to affect the older stages beyond causing a cessation of feeding". It is rarely that the hibernating larvae in their cocoons would be exposed to low temperatures for they are almost invariably found in the moss or duff where they are protected by snow. The larvae also have a habit of collecting in protected places beneath limbs during heavy storms.

Natural Enemies

In some sections rodents such as shrews destroy large numbers of cocoons. In other sections there is almost a complete lack of such

control. In Canada as high as forty per cent of the cocoons have been killed by rodents. At Wilmington, Vermont, where cocoons for parasite work were being collected, red squirrels were observed collecting and feeding on exposed cocoons. Birds have been observed feeding on the larvae.

Predatory Insects. Sawfly cocoons in the moss and duff are destroyed by a number of predators. The most important of these seem to be the larvae of click beetles which burrow into the cocoons and feed on the sawfly. One species has been reared, others have continued to live in the larval state in the rearing jars for two years without transforming to adults. Ground beetles, especially **Sphaeroderus canadensis** Chd., were observed at the camp near St. Francis to bite into the cocoons and feed on the sawfly. **Bothriopterus pennsylvanicus** Lec., **B. luczoti** Dej., **Platynus sinuatus** Dej., **Calathus gregarius** Dej., **Myas foveatus** Lec., **Sphaeroderus canadensis** Chd., and others have been observed associated with sawfly cocoons both at Bar Harbor and about Peterborough, N. H. A cantharid beetle larva, **Cantharis nigritulus** Lec. is common at Bar Harbor in association with cocoons of the sawfly. This larva is often found partly inside sawfly cocoons feeding on the contents but may not have pierced the cocoon. The larvae of the sawflies are destroyed while on the trees by different predators. A bug, **Podisus serieventris** Uhl., has been destroying many of the larvae at Bar Harbor, and similar shrivelled larvae have been beaten from trees in other parts of Maine.

Diseases. Two diseases of as yet no real importance have been observed attacking the larvae. One of these is a fungus which dries them up; the other appears to be a wilt disease.

Native parasites. There seems to be no evidence that native parasites are as yet of any importance, although a few have been reared at Bar Harbor from field sawfly material. As we have several native sawflies attacking conifers, it is possible that some of the parasites of these might prove of importance. This is particularly true if the native sawfly were closely related in its habits to the European Spruce Sawfly. As an example of this, a severe outbreak of a sawfly on red pine near Passadumkeag was wiped out in 1932-4 by parasites. Seven species, especially **Exenterus canadensis** Prov. and **Dibrachys** sp., were responsible in bringing this insect under control. Parasites swarmed by the hundreds from material brought to the laboratory as well as from material in the grove. At the present time some native parasite material is being held for study and determination.

Foreign parasites. In Europe where the sawfly is native, it is held n check by natural enemies. It was, therefore, considered that the logical method of control in America was to bring these natural enemies of the sawfly over and establish them here in large numbers so as to obtain the same type of control as exists in Europe. Entomologists were sent to Europe and collections made, which were first studied at the British Entomological Laboratory. The more promising ones were then sent to the Canadian parasite laboratory at Belleville, Ontario, where large scale rearing was started. Later, work was started at the Maine Forest Service laboratory, Bar Harbor, and also at the Federal laboratory, New Haven, Conn. Fourteen or more species have been studied and this past year additional promising species have been collected in Europe. It is very doubtful that the solving of the sawfly problem will come through the liberation and establishment of any one parasite. At the present **Microplectron fuscipennis** Zett., a minute wasp-like parasite which attacks the cocoons, and **Exenterus** sps. which attack the insect in the larval state seem to give the most promise. These have become well established in some localities where liberated and are proving effective. Under certain forest conditions **Microplectron** is not very effective and other parasites should also be liberated in these areas. It was, however, decided to concentrate the rearing in Maine on **Microplectron** for 1938. It was further decided to start large scale rearing and liberation so as to get the parasites established as rapidly as possible before widespread destruction of spruce occurred.

Through the courtesy of Mr. A. B. Baird, in Charge, Dominion Entomological Laboratory at Belleville, Ontario, small lots of breeding stock of **Exenterus** sp., a promising larval parasite, and **Microcryptus basizonius** Grav. were received in 1938. The **Exenterus** arrived in a weakened condition, but were immediately placed with sawfly larvae of proper age for oviposition. The cocoons spun by these larvae are now being overwintered and results will become known next summer. The **Microcryptus** is a large cocoon parasite. The material sent stood shipment well, and one of the females lived as long as seventy days in the Bar Harbor laboratory. They were successfully induced to oviposit under laboratory conditions. Some four hundred of their eggs were removed by hand and placed singly in fresh cocoons, and one hundred additional cocoons were exposed to oviposition without being subsequently opened. This material is now being overwintered.

Parasite Production and Liberation

Seasons 1935 through 1937

The first action against the sawfly in Maine was the release of parasites in T. 14, R. 6, in August, 1935. These parasites were obtained for Maine through the coöperation of the U. S. Bureau of Entomology from the Canadian Department of Agriculture. Further shipments of parasites were received from the same source in 1936 and 1937. They were released by entomologists from the New Haven laboratory and our department. The liberation points and numbers are shown in the table below.

In May, 1937, two **Microplectron** were recovered from an area at Bar Harbor where this species had been released in 1936. These two parasites were put with sawfly cocoons at the Bar Harbor laboratory and bred. Their offspring were in turn bred—the process being carried on into the fall when the material was overwintered and kept for work in 1938. This was the initial spruce sawfly parasite breeding work by Maine.

Year	Liberation Point	LARVAL PARASITES				COCOON PARASITES	
		Exenterus marginatus	Exenterus abruptorius	Exenterus adspersus	Lophyroplectrus luteator	Microcryptus basizonius	Microplectron fuscipennis
1935	14 R. 6	2,696	....	....	253	3,930	30,000
1936	Presque Isle	....	....	....	....	....	20,000
	Masardis	....	....	....	....	....	30,000
	Bar Harbor	....	....	....	....	....	30,000
	12 R. 17	....	....	....	....	....	20,000
	12 R. 16	....	....	....	....	....	10,000
	11 R. 15	....	....	....	....	....	10,000
	11 R. 13	....	....	....	....	....	10,000
	10 R. 13	....	....	....	....	....	30,000
	10 R. 12	....	....	....	....	....	20,000
	Dole Brook	....	....	....	....	....	10,000
	Hammond	....	....	....	....	....	10,000
	Plymouth	....	....	....	....	....	10,000
	Seboomook	....	....	....	....	....	30,000
	6 R. 16	....	....	....	....	....	20,000
	7 R. 15	....	....	....	....	....	20,000
1937	Ashland	....	2,468	97	....	....	100,000
	15 R. 10	....	1,680	....	....	....	200,000
	16 R. 10	....	2,075	....	....	....	100,000
	16 R. 5	....	2,256	....	....	....	100,000
	14 R. 6	....	....	....	....	....	100,000
	14 R. 15	....	....	....	....	....	40,000
	12 R. 15	....	....	....	....	....	35,000
	12 R. 16	....	....	....	....	....	35,000
	11 R. 16	....	....	....	....	....	70,000
	11 R. 17	....	....	....	....	....	20,000

1938 Rearing Program of Microplectron fuscipennis

The first large scale work by this department toward rearing its own parasites was started in September 1937, when one of our men and three hired local men started collecting cocoons in northern Maine for 1938 rearing of **Microplectron.** This force was augmented by three more men, one each being furnished by Mr. Freedman of the Penobscot Development Co.; Messrs. Bearce and Whitney, Maine Seaboard Paper Co.; and Messrs. Hendrick and Phillips, American Realty Co. Messrs. Hilton and Jones of the Great Northern Paper Co. had a cruising party collect about 50,000 cocoons so that a total of about 114,000 cocoons were collected in 1937 before snow forced a stop. Shortly, a group of timberland owners contacted Governor Barrows and the Executive Council on the problem, in consequence of which the first appropriation was made to the department for sawfly control. A. L. Jones, a trained entomologist who had some experience with the spruce sawfly, was hired to assist in the work.

The spruce sawfly committee was of great help in organizing and supervising the collection of cocoons in the summer of 1938 at the Allagash camp maintained by the land owners. The committee also aided generously in many other phases of the problem, especially in contacting the Governor and Council for additional funds to carry on the work, and in assisting in making arrangements for the laboratory at Orono. Governor Barrows and his Executive Council have shown a great deal of interest in coöperating in this project.

The committee met at various times in the spring of 1938. Of the parasites that work on the sawfly, it was decided to put the main efforts on rearing **Microplectron** since this parasite not only looked very promising from the experience of the Canadian authorities but also could be bred well in large numbers. The goal was set at producing and getting into the field from 25-30 millions of this parasite.

The introduction and breeding of this European parasite was undertaken to obtain, if possible, the same type of control as exists in Europe. The parasites will not feed on any plant life, and hence there is no danger of their becoming a plant pest. Canadian authorities inaugurated this work due to their earlier outbreaks and have done a large amount of work on all phases of the sawfly problem previous to our work this year. They have been of great help in readily giving us the benefits of their experience and in sending parasite stock from time to time—not only of this species but also of other European parasites which looked promising.

The rearing of such numbers of parasites required considerable space. Through the efforts of the committee, room was made available for the summer at the University of Maine where Prof. Demeritt was of great help in making arrangements for us to start work June 8 on **Microplectron.**

The following arrangements were necessary so that work could be started with a full crew: (1) getting all equipment ready, (2) getting men, girls, and room ready, (3) rearing sufficient breeding stock to supply the workers at Orono at the start until their own production would start yielding stock for them, and (4) getting sawfly cocoons from amongst the moss and duff in infested spruce stands. The first was taken care of in due time. The second was taken care of jointly. Prof. Demeritt at Orono arranged for capable girl students at the University to work during their summer vacation. Prof. Dorsey of the dairy department made his department refrigerator available and supplied cans for cocoon storage. The coöperation of various men at the University as arranged by Prof. Demeritt was excellent such as Prof. Hitchener in vacating his laboratory rooms and incubation closet for our work, Mr. Youngs and his steward for refrigeration at different temperatures in Ballentine and South Hall. The third item was done at our Bar Harbor laboratory where work was started on producing breeding stock early in the spring—arranging its production so that adult parasite stock would be available consistently each day to supply the Orono workers as they needed it. The parasites used to start this work were those which had been bred the previous season—the cocoons used were those collected in September, 1937. While this work was being carried on at Bar Harbor, as much extra material as possible was produced for field releases. Thus not only was sufficient breeding stock produced, but also 2,459,000 were produced for release in the field. It became necessary to hire four men to get equipment ready for Orono, and to properly handle the breeding stock as it increased; one man for the season, one man for seven weeks, one for two and one-half weeks, and one for one week. The fourth item was taken care of by the spruce sawfly committee, which had a camp of twenty men near the mouth of the Allagash River starting May 10 and continuing to August 27 and collecting 1,242,000 cocoons. This camp was in immediate charge of D. S. Stevens and L. Hancock of the American Realty Co. under Messrs. Hendrick and Phillips. Later Forest Commissioner Seavey obtained a side camp of fifty boys from the Jefferson CCC camp. This side camp was located on T. 14, R. 6, the collecting being done in the southeast part of the town. This camp operated from June 15 to October 11, the boys collecting 1,523,600 cocoons.

After collection, the cocoons were kept cool at the camps and shipped two or three times a week to the laboratory in gallon thermos jugs—each jug holding about 20,000 cocoons. The jugs were thoroughly chilled at Orono before they were shipped back to the collecting camps, by placing them opened in a 10° F. refrigeration room until time to ship. Just before they were shipped back, the jugs were also filled with ice cubes so that they would be cool when received to be reloaded with cocoons.

At the laboratory sawfly cocoons were winnowed by means of an electric fan arrangement to get rid of worthless ones, which consisted of those that appeared all right but which had the worm inside dead or dried out, and of those empty cocoons which had accidentally been sent from the camps. An average of 18% of the cocoons from the field were blown out as worthless by this process. The remaining good cocoons were placed in sealed cans and left in refrigeration just above freezing until needed by the laboratory workers, at which time they were taken out and small quantities at a time dipped in water at 140° F. for three minutes. These cocoons were then given to the workers who were also supplied with small glass vials and a box of adult **Microplectron**—the parasite. Two cocoons and one mated female parasite were placed in each vial, and the end of the vial plugged with a cotton wad. The workers transferred the female parasites from the box supplied them to the vials by means of a rubber tube at the end of which was a tapered glass tip. The parasites were sucked up into the glass tip by drawing in the breath through the rubber tube. By a slight puff of the breath through the tubing one could be blown out into each vial. Part way up the glass tip was a screen buffer which prevented the parasites from being drawn up into the rubber tubing.

After the vials were properly loaded they were placed in an incubation room, where the temperature was maintained at 73°-75° F. and the humidity kept high. They were then left for each female to lay her eggs in the two cocoons given her (after which she died), and for her young to develop in the sawfly larva inside the cocoon. In 18 days a new generation of adult parasites was produced, with a general average for the season of 19.96 parasites for each cocoon used. Samples of parasitized cocoons were kept and allowed to yield their flies, which were counted for each sample so that we could determine the average parasite production per cocoon. The vials could be used over again. Sufficient parasitized cocoons were kept at the laboratory for producing breeding stock for the workers, the rest put out in sawfly infested areas.

Each day's production of loaded vials was kept by itself, labelled, and dated so that it could be readily known when the parasites of each lot were due to emerge as adults. Four to five days before emergence was due, parasitized cocoons were taken from the incubation room, packed in release cages, and then placed in refrigeration at 45° F. to stop development of the parasites until we were ready to take such cocoons into the field. This allowed us four to five days after the cocoons were taken from the laboratory to get them into the woods before the parasites started emerging.

Release cages were six inches square, one inch thick, the frame made of wood, and the two broad faces covered with wire house screen. Damp moss was placed in the center of the cage with the parasitized cocoons at each broad face between the moss and the screen. Parasites could readily escape upon emergence through the mesh of the screen and go to find new cocoons in the duff to lay their eggs in. The screen prevents rodents from getting at the cocoons. Each cage was loaded with sufficient cocoons to yield 10,000 parasites. The cages were then packed in paper bags to prevent as much drying out as possible of the moss and cocoons.

The release cages when put out in sawfly infested stands were removed from the paper bags and leaned against the base of a tree (1 to a tree) on the north side at an angle so that the emerging parasites could readily escape from both sides of the cage. The distance between releases varied according to the areas but was never closer than 200 yards in the heaviest infestations—a rough average in heavy infestations would find 5 to 10 cages distributed 200-300 yards apart, then a stretch of a mile skipped and another series of five cages put out in a similar way.

The work at Orono was carried on by three men and from eleven to fourteen girls as the supply of cocoons from the field varied. An average of twelve girls worked from June 8 through September 6 when rearing stopped. Three girls and the men were kept on until September 20 to finish up with the material which was started up to September 6, to clean vials, and pack all equipment. Quarters at Orono were vacated September 21, everything being moved to Bar Harbor for final work and storage for the winter. Prof. C. O. Dirks of the entomology department of the University of Maine was obtained to supervise the work under the direction of Dr. Brower for the period June 8 to August 15. From August 15 on he was replaced by A. L. Jones of our regular force. A. E. Brower was present at the Orono laboratory for two weeks at its start to get the technical work under way smoothly and then visited the laboratory at least once a week.

Robert Leadbetter was supplied at the start by Mr. Hilton of the Great Northern Paper Co.; and as the work required more help, E. Stuart, Jr., was furnished the first of July by Mr. Freedman of the Penobscot Development Co. These men took hold exceptionally well and showed a great interest in the work. The girls worked 5½ days a week, their time being arranged so that work was carried on Saturday and Sunday mornings to properly handle the parasites which came along daily from the incubation process.

Areas where releases were made were determined from our survey of spruce areas of 1937, also from 1938 reports of fire wardens and representatives of land owners who had been instructed on what to look for and supplied with report blanks so that they could report regularly on the amount of infestation in their respective areas. The amount of defoliation and the number of full cocoons per square foot in the duff were the main bases of comparison of infestations. Their reports showed more extensive and severe infestations than were known at the end of last year's work. These men have been very helpful in getting this information. The wardens have also aided us greatly in getting the release cages distributed in the woods—in fact, a great majority of the 3,526 cages put out were distributed by them in a conscientious, willing manner. Without them our expense would have been much higher as a great amount of time was nvolved in distribution of all the cages. The use of the forest service airplane was of great help in some cases in landing large numbers of cages with one or two wardens in remote lakes from whence the wardens could distribute the cages in the surrounding territory. In one case, a few cages were dropped from the plane over a known infested territory.

Summary of Microplectron Production

Cocoons collected in field*	
Allagash camp	1,242,040
CCC camp T. 14, R. 6	1,523,610
Total collected	2,765,650
Disposition of cocoons*	
Used at Bar Harbor	122,800
Stored at Bar Harbor for 1939	383,070
Sent to Bar Harbor	505,870†
Sent to Orono	2,259,780
18% loss by winnowing at Orono	406,760
For use at Orono	1,853,020
Difference between measured and actual count	16,580
	1,869,600

Cocoons parasitized at Orono (934,800 vials filled at 2 cocoons per vial — 1,869,600 cocoons)	
For breeding stock	61,700
For sample counts	10,800
Parasitized and kept for 1939 breeding stock	30,000
Released in field	1,767,100
Used at Orono by count	1,869,600

*Cocoons were counted by measure
†Not winnowed

1,767,100 parasitized cocoons released from Orono at 19.96 parasites per cocoon amounts to 35,271,316 parasites. In addition, breed-

ing stock cocoons which had yielded the majority of their parasites but which were still yielding small numbers slowly, also living parasites kept from the sample counts were put into the woods—these two sources giving 206,134 parasites. The total parasites released from Orono was thereby 35,477,450.

From Bar Harbor 2,459,017 parasites were released in the woodlands. 1,000,000 parasites were obtained from the U. S. Bureau of Entomology, New Haven laboratory, and were released. Hence, a total of 38,936,467 **Microplectron** were released in Maine in 1938.

In the release work, 3,526 total cages were put out. They were figured to yield 10,000 parasites per cage, but in the first part of the season ours were loaded with cocoons figuring a yield of 15 parasites per cocoon. Later the sample counts showed the yield to be higher.

It was found from 45 laboratory samples, each of 200 parasitized cocoons, that after emergence of parasites started the females reached their peak of emergence on the second and third days, the males on the fifth and sixth days, after which respectively both dropped off sharply. By the end of the sixth day 93% of the females had emerged and through the eighth day 91% of the males had emerged.

Mr. Stuart conducted an experiment which showed in the work this past season that for best breeding results the adult parasites after emergence should be taken from the emergence box and left from 24 to 72 hours before being exposed to the cocoons. Under our laboratory conditions, those parasites emerging from the second to the sixth days seemed best for breeding purposes.

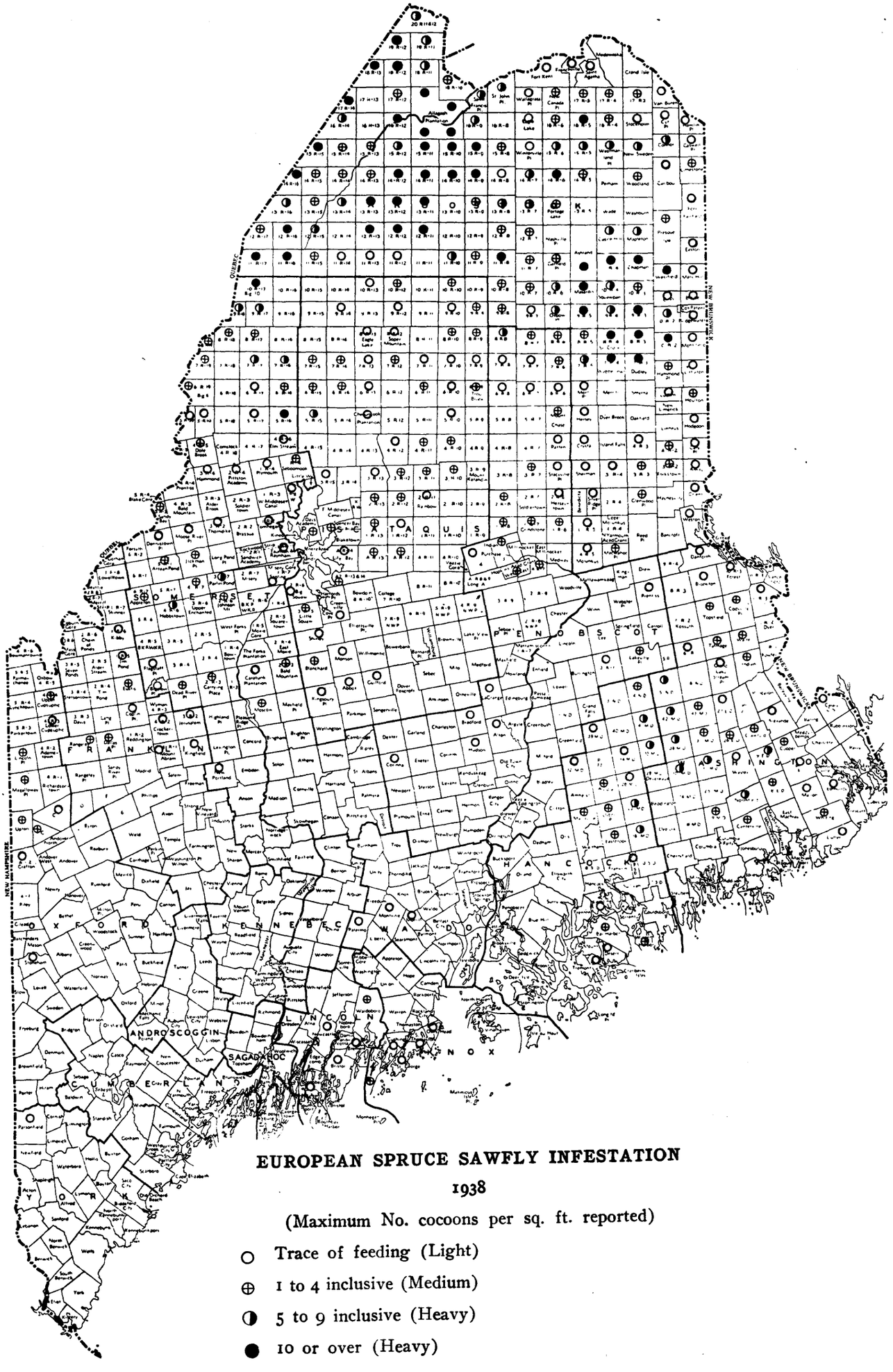
Average number of vials filled per day per girl—1,254.

Average yield of parasites for the season—19.96 per cocoon used.

Average females per cocoon 12.37 or 62%; average males 7.59 or 38%.

Of the cocoons exposed to parasites in the vials 19.4% were dead, dried up, or empty; 23.8% were unparasitized; 5.8% were parasitized but no parasites emerged from the cocoons; hence, the samples showed an average of 51% of the cocoons exposed yielded parasites.

Three release cages put out August 15, 1938, were taken in September 26. Counts of these cages showed an average of 50.5% of the cocoons yielded parasites.

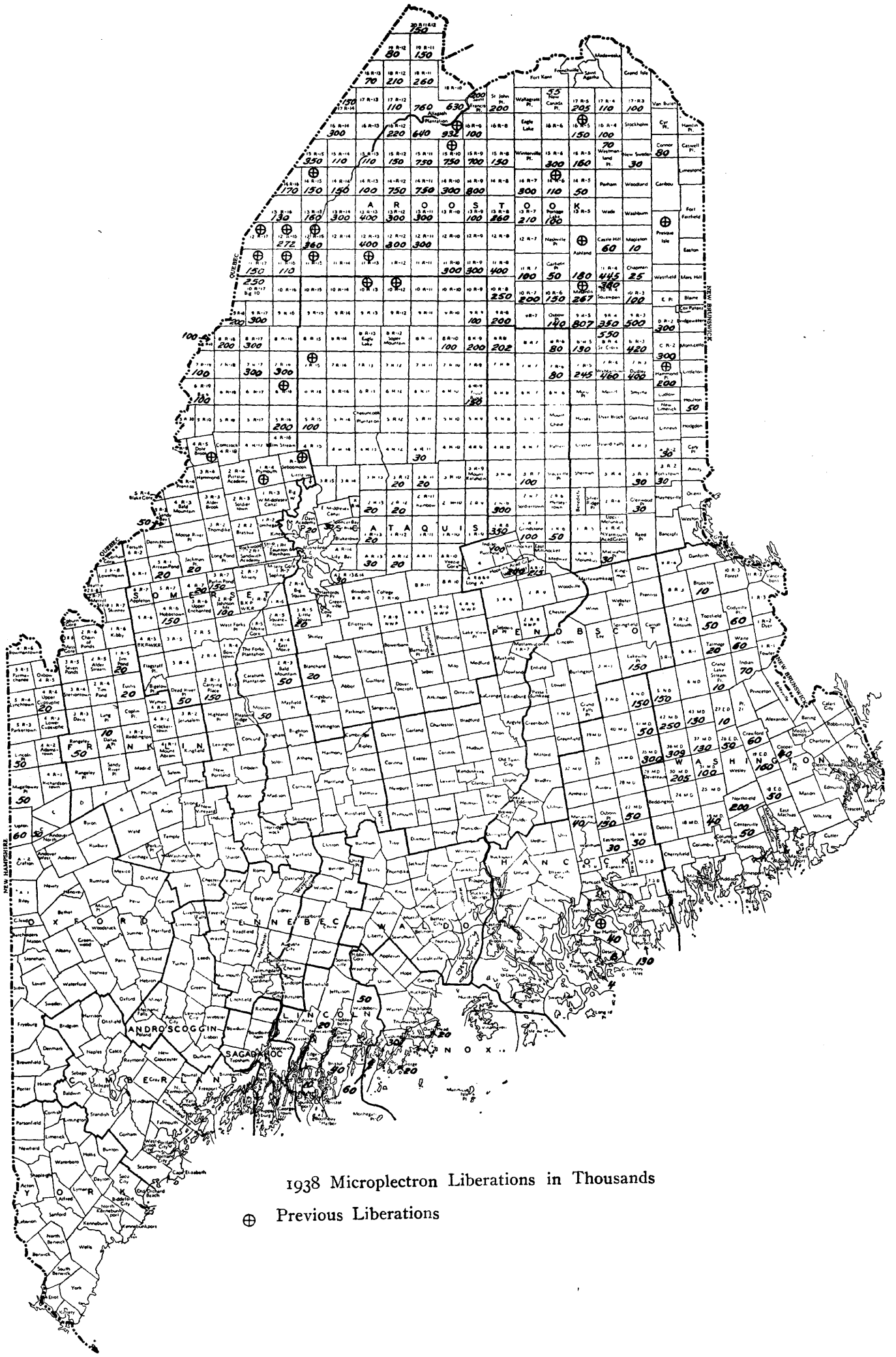


EUROPEAN SPRUCE SAWFLY INFESTATION

1938

(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)


1938 Microplectron Liberations in Thousands
⊕ Previous Liberations
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
SOMERSET
FRANKLIN
PENOBSCOT
WASHINGTON
HANCOCK
OXFORD
KENNEBEC
WALDO
ANDROSCOGGIN
SAGADAHOC
LINCOLN
KNOX
CUMBERLAND
YORK

Reports on Sawfly Conditions Received in 1938

Wardens Maine Forestry District

Name	Address	No. of Reports
St. John Waters		
Jos. M. Gagnon	Guerette	12
M. Bartlett	Portage	31
S. E. Drake	St. Francis	13
John Gardner	St. Pamphile, P.Q.	31
W. J. McRae	Daaquam, P.Q.	15
A. F. Bridges	Clayton Lake	15
C. L. Weeks	Ashland	22
James Cassidy	Houlton	24
Kennebec Waters		
F. P. Conley	Greenville Jct.	18
J. V. Wing	No. Anson	8
R. Sterling	Caratunk	22
A. R. Henderson	Kingfield	5
Arthur Holden	Jackman	23
Androscoggin Waters		
H. W. York	Oquossoc	27
Penobscot Waters		
Fred Owens	Milo	5
T. Perrow	Millinocket	6
J. E. Mitchell	Patten	14
H. R. Smith	Haynesville	33
P. A. Tracy	Stacyville	6
E. J. Leavitt	Seboomook	23
Alex Cormier	Chesuncook	21
A. Thibodeau	Tramway	27
Emery Lyons	Lee	8
Eastern Maine		
A. R. Jordan	Aurora	10
A. P. Belmore	Princeton	12
E. A. Grant	Marion	18
H. McReavy	Whitneyville	11

Wardens Organized Towns

Waldo Clark	Jefferson	1

Note: Reports from watchmen and patrolmen are credited to chief wardens.

Landowners and Others

Name	Address	No. of Reports
Walter E. Craig	Hollingsworth & Whitney, Waterville	18
Davis E. Howes	Hollingsworth & Whitney, Waterville	21
M. L. Cilley	Passamaquoddy Land Co., Bangor	3
E. F. Jones	Great Northern Paper Co., Bangor	16
Daniel Stevens	American Realty Co., Livermore Falls	25
W. W. Austin	Eastern Manufacturing Co., Bangor	25
J. D. Latno	Penobscot Development, Old Town	1
Clair H. Bearce	Penobscot Development, Old Town	1
C. R. Bradeen	Penobscot Development, Old Town	1
Miscellaneous	Augusta	33

Parasite Recoveries

Recoveries of **Microplectron** are made by going into areas where the parasites have been put out at least a year previously. Sound cocoons are collected, and kept confined until either a sawfly or parasites emerge from each cocoon.

In 1937 recoveries of **Microplectron** were obtained from areas where parasite releases had been made in 1936 in Masardis, Presque Isle, T. 12, R. 16, and Bar Harbor—at the last place again in 1938 where detailed counts of cocoons in the duff for the degree of infestation showed an average of only .65 cocoons per square foot. In 1938 at T. 14, R. 6, where the CCC side camp was collecting cocoons and near parasite release points of 1935 and 1937, recoveries were made from cocoons collected one mile from the nearest release points of 1935 and one-third to six-tenths miles from the nearest 1937 release point. Other recoveries in 1938 were made in T. 16, R. 5 at a release point of 1937; at four points in Ashland where releases were made in

1937—one point a quarter of a mile south, and one point three-eighths of a mile southeast from nearest release cages; and four places in Presque Isle where releases were made in 1936—the most distant recovery here being a distance of two miles south from the nearest release cage.

These recoveries show definitely that **Microplectron** is attacking the sawfly cocoons in the field, surviving well, and dispersing. These points have been of importance to know since liberations have been made for such a short period; and, until this year, in small numbers. Next year collections should be begun to give information on the percentage of parasitism.

Cocoon Collection—Fall 1938

On September 29, 1938, a meeting was held with the Forest Commissioner, supervisors, the sawfly committee, and other land owners. Reports on what had been accomplished during the season were given and the problem discussed. At the time it was decided to rear and distribute one hundred million **Microplectron** in 1939. This called for from five to six million cocoons. A very good place, easy of access, had been found to collect cocoons quickly around Peterboro and Temple, New Hampshire. Since the fall of the year is by far the best time to collect cocoons, it was moved at the meeting to have the Forest Commissioner go before the Governor and Council to obtain funds for this collection work. This was done, and funds appropriated on September 30. October 4 a party left here for New Hampshire for cocoon collection headed by Supervisor Gruhn and one of our men. The work was carried on until November 5. From October 24 on, the work was carried on at Wilmington, Vermont, where cocoons could be collected much faster and were easier to clean. Cocoons were brought to Augusta by truck, cleaned here, and stored in refrigeration. The collection in New Hampshire and Vermont took 540 man days. We were able to have a crew from the Jefferson CCC camp clean the cocoons of all debris here—taking about 636 man days for this work. A total of seven million cocoons were obtained.

Forest Insect Laboratory

As the field laboratory at Bar Harbor is not of sufficient size and is not equipped for large scale parasite rearing, it became necessary to have new quarters. Through the efforts of Forest Commissioner Seavey, a special project was submitted to the Civilian Conservation Corps officials in Washington and approved by them for immediate

construction of a laboratory building. An excellent site on the old arsenal grounds in Augusta was offered the department. This site is about a mile from the center of the city on a hard surfaced road. Water, lights, and sewerage connections were available. The building is of frame construction, a story and a half high, and approximately forty feet long by thirty-one feet wide. There is a garage and large refrigerating room in the basement. The main floor has two laboratory rooms, one fourteen by thirty-one feet and the other twelve by twenty-one feet. There is also an office, storeroom, and wash room. An incubation room is included in one of the laboratory rooms. A small plantation of spruce has been started for use in connection with raising larval parasites. The bringing of the parasite work to Augusta should do much to increase the efficiency of the work. Reports from wardens and land owners all come to Augusta and plans as to where parasites are to be released are made up from these. The laboratory will also make it possible to start rearing the parasites in the winter, so that large numbers will be available for early liberation.

A great deal of credit should go to the Civilian Conservation Corps for their assistance in rushing this emergency project through, and for the excellent manner in which the building was constructed. It is estimated that the cost of the building is approximately $5,500, including enrollee labor of nine hundred man days.

A summary of the CCC work on the sawfly project shows that, besides this building, assistance was received from the Jefferson camp in making the release cages, collecting over a million and a half cocoons for parasite work, surveying spruce along the coast, and cleaning the seven million cocoons collected in the fall of 1938; and from the Acadia National Park camps in building an insectary at Bar Harbor, and making check counts on sawfly infestation and parasite recoveries at Bar Harbor—all of which is greatly appreciated.

Recommendations

The severity of the present threat to the spruce forests of the state calls for every possible means of combatting it. The following recommendations are suggested:

(1) The continued rearing and distribution of large numbers of **Microplectron** until this parasite has an opportunity of becoming established throughout the spruce region.

(2) The rearing and distribution of other imported parasites. Some of these may prove more effective than **Microplectron. Exenterus** has obtained a strong foothold in one section of Quebec, and other species give promise of becoming effective.

(3) The rearing and study of native parasites attacking closely related evergreen feeding sawflies.

(4) The establishment of sample plots throughout the spruce region so that definite checks can be kept on the population of the sawfly, on the effects of parasites, and on the condition of the timber.

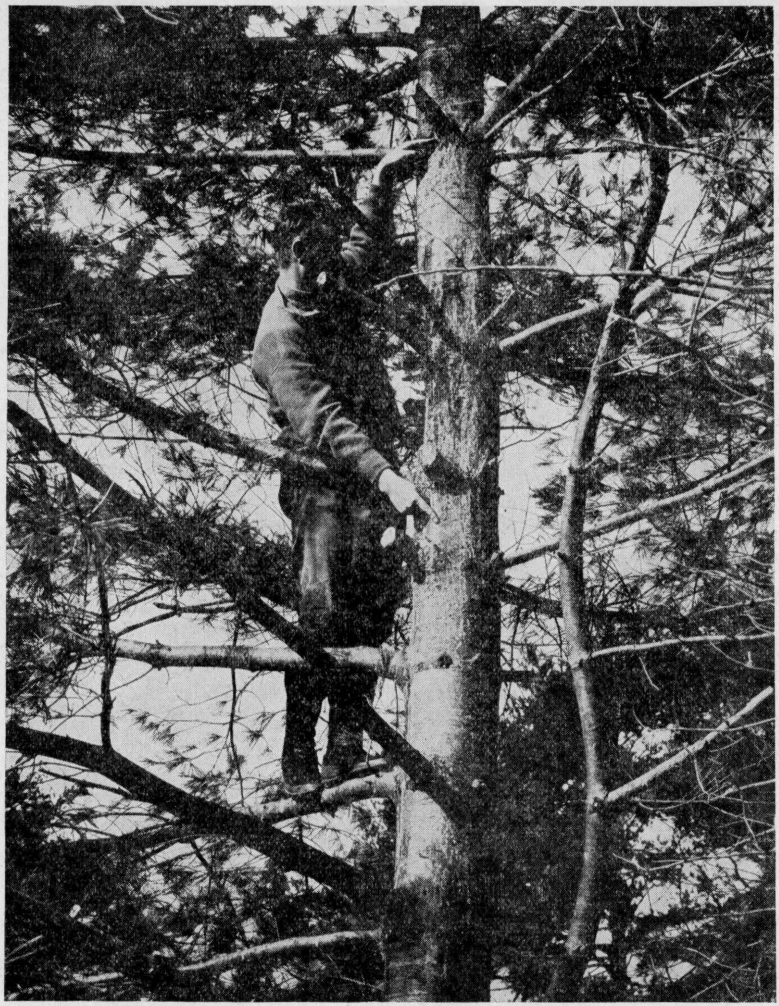
(5) The continuance of reports from forest fire wardens on presence of the sawfly and other forest insects is very essential. These reports should be made compulsory. Similar reports from timberland owners have proved of great help.

(6) There is great need of time for a more detailed study of the life history and habits of the sawfly in different sections of the state under varying conditions of climate, forest type, and ground cover.

(7) Studies on salvage should be made so that land owners may be furnished information as to how long timber will remain sound for lumber and pulp production after being killed by the sawfly. Studies made in Canada and other sections of the country are very often not applicable to Maine conditions.

(8) It is very essential that the fire protective organization, which was so valuable this last year in distributing the parasites, be made available again. The program as planned now is based on receiving the assistance of these men.

WHITE PINE BLISTER RUST CONTROL



White Pine Fatally Infected With the Blister Rust

This tree is about 45 feet tall and 13.3″ D.B.H. The blister rust canker on the main stem to which the man is pointing is 22 feet above the ground and 65″ long. The stem is nearly girdled and slightly constricted at the center of the canker. At this point the stem is 8½″ in diameter. The disease entered the stem from side branches at four different points. The upper portion of the tree above the canker is in a dying condition and many of the branches are dead or dying as a result of girdling by the rust.

Courtesy Bureau of Entomology & Plant Quarantine
U. S. Department of Agriculture

WHITE PINE BLISTER RUST CONTROL

Importance of White Pine to the State of Maine

White pine has been a favorite wood ever since the white man first set foot in North America. The combination of strength, even grain, and soft texture endeared it to the early settlers when most planking and timbers were hewed and boards for casings and furniture were whip-sawed by hand. Its justified popularity has continued and quality for quality it commands top lumber prices today. No satisfactory substitute has ever been found for white pine pattern stock.

Our state, "The Pine Tree State," was blessed with a seemingly inexhaustible amount of white pine of the finest quality, and early lumbermen claimed it would last forever.

It is a pretty well established fact that the first sawmill in Maine, perhaps the first in our country, was erected in 1634 at the foot of Asbenbendick Falls on the Piscataqua River at South Berwick in York County. As the country developed, other sawmills appeared, increasing in such numbers that they practically lined all principal rivers—pine always the first timber to be sawed. For years Maine led the world in the lumber markets—White Pine was "King."

Today, three hundred years after the erection of the first sawmill, our mills are still producing an annual cut of white pine ranking well with the output of other states. Lumber production figures furnished by the U. S. Department of Commerce, Bureau of the Census, show that white pine still ranks first, being 53 per cent of the total lumber cut in the state.

Practically all of the old growth white pine is gone—trees with a diameter of three feet and over are rare, although a few small, scattered stands of this size are cut annually. This virgin timber has been replaced by thousands of acres of second and third growth, which is so extensive that it is by all odds the most important tree in southern Maine. 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 the control of fire, insects, and diseases. 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. Over the entire country coniferous forests have a much greater appeal to recreationalists than hardwood forests. Much of the beauty of our mountain, seashore, and lake resorts is generally recognized by the public as largely attributable to white pine.

White Pine Blister Rust — Methods of Control — Examples of Damage — Federal and State Coöperative Control Agreement

The future value of our White Pine, the greatest natural asset of Southern Maine, depends largely upon the control of the blister rust, a disease of comparatively recent introduction in the United States, but now prevalent throughout the range of all five-needled pines.

White pine blister rust is a fungus disease. It is transmitted by means of spores. Like the black stem rust of wheat and the cedar apple rust, it makes use of an intermediary host in achieving its life cycle. This intermediary is one or another species of currant or gooseberry, these having the generic Latin name of Ribes, and being so known in control work. Since the rust can continue to spread only through this host plant, its elimination holds the secret of control.

The blister rust spreads by wind-blown spores which are produced during the spring, summer, and fall. It enters white pines through their needles and grows into the bark, forming cankers. After the pines are infected, about three years elapse before the cankers become large enough to be recognized. The diseased bark is often swollen. Usually the cankered areas are surrounded by a yellowish discoloration of the bark. When the cankers are fully developed, orange colored blisters break through the diseased bark. These blisters are full of orange-yellow spores, called spring spores, and are most abundant in May. These spores are scattered over large areas by the wind—100 miles or more. The broken bark dies, but the fungus continues its growth in the live bark and produces new blisters each spring, until the tree is completely girdled and dies. The spring spores cannot spread the disease directly from one pine to another. They carry it only from infected white pines to the leaves of the Ribes.

About three weeks after the infection of Ribes by the spring spores, small orange-yellow pustules appear on the under surface of their leaves. These pustules break open and liberate the summer spores which spread the disease on Ribes from leaf to leaf and plant to plant. From late Juneuntil the leaves drop, brownish hairlike outgrowths of the rust appear on the under surface of the leaves. These fall spores are very delicate, and consequently short-lived, so that their infecting range is limited to short distances form diseased Ribes. This makes it possible to control the disease locally by destroying all Ribes in the vicinity of white pine.

The early stages of the disease are so inconspicuous that recently infected trees appear healthy. The presence of partially developed

cankers can be determined only by careful inspection. The cankers mature and begin to produce spores in from three to four years, after which the affected parts of the trees gradually die. Each year the damage becomes more evident until the pines die. The occurrence of new pine infections can be prevented by the removal of the Ribes, but this will not stop the development of damage on pines that are infected at the time the control work was performed. Therefore, the appearance of damage in protected stands does not necessarily mean that the control work has failed. An examination of the diseased trees will probably show that they were infected before the Ribes were destroyed and that the damage is just becoming noticeable.

Small pines, attacked by the rust, are often stunted and bushy. Such trees usually have short, yellowish needles, and a generally unhealthy appearance. Lightly infected pines, of medium or large size, may appear normal for several years except for an occasional dead or dying branch. Such branches are called "flags," because they stand out conspicuously against the background of healthy green foliage. Cankers located far out on the branches may die before reaching the stem, but those nearer the bole usually grow into the trunk and girdle it, thus killing the tree. The death of pines weakened by blister rust is often hastened by the secondary attacks of rodents, insects, and other fungi.

Blister rust kills white pines of all sizes. The smaller the trees, the more quickly they die. In unprotected areas within infected regions, the disease is preventing natural restocking by killing the small trees. In areas where the disease has been present for several years, many of the larger pines are either dead or in a dying condition. When severely infected, the larger trees are characterized by dead and dying branches, broken-off tops, and trunk cankers covered with white pitch. Trunk cankers girdle the trees, retard their growth, and so weaken the stems that the tops often break off at the point of girdling. In unprotected areas, new infections may take place each year and cause a corresponding increase in the amount of the disease on the pines. On the other hand, very little or no increase in the amount of new pine infections occurs in areas which are kept under protection.

Methods of Control

Control of blister rust is accomplished by destroying the wild and cultivated Ribes within infection distance of the pines. This distance seldom exceeds nine hundred feet. Field conditions are sometimes encountered, however, which make it necessary to remove cultivated

Ribes growing at greater distances from pines. Forest conditions are generally favorable for the spread of the disease, because the wild Ribes and white pines usually occur on the same areas. Ribes species vary in size and habit of growth, but workmen are able to effectively distinguish them from other plants after a few days of intensive training. In white pine areas Ribes are dangerous weeds, and unless destroyed, severe damage to the pines may result before the presence of the disease is discovered. Since the rust strikes without warning, pine owners should promptly destroy the Ribes on their land, even though the disease has not been found in their locality.

The planting of cultivated Ribes in blister rust control areas is regulated by the state, and shipments of Ribes into the state must be accompanied by special permits. The interstate shipment of white pines and Ribes is regulated by a Federal quarantine to prevent the spread of the disease through the movement of infected plants.

Ornamental pines infected with blister rust can be saved by cutting out the diseased bark. This method of control is too costly to be practicable on forest areas and is of little value for ornamental pines unless they are first protected from further infection by destroying all near-by Ribes.

Blister rust control work has developed over a period of years to meet the needs of the problem as this destructive disease spread into the several important white pine regions of the country. The disease cannot be exterminated, but it can be controlled at relatively low costs as compared to the value of the timber.

Examples of Damage

Blister rust was first found on pines in Maine in 1916 at Kittery Point, on trees of all sizes, extending over several hundred acres. Within a short time other centres of infection were found at Brunswick, Bar Harbor, and Moxie Gore. As wild currant and gooseberry plants were present throughout the state within infection range of white pines, a general infection of the pines in every town soon followed. Pine infection may be heavy or light, depending upon moisture conditions and the number of ribes present. Hundreds of sample plot studies taken in many towns show that ten to ninety or more per cent of the pines have the blister rust. A strip line, one rod wide and over twenty miles long, showed twenty-five per cent of the pines infected. Great damage has occurred in white pine plantations; in one case ninety-three per cent infection was found, caused by the presence of currant and gooseberry bushes within nine hundred feet. A sample acre in a large unprotected plantation was examined three times at

two year intervals to determine the increase of blister rust infection. These examinations showed twenty-one per cent infection in 1930; fifty-two per cent in 1932; and sixty-one per cent in 1934; an increase of two hundred per cent in the number of infected trees in four years. These examples prove that as long as currant and gooseberry plants are present within infecting range, the disease will take a steadily increasing toll. That many of the general public are aware of the seriousness of blister rust, is evidenced by the requests received at this office for information and assistance, as well as by the number of coöperating towns.

Federal and State Coöperative Control Agreement

Pine owners cannot do the work without leadership and technical supervision, because they do not know the different Ribes species, cannot recognize the rust in its early stages, have difficulty in applying control methods systematically, and will not follow up the work periodically without leadership. The highly trained personnel required for the proper supervision of this work has been developed jointly by the states concerned and the Federal Government.

Blister rust control in Maine is conducted under a coöperative agreement with the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture, in which they would coöperate with towns and pine owners, the Federal Government furnishing the educational, scouting, and supervisory work, and the state, towns, and pine owners the eradication labor. In the operation of this plan the state adds fifty per cent to town appropriations, the combined funds being expended for eradication crews of four to six local men, and for advance scouting for Ribes and supervision. The Federal Government furnishes the Federal Agent in Charge, W. O. Frost, Forestry Dept., State House, Augusta; four permanent district agents, viz.: H. G. Bradbury, Belfast; G. H. Kimball, Auburn; D. S. Curtis, Bridgton; and J. M. White, Waterville. In addition, several trained temporary appointees for scouting and supervision are employed during the control season.

During the past several years the Federal Government has allotted large sums of relief funds to the several states for blister rust control, thereby providing employment for thousands on relief rolls. As blister rust control does not require costly equipment, this work ranks high among relief projects.

Progress of Control Work in 1937

Blister rust control work was conducted under three programs: I—Coöperative Control Work with Towns and Pine Owners (Regu-

lar); II — Emergency Conservation Work (C.C.C.); III — Works Progress Administration (W.P.A.).

The months of January, February, March, and April were devoted to the W.P.A. white pine type mapping project; May, June, July, August, and September to ribes eradication work under all programs; and the continuance of the type mapping and a pine infection data project during October, November, and December with W.P.A. funds.

During the ribes eradication season 3,243,057 wild and 1,375 cultivated currant and gooseberry plants were removed from 111,519 acres in 69 towns in 14 counties, protecting 40,104 acres of pine.

White pine type mapping was conducted in 110 towns in 13 counties, definitely locating 131,093 acres of pine for future control work.

The infection data project consisted of laying out 42 permanent one-acre plots on eradicated and uneradicated areas to determine effectiveness of control measures.

I — Regular Coöperative Control Work

Coöperation with towns and pine owners was conducted on a scale comparable with other years; 41 towns appropriating $6,950.00 for ribes eradication. This amount, plus $4,050.00 of unexpended 1936 appropriations by 25 towns, made a total of $11,000.00 in 61 towns for the 1937 control season, of which $6,382.83 was expended under the Regular, and $1,107.66 under the W.P.A. program, a total of $7,490.49. In addition, 5 private pine owners expended $283.78, of which $93.53 was for ribes eradication under the Regular program, $20.25 under the W.P.A. program, and $150.00 for treatment of infected pine trees. The state employed four men for supervision during the ribes eradication season.

1937 Coöperating Towns

County	Town	1936 Funds	1937 Appropriation	Total
Androscoggin	Turner	$300.00		$300.00
"	Leeds		$200.00	200.00
"	Poland		150.00	150.00
Cumberland	Naples	200.00		200.00
"	Falmouth	200.00		200.00
"	Gorham	200.00		200.00
"	Cumberland		200.00	200.00
"	Scarboro		200.00	200.00
"	Standish		150.00	150.00
"	Windham		300.00	300.00
"	Freeport		100.00	100.00
"	Westbrook		300.00	300.00

Franklin	Farmington		300.00	300.00
"	New Sharon		200.00	200.00
"	Jay		200.00	200.00
"	Carthage	200.00		200.00
"	Avon	100.00		100.00
"	Phillips	100.00		100.00
Hancock	Ellsworth		300.00	300.00
"	Franklin		200.00	200.00
"	Surry		150.00	150.00
"	Sorrento		150.00	150.00
Kennebec	Benton		200.00	200.00
"	Rome	200.00		200.00
"	Monmouth		200.00	200.00
Knox	Appleton		100.00	100.00
"	Rockport		200.00	200.00
"	Hope	100.00		100.00
"	Thomaston		150.00	150.00
Lincoln	Bremen	100.00		100.00
"	Wiscasset		200.00	200.00
Oxford	Bethel		200.00	200.00
"	Gilead	100.00		100.00
"	Newry		200.00	200.00
"	Dixfield	200.00		200.00
"	Canton	100.00		100.00
"	Hartford		100.00	100.00
"	Norway	200.00		200.00
Penobscot	Orrington		100.00	100.00
Piscataquis	Wellington	100.00	50.00	150.00
Sagadahoc	Topsham	100.00		100.00
"	West Bath		100.00	100.00
Somerset	Anson	100.00	50.00	150.00
"	Athens	200.00	200.00	400.00
"	Bingham	100.00	100.00	200.00
"	Brighton	200.00		200.00
"	Cornville		200.00	200.00
"	Fairfield		200.00	200.00
"	Madison	200.00		200.00
"	Moscow	200.00		200.00
"	Harmony	50.00	100.00	150.00
"	Skowhegan		200.00	200.00
"	Solon	200.00		200.00
Waldo	Brooks		100.00	100.00
"	Northport		100.00	100.00
"	Lincolnville		100.00	100.00
"	Winterport		100.00	100.00
"	Stockton		100.00	100.00
York	Eliot	300.00		300.00
"	York		300.00	300.00
"	So. Berwick		200.00	200.00
Total.....	61 Towns	$4,050.00	$6,950.00	$11,000.00

The Regular Control Work in 1937 is summarized as follows:

Number towns worked in	36
" men employed	157
" acres worked	12,518
" " pine protected	3,825
" wild ribes destroyed	311,833
" cult. " "	143
Private labor cost	$93.53
Town " "	6,378.83
State " "	895.24
Town transp. "	4.00
Gov't equip. "	19.00
Total eradication cost	$7,390.60
Per acre " " (sup. not inc.)	$0.59
Ribes per acre	25
State supervision cost	$846.23

These figures include 3,281 acres and 190,797 ribes of initial, and 9,237 acres and 121,179 ribes of reëradication control work.

II — C.C.C. Control Work

Blister rust control was one of the major work projects at the Jefferson, Bridgton, and Alfred C.C.C. camps, employing a daily average of 123 enlisted men, 18 foremen, and one checker-mapper.

Number towns worked in	9
" acres "	41,014
" wild ribes destroyed	1,047,187
" cult. " "	332
" acres pine protected	14,112
" man hrs. enlisted men	94,938
Average " " " " per acre	2
Ribes per acre	26

These figures include 6,396 acres and 317,879 ribes of initial, and 34,618 acres and 729,640 ribes of reëradication control work.

1937 C.C.C. Ribes Eradication Work Summary by Camps

	Jefferson	Alfred	Bridgton	Totals
Towns worked in	2	4	3	9
Acres worked	6,396	13,173	21,445	41,014
Ribes destroyed	317,879	68,021	661,619	1,047.519
Hrs. enlisted men	38,372	14,990	41,576	94,938
Wages at $1.00 per day	$4,796.50	$1,873.75	$5,197.00	$11,867.25
Subsistence at 50c per day	2,398.25	936.88	2,598.50	5,933.63
Transportation	1,043.91	439.18	1,410.13	2,893.22
Equipment	24.00	9.20	45.61	78.81
Foremen salaries	3,011.91	695.44	1,628.77	5,336.12
Total cost	$11,274.57	$3,954.45	$10,880.01	$26,109.03
Ribes per acre	50	5	31	Av. 26*
Man hrs. per acre	6	1	2	Av. 2.3

*Initial work 50 ribes per acre—Reeradication work 21 ribes per acre
Jefferson Camp work all initial—others reeradication.

III — W.P.A. Control Work

Ribes eradication work with W.P.A. funds was on a smaller scale than in 1936. During May and June the budget provided for the employment of 140 unskilled reliefers. Also during this period 28 foremen, paid skilled reliefer wages, were carried on state funds. During July, August, and September, W.P.A. funds provided for the employment of 22 skilled and 107 unskilled reliefers, and for the period October to December, 15 intermediate and 60 unskilled reliefers for white pine type mapping.

A staggered personnel was used in many towns; i e., mixed crews of W.P.A. and town-paid laborers, or a W.P.A. crew with a town-paid foreman. Four State-paid men were employed to assist in supervising this large and complicated program.

The W.P.A. Control Work in 1937 is summarized as follows:

Number men employed (Town-State-W.P.A.)	242
" state supervisors	4
" towns worked in	51
" acres "	57,987
" " pine protected	22,167
" wild ribes destroyed	1,884,037
" cult. " "	900
Town cost for eradication	$1,107.66
State " " "	3,670.83
Private " " "	20.25
W.P.A. " " "	35,535.90
Total " " "	$40,334.64
Cost per acre	$0.70
Ribes " "	33
State supervision cost	$588.30

Included are 27,691 acres and 1,301,269 ribes of initial, and 30,296 acres and 583,668 ribes of reëradication control work.

Grand Summary of Ribes Eradication Work under All Programs in 1937

	No. Towns	Acres Worked	Wild Ribes	Cult. Ribes	Cost*	Per Acre Cost	Ribes per Acre	Hrs. per Acre
Regular	36	12,518	311,833	143	$7,390.60	$0.59	25	1.5
C.C.C.	9	41,014	1,047,187	332	20,772.91	0.51	26	2.3
W.P.A.	51	57,987	1,884,037	900	40,334.64	0.70	33	1.5
Total	69†	111,519	3,243,057	1,375	$68,498.15	Av. $0.61	Av. 29	Av. 1.8

†Actual *Supervision not included.

White Pine Type Mapping

White pine type mapping is the chief blister rust project during the fall and winter months, and in 1937, as in the past several years, this work was conducted with W.P.A. funds, employing 66 reliefers.

It is only by mapping all white pine areas worth protection from the blister rust control viewpoint that a permanent control area may be established, and a yearly control program outlined.

Black and white prints of 2X enlargements of U. S. Geological Survey maps are used, a scale of approximately two inches to a mile. All white pine lands classifying under the requirements set up by the coöoperating parties are mapped. Compass bearings are taken and distances paced, each mapper using a protractor and scale rule for plotting purposes. As many of the men were inexperienced, the four district agents conducted training schools before actual mapping began. Mapping was conducted within a twenty-mile radius of the various headquarters. Transportation was by federal-owned trucks, personally-owned cars on a mileage basis, and on the owner-operator basis.

Type mapping was conducted in 109 towns; 97 towns completed and 12 partly mapped, showing the location of 126,524 acres of pine land, and 366,466 acres of pine plus protective strip for crew work. In addition, a C.C.C. checker partly mapped the town of Sebago, showing the location of 4,569 acres of pine and 10,650 acres of pine plus protective strip. Pine lands are classified as to the necessity for control work.

Canker Removal Work

Pine trees infected with the blister rust may be saved, providing treatment is practiced before two-thirds of the tree trunk at point of infection becomes girdled. All diseased bark must be removed, otherwise the work is a failure.

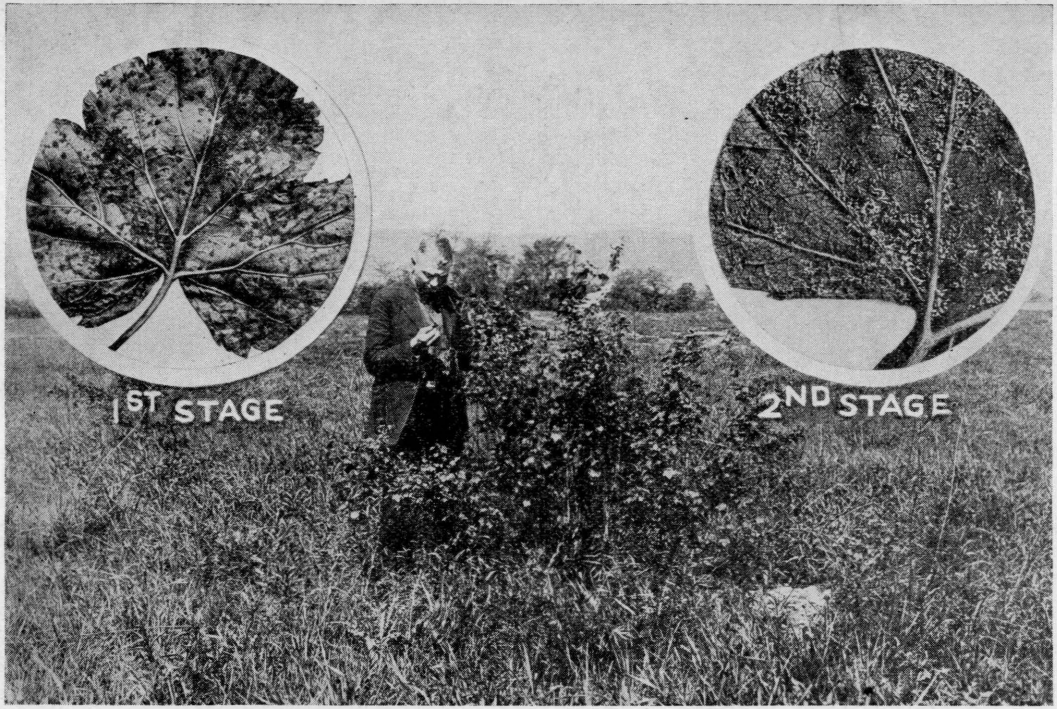
Treating large forest areas is not practiced or recommended, but is advised for ornamental pines and plantations. Many requests for information and supervision are received at the office of the Forest Commissioner each year from estate and summer resort owners.

Canker removal work was performed on a white pine plantation on Sawyer's Island in the town of Boothbay. Under our supervision, two men were employed 300 hours at a cost of $150.00 to the owner to examine 14,921 trees planted twelve years ago. Ten per cent of the trees, or 768, were found fatally infected and were removed; 724 trees had live branch and stem infections, of which 208 were saved by cutting out the trunk cankers. All infected live branches were

cut off, thereby preventing the disease from reaching the tree trunks. This damage was caused by the presence of thousands of nearby currant and gooseberry bushes which the owner removed early in 1938.

Exhibits

There were two blister rust control exhibits in 1937; at the Skowhegan Fair, and the natural growing outdoor exhibit at Belfast on Route 137. The Belfast exhibit has an area of 2.2 acres, containing 365 living trees with diameters to twenty-two inches. Ninety-five per cent of these trees are infected with the blister rust. All infected trees are tagged and banded. Appropriate signs and posters are used for educational purposes. As this area is 700 x 150 feet in size, and borders a main highway, hundreds of pine owners visit it yearly, and are greatly impressed with the seriousness of the blister rust. This exhibit is permanent, arrangements having been made with the owner for the Department to lease the area for an indefinite period.



Showing the Blister Rust on Currant and Gooseberry Leaves

1st, or uredinial stage—small yellow pustules on the under surface of leaves. These pustules break open and liberate spores which spread the disease from leaf to leaf and plant to plant.

2nd, or telial stage—from June to late fall, brownish hair-like growths on the under surface of the leaves. These outgrowths produce the spores which infect white pines.

Courtesy Bureau of Entomology & Plant Quarantine,
U. S. Department of Agriculture.

Progress of Control Work in 1938

The blister rust control program in 1938 was similar to that of 1937: i. e., under the Regular, C.C.C., and W.P.A. programs, Federal Relief funds bearing the greater part of the costs. Pine type mapping was conducted with W.P.A. funds during the fall and winter months, and ribes eradication work under all programs in the summer months.

During the ribes eradication season, 2,763,036 wild and 3,018 cultivated currant and gooseberry plants were removed from 116,200 acres in 54 towns in 12 counties, protecting 39,566 acres of pine from the blister rust. Four state-paid men were employed as supervisors.

White pine type mapping was conducted in 73 towns in 12 counties, definitely locating 106,408 acres of pine.

I — Regular Coöperative Control Work

Town coöperative funds available for 1938 were as follows: $5,925.00 appropriated by 31 towns; $1,500.00 held over by 9 towns from unexpended 1937 appropriations; and $350.00 by 2 towns from funds set up for W.P.A. projects, making a total of $7,775.00 in 42 towns for ribes eradication. From these funds $4,760.97 was expended under the Regular, and $1,832.42 under the W.P.A. program, a total of $6,593.39. In addition, two private pine owners expended $184.00 under the Regular program, or a total of $6,777.39 of town and private coöperative funds expended in 1938 for ribes eradication work.

1938 Coöperating Towns

County	Town	1937 Funds	1938 Appropriation	Total
Androscoggin	Turner	$300.00		$300.00
"	Poland			150.00*
Cumberland	Falmouth	200.00		200.00
"	Gorham		200.00	200.00
"	Cumberland		200.00	200.00
"	Windham		300.00	300.00
"	Scarboro		200.00	200.00
"	Naples	200.00		200.00
Franklin	Jay		200.00	200.00
"	Wilton		200.00	200.00
"	Farmington		200.00	200.00
"	New Sharon		150.00	150.00
"	Carthage	200.00		200.00
Hancock	Blue Hill		625.00†	625.00
"	Franklin		200.00	200.00
"	Hancock		150.00	150.00
"	Surry		150.00	150.00
Kennebec	Monmouth			200.00*
"	Benton	200.00		200.00
"	Winslow		100.00	100.00

Town cost for eradication	$1,832.42
State " " "	179.71
W.P.A. " " "	34,712.53
Total " " "	$36,724.66
Cost per acre	$0.70
Ribes " "	19
State supervisors' cost	$1,195.88

Included in the above figures are 16,362 acres and 433,587 ribes of initial, and 36,081 acres and 578,101 ribes of reëradication work.

Grand Summary of Ribes Eradication under all Programs during 1938

	No. Towns	Acres Worked	Wild Ribes	Cult. Ribes	Cost*	Per Acre Cost	Ribes per Acre	Hrs. per Acre
Regular	26	9,754	281,885	319	$6,558.08	$0.67	29	1.8
C.C.C.	5	54,003	1,471,048	1,114	36,938.25	0.68	27	3.3
W.P.A.	39	52,443	1,010,103	1,585	36,724.66	0.70	19	1.6
Total	54†	116,200	2,763,036	3,018	$80,220.99	$0.69	Av. 24	Av. 2.4

†Actual *Supervision not included.

White Pine Type Mapping

Mapping white pine with W.P.A. funds was conducted during the periods January to April, and October to December, employing an average of 64 reliefers, divided into three man units. Mapping was performed in 73 towns in 12 counties, in which 106,408 acres of white pine and 288,327 acres of pine plus protective strip were recorded.

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 plantations and ornamental pines have saved thousands of pines by following our instructions.

The outstanding 1938 canker removal project was on the Mrs. Frederick E. Camp estate at Blue Hill, where seven men in Mrs. Camp's employ conducted this work for three months, under our supervision. Hundreds of fatally infected pines of all sizes were cut down, while hundreds of others were saved by removing infected branches, and diseased bark from the trunks. The ribes plants were destroyed earlier in the year.

Exhibits

There were four blister rust control exhibits in 1938, viz.: Skowhegan Fair; Boy Scouts' Camporee, Augusta; a small one at Blue Hill; and the large natural outdoor exhibit on Route 137, near Belfast, which is mentioned previously in this report under 1937 exhibits.

Summary of White Pine Blister Rust Control during Eradication Seasons 1937-1938

	No. Towns	Acres	Wild Ribes	Cult. Ribes	Cost*	Per Acre Cost	Ribes per Acre	Hrs. per Acre
Regular.....	50	22,272	593,718	462	$13,948.68	$0.63	27	1.6
C.C.C.....	11	95,017	2,518,235	1,446	57,711.16	0.61‡	27	2.9
W.P.A.....	64	110,430	2,894,140	2,485	77,059.30	0.70	26	1.6
Total....	87†	227,719	6,006,093	4,393	$148,719.14	Av. $0.65	Av. 26	Av. 2.1

*Supervision not included. †Actual ‡$1.50 per man day.

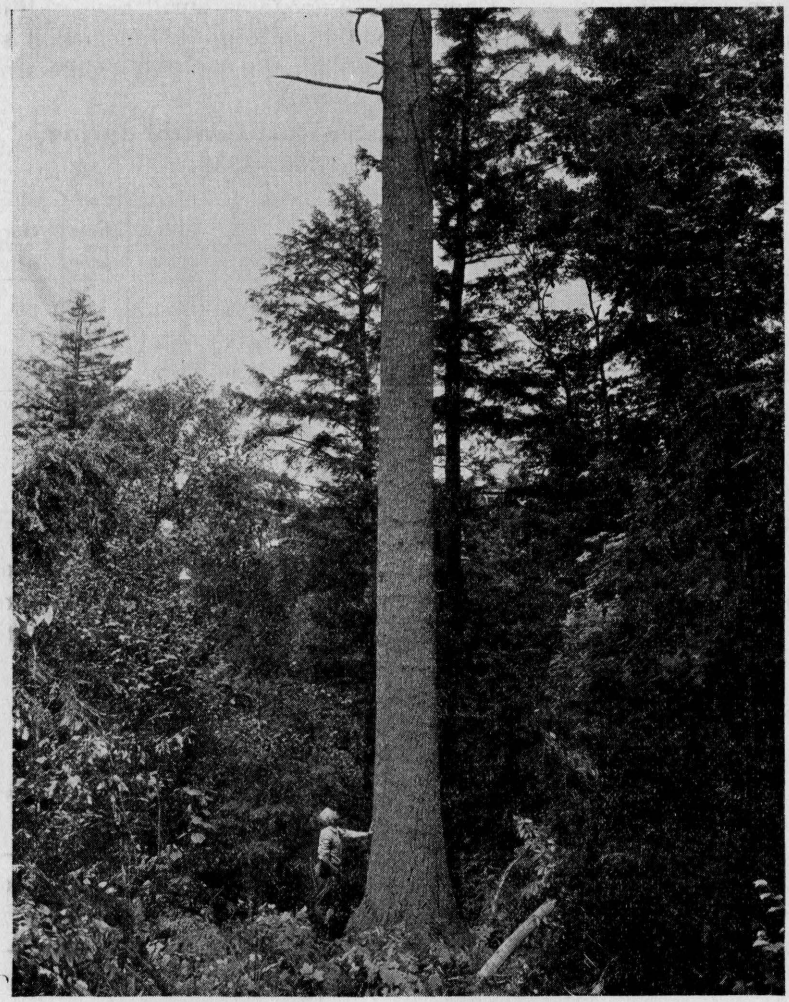
Summary of White Pine Type Mapping 1937-1938

During the two-year period, mapping was conducted in 170 towns, 156 towns completed and 14 partly mapped, showing 237,501 acres of white pine land, and 665,443 acres of pine plus protective strip for future control work.

Federal, State, Town, and Private Expenditures during Calendar Years 1937-1938 (including supervision)

	Federal All Agencies	From State Appropriation	Towns	Private	Total
1937.....	$80,986.64	$8,467.59	$7,490.49	$263.78	$97,208.50
1938.....	78,419.98	5,949.88	6,593.39	1,027.52	91,990.77
Total.....	$159,406.62*	$14,417.47	$14,083.88	$1,291.30	$189,199.27

*C.C.C. costs not included.



WHITE PINE IS STILL KING OF THE FOREST

Courtesy Bureau of Entomology & Plant Quarantine
U. S. Department of Agriculture

GENERAL FORESTRY

GENERAL FORESTRY

Publicity

This department continues its program of posting conspicuous yellow signs along the most commonly travelled routes in the woods upon which are short catch phrases admonishing the public to be careful with fire while travelling. 650 large road side signs and 1500 small fire signs were posted.

Our wardens distributed 10,000 celluloid 6" rulers to parties in the woods. Upon these rulers was printed fire warning notices.

During periods of fire hazard, the department inserts conspicuous fire warning notices in the daily papers admonishing care with fire in the woods.

Members of the staff are subject to call before clubs, associations, and federations where they lecture and discuss matters dealing with forest protection.

At all times the department stands ready to advise and coöperate with organizations and individuals in matters of publicity.

For public distribution, the following pamphlets are available:

The "Directory" containing a list of all the fire wardens in Maine and instructions governing them.

"Forest Trees of Maine," a small convenient pamphlet describing all trees indigenous to the state.

"Forest Fires in Maine," 1916-1925 — fire statistics.

Forest Tree Planting pamphlet.

Numerous other publications, which, while not dealing directly with forest fires, are of a nature to make people appreciate the value of the forests.

State Forest Nursery

In 1913, by an Act of Legislature, there was established at the University of Maine a two-acre State Forest Nursery. This was established primarily as a field laboratory in which students study seeding, transplanting, weeding, packing, and shipping. As most of the work is done by the students as part of their training in forestry, there is little overhead expense, and the grown nursery stock is therefore sold at practically cost price.

In 1924, the National Congress passed the Clarke-McNary law which, in part, provides for a coöperative agreement in the distribution of forest planting stock. The state, in 1926, received its first federal appropriation under the terms of this new act.

This State Forest Nursery is, therefore, maintained by an appropriation set up by the State of Maine and a regular federal allotment. Credited to this fund are the net receipts from the sale of nursery stock. At the end of the fiscal year, all expenditures of field personnel, supplies, and property and equipment are deducted from this fund. If there is any balance, the amount is turned into the State Contingent Fund.

Forest planting stock from the State Nursery is sold at cost to municipalities, industrial organizations, clubs, associations, schools, and individuals for the purpose of establishing wind breaks, shelter belts, reforesting denuded or non-forested lands, and to water companies for watershed protection.

Trees Sold by State Nursery

	1937	1938
White Pine	12,800	36,000
Red Pine	25,000	40,450
Scotch Pine	1,900	2,750
Swiss Pine	500	.....
Jack Pine	.....	600
Norway Spruce	33,000	28,300
Red Spruce	1,000	.....
White Spruce	17,200	13,100
Balsam Fir	1,200	.....
White Cedar	100	.....
White Ash	400	200
	93,100	*121,400

*Out of this total 10,000 white pine, 15,000 red pine, and 25,000 Norway spruce were purchased from the State Forestry and Recreational Department, Concord, N. H.

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 the growing and selling of forest nursery stock.

Trees Planted in the State of Maine

	1937	1938
White Pine	12,800	52,000
Red Pine	40,000	79,450
Scotch Pine	5,900	2,750
Jack Pine	.....	600

Swiss Pine	500	.....
Norway Spruce	33,000	41,300
Red Spruce	4,000	.....
White Spruce	27,200	16,100
Balsam Fir	1,200	.....
White Ash	400	200
White Cedar	1,100	.....
	126,100	192,400

From the files of this office, a minimum of 16,000 acres have 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.

Arbor Day, Forest Protection, and Conservation Week

Arbor Day originated in Nebraska on April 22, 1872, by J. Sterling Morton. Since then, this day has been annually observed in most every state in the Union.

In Maine, Arbor Day was first observed in 1887 by an Act of Legislature, and in the succeeding years a day has been annually set apart by Governor's Proclamation.

In 1921, Forest Protection Week was first proclaimed and again in 1923.

Conservation Week was first proclaimed in 1934, and has now become one of the regular program activities of the public schools in Maine. In 1937 the Maine Section of the New England Wild Flower Preservation Society, Inc., distributed among the public schools a very instructive little booklet in which appeared the Governor's Proclamation and various exercises and articles on conservation. This publication was repeated in 1938 with interesting articles and cartoons.

In addition to the public schools, various Women's Clubs, Associations, and Chambers of Commerce also observe Conservation Week.

Benjamin C. Jordan Fund

In 1909, the late B. C. Jordan of Alfred gave the State of Maine, to be its property forever, one thousand dollars, on condition that in consideration of said gift the state shall once in eighteen years offer five prizes to be called the Jordan Forestry Prizes.

By Chap. 157, Public Laws, 1929, the original rules and conditions of the gift were modified in order to more fully encourage the cultivation of forests, so that the first award under the new resolve would be made in 1932 and once every five years thereafter. The first prize shall be one hundred and twenty-five dollars, the second prize seventy-five dollars, and the third prize fifty dollars.

Conditions of the Gift

The time of the contest shall be made to read, once in five years and the prizes shall be one hundred and twenty-five dollars, first prize; seventy-five dollars, second prize; fifty dollars, third prize.

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, Hachmatack, 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 o 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.

Awards of these prizes for the last 5 year period ending December 31, 1937, were made in January 1938. As judges in the contest for this period, the Commissioner appointed A. D. Nutting of Orono, W. O. Frost, R. W. Nash, and R. G. Stubbs, all of Augusta. After inspection of nine woodlots entered for this period, the judges recommended the award of prizes as follows:

1st — W. B. Deering, Hollis Center
2nd — Herbert S. Allen, Bridgton
3rd — Nellie B. Jordan, Alfred

The awards were made on the following described woodlots:

1. **Deering Lot, Waterboro.** This is a 25-acre tract of natural white pine reproduction, which succeeded the old, original stand which was cut in 1921. There is a scattering of red oak and hemlock mixed with the stand. The stand has been weeded or thinned three times: 1926, 1930, and 1937, thereby releasing the white pine for more rapid growth. The average height of the stand is 8 to 12 feet. It is well distributed and thrifty with little evidence of disease or insect infestation.

2. **The Allen Lot, Bridgton.** This tract comprises a many aged mixed stand of 19 acres which has seeded naturally to white pine, hemlock, maple, and white birch. It has been successfully handled by the owners as a farm woodlot for many years. Some small openings have been planted up artificially to close up the stand. The older part of the stand has been pruned to clear the lower part of the tree for better growth of lumber. In sections the reproduction should be thinned.

3. **The Jordan Lot, Alfred.** This is an 18-acre tract of white pine, pitch pine, red oak, and grey birch, upon which the owner has done a large amount of thinning and pruning In so doing the pitch pine, grey birch, and some red oak has been removed to promote the growth of the more thrifty white pine which averages nearly thirty feet in height. The growth is uniformly distributed, very thrifty, and naturally adapted to its site.

EMERGENCY CONSERVATION WORK

STATE CAMPS OF THE CIVILIAN CONSERVATION CORPS IN MAINE

The Civilian Conservation Corps was originally organized and maintained under the authority of Executive Orders issued by the President of the United States pursuant to an Act of Congress approved March 31, 1933. An Act of Congress approved April 8, 1935, entitled "Emergency Relief Act of 1935" provided for continuation of the CCC program until June 30, 1937. On June 28, 1937, the President approved an Act of Congress entitled "An Act to Establish a Civilian Conservation Corps and for other purposes." This act extended the life of the Corps for a three year period from July 1, 1937. It differs slightly from previous acts in that it provides for vocational training, as well as employment for young men between the ages of 17 and 23 "who are unemployed and in need of employment."

While there is an almost unlimited amount of work to be done in connection with conservation and development of natural resources in this country, the first and continuing objective has been the restoration of confidence and training of young men.

Mr. Robert Fechner has been Director of the Civilian Conservation Corps since its inception.

An Advisory Council composed of representatives of the Departments of War, Labor, Interior and Agriculture, with the Director as Chairman, functions just as its designation implies, in matters of CCC policy and practice.

The Department of Labor is responsible for the selection of Junior enrollees. In this state, Mr. George W. Leadbetter, Commissioner, Department of Health and Welfare, is Director of Selection.

Veteran enrollees are selected by the U. S. Veterans Administration.

The War Department enrolls, feeds, clothes and houses the enrollees and also provides medical service, religious, educational and recreational facilities.

The Department of Agriculture, through its Forest Service, is responsible for the field work in the classifications of camps under the immediate supervision of the State Forest Commissioner.

The enrollees in the five camps now allotted to Maine and under the supervision of the Forest Commissioner, consist of young men, who for the most part, have dependents to whom they allot $25.00 of their $30.00 monthly pay, this last amount being released to him at the termination of his enrollment period.

At present, the individual camp quota is set at 200 men. All are juniors, except that 5 local experienced men, classed as project assistants, may be enrolled at each camp.

Camps now in Maine, under the jurisdiction of the Forest Commissioner and located on private lands are at Jefferson, Alfred and Bridgton; one camp, Princeton, is located on State land and the Chatham, N. H. camp, whose work area is in Maine, is located in the White Mountain National Forest.

Due to the scheduled curtailment of the Corps, camps at the following locations have been abandoned:

Seboomook, Grant Farm, Millinocket, Patten (at Patten Village), Patten (at Hay Lake), Lewiston, Beddington (at Narraguagus River), Beddington (at Deer Lake), Rangeley, Flagstaff and Greenville.

Work projects at each camp are under the direct supervision of a camp superintendent, under whom are various foremen both technical and non-technical. The work agency is entirely separate from the Army except supervisory personnel occupy quarters and board with the Army personnel.

Camp supervisory and facilitating personnel at present is as follows:

Alfred: Superintendent D. L. Moody:	1 forester, 1 engineer, 1 blister rust checker, 5 foremen, 1 mechanic
Bridgton: Superintendent L. P. Brooks:	1 forester, 6 foremen, 1 mechanic
Chatham: Superintendent E. W. Stacy:	7 foremen, 1 mechanic, 1 blacksmith
Jefferson: Superintendent G. C. Murphy:	1 forester, 5 foremen, 1 mechanic
Princeton: Superintendent R. A. Savage:	2 foresters, 2 engineers, 1 foreman, 1 mechanic

The enrollee work week consists of 5 8-hour days, lost time is made up Saturdays. Supervising and Facilitating Personnel are on a 5½ day basis, besides which they are expected to take part in the camp educational and safety programs. Two foremen must be in camp each night and week end to be in readiness for emergency duty. In the event that there exists fire hazard or other possible emergency, foremen are required to spend off duty time at camp.

Formerly, when the majority of the camps were located in the Maine Forestry District, the work load consisted principally of truck trail construction, building of telephone lines, horse and foot

trails and developing camp or picnic grounds. Due to the loss of many camps, only the Princeton camp is carrying on this work upon wild lands of the state. In addition to these types of work, the Princeton unit has had a varied work program.

The camps located in the southern part of the state have worked along lines of forest insect pest and disease control, some road construction has been done and all have engaged in building camp and picnic grounds. Timber estimating and mapping has been another major work project.

At present three camps are engaged exclusively in cleaning up the fire hazard caused by the September hurricane.

All of the camps have been called upon to fight forest fires each season.

Side camps of various types of construction have been used to place crews in close proximity to their work.

Emergency work of various kinds has been done by all camps. The most frequent of these emergencies has been searching for missing' persons. Emergency work due to the 1936 floods and to the hurricane of 1938 caused the greatest expenditure of man days.

During the past two years, the Corps has coöperated with the State Department of Inland Fisheries and Game in building fish rearing pools at Lily Bay, Greenville, Kokadjo and Grand Lake Stream Plantation.

A 50 man side camp located 12 miles north of Portage Lake was established early in June 1938 to aid the State Forest Service in its fight against the European Spruce Sawfly by collecting cocoons to be used in breeding parasites. Nearly one and one-half million parasites were collected and shipped to State Insect Laboratories at Orono and Bar Harbor.

The Forest Commissioner is deeply appreciative of the coöperation given by the Regional Forester and Army authorities in making it possible to carry on this work from a side camp, which was located 264 miles distant from its parent camp.

The coöperation given by these camps in fighting forest fires is worthy of commendation.

Since the establishment of the CCC in Maine, 33,053 man days have spent in fighting forest fires. This number of days does not include the time of supervising personnel paid by CCC funds. Each camp is really an organized fire suppression unit with trucks, foreman, men and equipment that can be dispatched with a minimum of delay. Owing to the present high fire hazard in the western portion of the state, additional fire fighting equipment is to be provided the camps,

enrollees and foremen will receive intensive training in fire fighting by Federal and state supervisors before the 1939 fire season.

The 33,053 man days already expended in fighting forest fires represents a saving to the state of approximately $66,106.00.

The roads constructed are primarily to open inaccessible sections for fire control, and are designated as truck trails by the Federal Agencies. They are built to reasonable alignment and grade, 10 feet wide from shoulder to shoulder with additional width allowed on filled and side hill sections. Surface gravel is one foot deep.

Camp sites on leased land have been constructed and act as concentration points for parties traveling the roads, fishing, hunting or simply enjoying the out of doors.

The Forest Commissioner believes that such concentration avoids the possibility of indiscriminate camping and fire building in hazardous places.

These developments vary from a single fireplace near some spring to ones equipped with sleeping and lunching shelters, table and bench combinations, seats, fireplaces and latrines.

Sleeping shelters have been constructed along the Appalachian Trail between Mt. Katahdin and the Maine-New Hampshire line. With the completion of a shelter at Moxie Bald Mountain last summer, it is now possible for travelers over the trail to sleep at a sporting camp or shelter at the end of each day's tramp. These shelters are of log construction with cedar split roofs and should last for many years.

Bridges vary from simple single span over narrow streams to the 100 foot steel and cement bridge over the east branch of the Penobscot River just below Grand Lake.

A unique piece of bridge-work is the 200 foot cable suspension foot bridge on the Appalachian Trail, across the west branch of the Penobscot River at Sourdnahunk Falls.

In the Maine Forestry District, various structures have been built. They include: Storehouses, boat houses, patrolmen's and watchmen's cabins, lookout towers and wharves.

CAMPS IN THE FORESTRY DISTRICT

Rangeley

This camp was situated in the Rangeley Lakes region in the western part of the state. Its major activity was the construction of a truck trail to open up the wilderness west of Rangeley Lakes and to connect Rangeley with the highway which comes in from New Hampshire to the foot of Sawyer Lake on the Magalloway River.

A third truck trail was being extended up the Cupsuptic Valley from the head of Cupsuptic Lake toward the Canadian line, through several townships which are at present inaccessible except on foot.

The Rangeley camp had an important section of the Appalachian Trail between Maine and Georgia to construct. It was about forty miles long lying south of the Rangeley Lakes, and it had to be explored and located. It was the only link which had not been located. This has been done and the trail built. It gives a continuous foot path from Mt. Katahdin to Mt. Ogelthorpe in Georgia.

The camp was abandoned May 26, 1927.

Flagstaff

This camp was located in the midst of the Dead River country at Flagstaff, and was abandoned in 1935. Its major project consisted of various truck trails to open inaccessible country, and in particular it had started construction of a truck trail to go down the valley of the Dead River so as to connect the road from Eustis to Megantic with the road to Quebec via Jackman. With the abandonment of this camp this project is of course incompleted.

Greenville

This camp located in Greenville was closed in November 1938 and its supervisory personnel and enrollees were transferred to Chatham, N. H., for work in Maine. Truck trail construction was the major project of the camp. A truck trail from Shirley to the foot of Lake Moxie was completed in the spring of 1938.

This trail, 12 miles in length, makes a short cut from the Kennebec River to the Moosehead Lake country.

A second truck trail was constructed along the south side of Kokadjo Lake as far as Big Lyford Pond. It was proposed to continue this trail down the valley of the Pleasant River to Katahdin Iron Works.

The Wilson Pond Truck Trail was constructed for a distance of 6 miles from the old Gerrish Farm in Greenville to the west town line of West Bowdoin College Grant.

A great deal of work has been done along the Appalachian Trail, as well as on various camp sites, telephone lines and minor roads.

Three fish rearing stations have been constructed at Squaw Brook, Lily Bay and Kokadjo.

Seboomook and Grant Farm Camps

The Seboomook camp in 1933 was at the northern end of Moosehead Lake, but was moved to the Grant Farm, thirty miles from Greenville on the east side of Moosehead Lake in the fall of that year. The Grant Farm camp was abandoned in the spring of 1934. The major project from both these camps was a road from Northeast Carry, at the northerly end of Moosehead Lake, to the Ripogenus road at the Grant Farm. This project was not completed.

Millinocket

This camp was situated in the town of Millinocket and was abandoned in 1935. Its important projects were truck trails to improve the approach to Baxter State Park, the major one being a truck trail from Ambajejus Lake around the east side of Mt. Katahdin. This was completed as far as Windey Pitch, when the camp was discontinued. Several years' more work was planned from this camp, including the reconstruction of the old Sourdnahunk tote road on the west side of the mountain. Sundry camp grounds, much telephone line and various minor roads were also built as well as planned.

Patten

The original Patten camp was located in the town of Patten, but as work progressed, it was moved to Hay Lake in Township 6, Range 8, W.E.L.S. The major project was a truck trail which opened up almost entirely inaccessible country. It extends from the Crummett Farm, in the southeast part of Township 6, Range 7, W.E.L.S., where the highway from Patten has its terminus, westward across the East Branch of Penobscot River just below Grand Lake. It has been completed to a point three miles beyond that river. It was proposed to continue it up the valley of Trout Brook and down around Sourdnahunk Lake to a junction with the Ripogenus-Greenville road.

Another truck trail branches off this Grand Lake road at a point near Seboeis Stream and runs northeastward to the Maine Forestry District's Camp Colby.

This camp was abandoned in September 1937.

Beddington

This camp was originally established on the Airline Road at the Narraguagus River in Washington County. It was later moved northward to Deer Lake in Twp. 34, M. D., in order to keep it closer to work projects. The major project was the construction of a truck

trail northward through inaccessible country from the Airline Road to Deer Lake, where the truck trail forks; one branch running westward to the town of Greenfield and the other northward, around the east side of Nicatous Lake to join the road coming in from the Penobscot towns of Enfield and Burlington. Work was concentrated on the branch which runs to Greenfield in order to shorten the distance from the main camp to railroad.

This trail was completed before the camp closed in September 1937.

Princeton

This camp is situated in Indian Township, which is a state forest, subject to treaty rights with the Passamaquoddy Indians, who have one of their reservations there. Silvicultural work to a considerable scale has been carried out on this township and a truck trail system both for fire protection and for utilization is being built on the state land. This camp is also building a truck trail from Princeton southwestward by Clifford Lake, toward the Machias River.

Another truck trail has been built northwestward from Waite to West Musquash Lake, and it is proposed to extend this still further northwestward to Pleasant Lake. The proposed Grand Lake National Forest will probably take in some of this latter country.

During the past year, the camp completed a combination boat and storehouse for the Forestry District and a large Fish Rearing station for the Fish and Game Department.

CAMPS IN THE ORGANIZED TOWNS

Control of insects and diseases constitutes the principal work of the four southern camps, covering towns within 25 miles from the camps. White pine blister rust work is done from May to September, and consists of eradicating currant and gooseberry plants in white pine areas. Mapping of white pine areas has also been done in the winter months in preparation for control work. From September to May, control work is done on gypsy moth in which egg masses are destroyed by painting with creosote. Work is stressed on town and village shade trees, about wooded summer colonies to protect such places which are of high economic value to the towns, and about public lands and reservations. Work is also done toward moving a present gypsy moth quarantine line, adjacent to the Bridgton and Jefferson camps, south so that certain forest products may with inspection be shipped out of the areas involved into uninfested areas such as to points about New York, south, and west. Control work

has been done on the brown tail moth by destroying winter nests. Dead and abandoned apple orchards have been cut to remove worthless trees which were an insect menace to nearby producing orchards. In mid-summer white pine tops infested with white pine weevil are destroyed in plantations. A survey of elms in 68 towns was made to locate presence of the Dutch elm disease. European corn borer infested corn stalks buried in the fall to destroy the insects, but later washed out by the 1936 floods were taken care of to protect corn producing areas.

Foot and horse trails are built to inaccessible areas to facilitate travel of fire-fighters, and to lookout towers for benefit of the public.

General forest improvement, and protection on state and town lands consists of thinning and pruning stands, release cuttings to favor the valuable tree species, clean-up of slash areas to reduce the fire hazard, and to make fire breaks about timber stands, and the digging of water holes in strategic places to provide a water supply in time of fire.

The type mapping and timber survey project is being done to give us definite information on the area of forest types with estimates of timber resources in the southern part of the state. This map will be of great value in fire, insect, and disease control.

The serious floods in 1936 made necessary much emergency work by the camps on sand bagging dams and bridges, making roads passable, distributing water and food, and general sanitation work along river banks, and in cleaning and disinfecting flooded buildings.

Since the September 1938 hurricane, the camps at Bridgton, Alfred and Chatham have been engaged exclusively in fire hazard reduction. 17,197 man days have been devoted to the project to December 31, 1938.

Alfred

This camp was established in June 1933 and has been at its present location ever since, except for the period June to October 1934, when it was located at Mt. Katahdin for the purpose of building trails in the State Park.

Much of the work at this camp is confined to the Massabesic Experimental Forest operated by the U. S. Forest Service.

The work on private lands has consisted chiefly of tree and plant insect and disease control, forest type mapping and picnic ground construction.

At present fire hazard reduction in "blow down" areas is the exclusive project of the camp.

Bridgton

This camp established in 1935 has been engaged in gypsy and brown tail moth control, timber stand improvement, telephone line construction and development of picnic grounds. It has had crews on the Appalachian Trail the past two seasons for the purpose of constructing trails and shelters.

Type mapping, white pine weevil control and telephone line construction have been other major projects.

The camp is now engaged in opening up roads, and in fire hazard reduction.

Jefferson

This camp was established in June 1933 and for the first two years was occupied by World War veterans. The veteran company was replaced by a junior company in July 1935. The major work of the camp has been tree and plant insect and disease control. It has also been engaged in road construction, timber stand improvement, forest type mapping, picnic ground development and the establishment of a state arboretum in Augusta.

During the past season, it has been engaged in collecting spruce sawfly cocoons from a side camp near Portage Lake. It has just completed a fire equipment storehouse at Jefferson and an Insect Laboratory at Augusta. This building located on the State Hospital grounds is 35′ x 42′ story and a half, frame construction. The basement is of concrete the full size of building. Outside of building, walls are covered with asbestos shingles and the roof is covered with asphalt fire resistant shingles. Interoir walls are of fibre board painted an ivory color. All floors are of hardwood. Plumbing and electric fixtures were installed.

Chatham, N. H.

The company located at Greenville was scheduled for transfer to a western state during late October 1938, but before this contemplated transfer had taken place the hurricane of September twenty-first occurred and in its wake left a high fire hazard in windthrown timber. The Regional Forester was agreeable to the Forest Commissioner's request that the company be left in Maine for the purpose of fire hazard reduction providing housing facilities could be found for it. The only available place was a National Forest camp at Chatham, N. H. Hence, the rather odd situation of Maine camp being located outside the State.

The camp has been engaged solely in clean-up work in the towns of Fryeburg, Lovell, Stow and Sweden. The work consists of opening roads that were plugged by "blow downs", clearing and burning brush along roads and other areas where hurricane damage is severe.

Lewiston

Field work at the Lewiston camp started in June 1933. The major projects were forest insect and disease control. The camp was ideally located to carry on effective gypsy moth work, as it was within working distance of the quarantine line, and also in a heavily infested territory. This work was met with strong public approval. During August and September of 1934, a side camp was maintained at Avon to construct a watchman's cabin on Mt. Blue. In Hartford a two-mile truck trail was completed to the summit of Bear Mt. where the state maintains a lookout.

Other projects consisted of forest type mapping, stand improvement and planting on public forest, construction of Forest Service lunch grounds, water holes for fire protection, white pine weevil control, and Dutch elm disease survey.

The camp closed May 31, 1937.

Summary of Work Accomplished by all Forest Camps to December 31, 1938

Bridges, Foot and Horse	107
Bridges, Vehicle	240
Dwellings	13
Equipment or Supply Storehouses	2
Garages	1
Latrines and Toilets	56
Lookout Towers	6
Shelters, Trail and Picnic Grounds	81
Other Buildings	1
Cribbing, including Fill	856 Cu. Yds.
Fences	832 Rods
Guard Rails	382 Rods
Sewage and Waste Disposal System	1
Telephone Lines	481.8 Miles
Water Supply Systems, Misc.	13
Camp Stoves and Fireplaces	93
Camp Ground Seats	29
Signs, Markers and Monuments	12
Table and Bench Combination	76
Structures, Misc.	14
Water Holes	41
Airplane Landing Fields	10.2 Acres

Truck Trails	245.5 Miles
Foot Trails	495.2 Miles
Horse Trails	143.6 Miles
Misc. Erosion Control	318 Man Days
Excavation Channels—Ditches	1649 Cu. Yds.
Rip Rap—Rock	100 Sq. Yds.
Pipe or Tile Lines	774 Lin. Ft.
Tree Planting or Seeding	64 Acres
Forest Stand Improvement	1830.6 Acres
Fighting Forest Fires	29,024 Man Days
Fire Breaks	12.9 Miles
Fire Hazard Reduction—Roadside	551.5 Miles
Fire Hazard Reduction—Other	2198 Acres
Fire Presuppression	3397 Man Days
Fire Prevention	499 Man Days
Tree and Plant Control Disease	331,397 Acres
Tree Insect Pest Control	770,585 Acres
General Clean-up	20.8 Acres
Landscaping	36.1 Acres
Moving and Planting Trees	11,090
Parking Areas	6005 Sq. Yds.
Public Picnic Grounds	113.7 Acres
Seeding and Sodding	1 Acre
Soil Preparation	1 Acre
Walks	150 Lin. Ft.
Fish Rearing Pond	4
Stream Development	3 Miles
Other Wild Life Activities	350 Man Days
Searching for Missing Persons	1230 Man Days
Emergency Work	25,621 Man Days
Experimental Plots	90
Type Maps	1212 Man Days
Reconnaisance and Investigation	271 Man Days
Surveys	40 Miles
Timber Estimating	1,642,700 Acres
Prepare and Ship Materials	677 Man Days
Tree Preservation	245 Man Days
Gypsy Moth Egg Masses treated	13,861,782
Brown Tail Moth Webs destroyed	352,239
Weeviled White Pine Tops destroyed	270,230
Blister Rust Control—Ribes destroyed	679,512
Spruce Sawfly Cocoons collected	1,840,031

PUBLIC LANDS

PUBLIC LANDS

Public Lots

The reserved lands in all unorganized towns and plantations are known as public lots or school lands, and are administered by the Forest Commissioner until the township is incorporated.

The following circular, printed here by permission of the Department of Education, explains the importance of guarding school funds and the necessity for the Forest Commissioner to see that these lands are administered in a proper manner.

"STATE OF MAINE
EDUCATIONAL DEPARTMENT

Circular of Information Regarding Permanent School Funds

The purpose of this circular is to call the attention of school superintendents and municipal officers to the importance of scrupulously guarding the "permanent school funds" of their towns, and the necessity of devoting them to the purposes for which they were granted.

The reservation of 1,000 acres of land in every township, commonly known as school lands, comes from an old regulation of Massachusetts adopted while Maine was still a part of that Commonwealth.

At that time our State was known as the District of Maine, and was divided into the counties of York, Cumberland and Lincoln. The unsettled portions of the territory were commonly referred to by the Massachusetts legislature as the "Eastern Lands."

In order to encourage the settlement of the "Eastern Lands" the legislature of Massachusetts in 1788 enacted a law providing that in the disposition of all towns thereafter, four lots, of 320 acres each, should be reserved for certain purposes in each and every township, whether sold or granted.

The purposes for which these lots were reserved were as follows:

The first was "for the first settled minister" in the township and was known as the "minister lot." The second was for the "use of the ministry" and known as the "ministerial lot." The third was for the support of the common schools in that township and became known as the "school lot," while the fourth was reserved "for the future disposition of the State," and was known as the "State lot."

By the articles of separation of 1820, when we became an independent state, it was provided that Maine should carry out all the

regulations regarding the sale and settlement of the wild lands, embraced in the plan originally adopted by Massachusetts, unless the consent of that State was obtained for any change in policy.

Consequently for several years after Maine became a State, in the sale or grants of all Maine towns for whatever purpose, these several lots were reserved in accordance with the plan adopted in 1788. In 1832 Maine changed the law providing for the disposition of these lots for various purposes, to take effect when Massachusetts consented to the new arrangement.

By the new law the minister's claim was ignored except in cases where the title had become vested; for by the new provision all the land reserved in each new township (the acreage having been previously changed to 1000 for each full township and at the same rate in all tracts less than a full township) was to be for the support of the schools in that township; hence all townships surveyed from 1788 to 1832 would have reserved lands of 1280 acres, 320 acres of this for the State, leaving 960 acres for the benefit of schools.

The fund created by the sale of grass and timber from these lots, together with the money received for the land itself, was to be a permanent fund for the benefit of the schools. The selectmen, treasurer and clerk of the several towns were constituted a board of trustees to care for this fund, using the interest only, for the purposes indicated.

In several towns of the State this fund is still kept intact and the interest is added each year to the funds derived from other sources for the support of the schools. In other towns, in order to simplify matters, the money was loaned to the town, and these towns raise, in addition to the amounts required by law, a sum equilavent to the interest on this fund.

In still other cases the fund has been used for general town purposes, and all record of it has been either lost, or overlooked. At least they fail to raise any money for school purposes in addition to the amount required by law.

No town has ever had the right to appropriate its permanent school fund to any use except to that for which it was originally intended. The law provides that this fund shall be permanent forever and every town has accepted this obligation, and towns that have failed to meet these obligations should restore the funds that have been misapplied.

It may be well to state in connection with this subject that in all unincorporated townships the State is the trustee and has kept good faith in every instance.

In the unorganized forest townships long term permits to cut timber and grass have been sold and the proceeds of such sale credited, on the books of the State treasurer, to the several townships to which they belong.

By the terms of these permits all rights of the grantee cease when the township is organized for plantation purposes.

During the time the township is a plantation the care of these reserved lands is in the hands of the land agent, who is authorized to sell the wood, grass and lumber from them, turning the net proceeds of such sales into the State treasury each year, and the plantation receives from the State treasurer each year 6 per cent interest on the fund, in addition to the regular school funds arising from the bank and mill tax.

When the township is incorporated, however, the title to these lands passes directly to the town and the State treasurer pays to the trustees of the school fund all moneys in his hands received from sale of grass and stumpage, and the town is expected thereafter to guard this fund carefully and honestly and to devote the income of it to the support of common schools.

In some plantations, however, there have been gross irregularities. In years past the assessors have assumed authority to sell stumpage. The money received at these sales has been used for plantation purposes, instead of being redeposited in the State treasury.

These funds belong to the public schools of the several towns, and if any towns have intentionally or carelessly allowed them to be lost or misapplied, the loss must be made good and the fund restored to its original amount.

School superintendents will be called upon to report the amount of the school funds in their several towns, how these funds are invested, the amount of income derived from them and such other details as will give a complete history of the original funds and disclose their present amount and condition."

The reserved lots in many unorganized townships have not been laid out on the face of the earth, and at present are considered in terms of their being a proportionate part of the township. As a rule, these lots are located only when the owners of common and undivided interests in the township wish a partition, or when the owner of an entire township wishes to sell a part of the township. The average cost of locating a Public Lot and establishing its metes and bounds is about $500.

In 1937, Public Lots were located and established in Big Squaw Mt. Township, Piscataquis County, and Day's Academy Grant,

Piscataquis County, by request of the Hollingsworth & Whitney Company, and in agreement with the Forest Commissioner.

The metes and bounds of the Public Lot in T. 3, R. 4, W.B.K.P. (Stetsontown) were relocated in 1937. These lines were originally established in 1836.

Under authorization given the Forest Commissioner by the 1937 Legislature, a certain parcel of land in the Public Lot of T. 1, R. 7, W.E.L.S., Penobscot County, was conveyed to Eugenia A. Powers on June 14, 1938.

Revenues from the Public Lots from all sources during the years 1937 and 1938 are as follows:

Township or Plantation	County	1937	1938
Glenwood Plantation	Aroostook	$ 15.00	$ 20.00
Macwahoc Plantation	"	464.37	.....
Molunkus Plantation	"	25.00	25.00
New Canada Plantation	"	406.40	39.00
Oxbow Plantation	"	61.60	.....
St. John Plantation	"	20.00	423.85
Westmanland Plantation	"	33.00	3,094.67
Winterville Plantation	"	310.73	24.00
T. 3, R. 2, W.E.L.S.	"	.....	10.00
T. 10, R. 4, W.E.L.S.	"	30.00	15.00
T. 17, R. 5, W.E.L.S.	"	9.91	2.08
T. 17, R. 10, W.E.L.S.	"	19.62	.....
T. 16, R. 10, W.E.L.S.	"	1,099.03	1,438.02
T. 16, R. 11, W.E.L.S.	"	708.59	1,208.93
T. 17, R. 11, W.E.L.S.	"	4.57	.....
T. 3, R. 3, W.B.K.P.	Franklin	625.00	300.00
T. 3, R. 4, W.B.K.P.	"	1,000.00	550.00
Letter E	"	262.50	50.00
Coplin Plantation	"	545.67	.....
T. No. 8, S. D.	Hancock	.....	38.00
Andover North Surplus	Oxford	2,473.00	.....
T. 4, R. 2, W.B.K.P.	"	245.00	200.00
T. 5, R. 4, W.B.K.P.	"	125.00	100.00
T. A, No. 1 (Riley)	"	.....	36.44
Lakeville Plantation	Penobscot	161.33	84.00
Stacyville Plantation	"	452.31	.....
T. 5, R. 8, W.E.L.S.	"	20.00	10.00
Elliottsville Plantation	Piscataquis	50.00	50.00
T. 2, R. 9, W.E.L.S.	"	.....	.44
T. 10, R. 9, W.E.L.S.	"	25.00	.....
T. 2, R. 11, W.E.L.S.	"	.....	25.00
Caratunk Plantation	Somerset	.....	549.83
Dennistown Plantation	"	16.50	42.22
Highland Plantation	"	.....	60.83
The Forks Plantation	"	41.63	.....
T. 5, R. 20, W.E.L.S.	"	1,540.59	.....
No. 14 Plantation	Washington	.....	987.26
		$10,791.35	$9,384.57

Indian Township

This department has been relieved of the duties of administering Indian Township, in accordance with Chapter 1, Section 283, Public Laws of 1933.

On May 13, 1938 the Forest Commissioner forwarded to the Commissioner of Health and Welfare, State House, a sworn statement of the receipts and disbursements in this matter together with receipt and disbursement vouchers, all of which had been duly audited and approved by the State Auditor.

MAINE STATE PARK COMMISSION

The last report stated that the U. S. Resettlement Administration had acquired over 16,000 acres of lands for state park purposes. This administration has been succeeded by the Farm Security Administration, the Bureau of Agricultural Economics, and its work is now carried on by the Soil Conservation Service in the U. S. Department of Agriculture.

The Commission has recommended the acceptance of about 8500 acres to the Governor and Council. The areas have been developed for public recreational use, timber and wild life conservation by the Works Progress Administration. They are as follows:

Site 1—Montville and Liberty, Waldo County 2575 A.
A day picnic area with beach and bathing privileges on St. George Lake and a wilderness area on Frye Mountain. For administration use a building has been erected, together with a storehouse and garages. For public convenience two and one-half miles of road have been improved, two latrines erected and a well dug. There are twenty-two acres cleared for picnic use and twenty-five square rods available for parking. There are twenty picnic tables and six fireplaces.

Site 2—Naples and Sebago Lake, Cumberland County 1275 A.
Beach and bathing privileges, overnight camping and trailer camping facilities. For administration use, in addition to office quarters and garages, a ranger's cabin is available. For the convenience of users three shelters and five latrines have been erected. This area has four separate beach areas with an opportunity for parking on four different areas aggregating over two thousand square rods. There are over three miles of park roads and ten miles of foot trails. There are six driven wells, fifty-eight picnic tables and fifty-two fireplaces.

Site 3—Weld (Mt. Blue, Center Hill and Lake Webb), Franklin County 4475 A.
Day picnic area on Center Hill, with beach and bathing privileges on Lake Webb and a wilderness area on Mt. Blue. For administration use a unit of farm buildings has been completely remodeled. Four miles of road have been built and the road to the Center Hill picnic area has been stabilized. There are twelve miles of foot trails and 100 square rods cleared for parking use. On Center Hill there are twenty-five picnic tables and twelve fireplaces. At Lake Webb there are twenty-one picnic tables and six fireplaces.

Site 4—Pownal, Cumberland County 175 A.
(Wilderness area on Bradbury Mountain with no development.)

The National Park Service through its State Park Division is still developing the park at Camden Hills.

On September 21, 1938, 100 acres of land was deeded to the state by the Merchants Association of Presque Isle to be known as the Aroostook County State Park. This area is located on the top and slope of Quoggy Joe Mountain and the shore of Echo Lake. With

the assistance of the Works Progress Administration a winter use development is under way. This will include a 2500 foot down hill ski run, ski jump and toboggan slide.

The Commission as State Study Authority is now undertaking a project of making a parkway study in order to definitely establish a State Park policy. With our natural advantages and use areas available there is no reason why Maine should not have a State Park System which will be enjoyed by our citizens and prove a paying attraction to our many visitors.

National Forests

By an Act of Congress, known as the Weeks Law, 24,994 acres of forest land were first acquired in 1918 in Oxford County, Maine, as part of the White Mountain National Forest Reserve. From this original purchase, there are today in this state 45,369 acres of forests. The following table shows the civil subdivisions of this land in Oxford County:

Town	Acres
Albany	6,362
Batchelder's Grant	14,260
Gilead	2,161
Lovell	78
Mason	10,153
Stoneham	8,736
Stow	3,619
	45,369

By an Act of Congress in May 23, 1908 the State Treasurer receives 25% of the net receipts realized from this Reserve in Maine and is apportioned by him to the towns located within the White Mountain National Forest. The following table shows this apportionment:

Town	Dollars
Albany	$181.16
Gilead	61.54
Lovell	2.22
Mason	289.11
Stoneham	248.76
Stow	103.05
	$885.84

IN MEMORIAM

During the past two years Maine has lost two of its former Forest Commissioners. Both were men who had maintained a continued interest in the Department.

Forrest H. Colby 1869-1938

Forrest Colby was unquestionably one of the most outstanding foresters Maine ever had, and is said to have been one of the longest practicing foresters in the United States. Born in Bingham, February 4, 1869, he attended the public schools in that town and later took a business college course in Augusta. He followed the lumber business all his life, first with his father in the business firm of Colby and Preble. Later he served with the American Realty Co., the S. D. Warren Co., and at the time of his passing, as timberland agent for the Maine Seaboard Paper Co. He served his state in the Maine House of Representatives and in the Senate. In 1917 he was appointed Forest Commissioner, which position he held for four years. Mr. Colby was a man of broad vision, and his years of experience in such phases of forestry as planting, surveying, timber estimating, logging, and river driving made his counsel often sought. He had a host of friends and was a man of deep religious conviction as is so often the case with men who really love the woods.

Frank E. Mace 1863-1937

Frank Mace was born in Aurora, June 11, 1863. His father, who was interested in lumbering, later moved to Great Pond where most of Mr. Mace's early life was spent. He was interested in civic activities and at the age of twenty-one held his first town office, later being appointed postmaster. He worked for a while for the Great Northern Paper Co. and in 1910 was elected to the State Legislature as Representative from Hancock County. In 1911 he was appointed State Forest Commissioner for a period of two years. After an interim of two years, he was again appointed Forest Commissioner in 1915 for a two year term. Following this he carried on lumbering operations in the vicinity of Augusta. In 1935 he was elected Representative to the State Legislature from Kennebec County. Mr. Mace died September 19, 1937 in Augusta. He was very much interested in charity work and did a great deal for the Augusta General Hospital. His ready smile made for him many friends.

INDUSTRIAL EVOLUTION AND FOREST PRACTICE IN THE NORTHEAST

*INDUSTRIAL EVOLUTION AND FOREST PRACTICE IN THE NORTHEAST

By FORREST H. COLBY

Maine Seaboard Paper Company

This title sounds rather formidable to me. It might, perhaps, better have been "Fifty Years of Forestry in the Northeast." Or, better still, "Fifty Years in the Woods of the Northeast." However, whatever I may say starts with a period beginning about fifty years ago.

On October 1, 1887 I started my life work as a woodsman and forester. Some nine years before that date I had begun to travel in the woods with my father, who had been a woodsman and lumberman all his life. Looking back to my first winter in camp I remember such things as these. All the trees were chopped down. The stumps were all cut very high because no snow was removed to cut them lower. Long tops were left also. But, it was planned to cut no trees less than fourteen inches on the stump. We did not start cutting until about the first of December. Before spring the snow became very deep and in some instances where the roads were shovelled the oxen were driven under the logs that had been felled across the shovelled roads.

All the hauling was done with oxen. Drag-sleds were used and the logs dragged a distance of about two miles to the landing. One pair of horses did the toting from a nearby headquarters camp. All supplies were toted with six-horse teams to this depot camp about seventy-five miles from the railroad. It took about a week to make the trip. For food we had beans, peas, salt pork, corned beef, flour, molasses, and dried apples. All the bedding was of a long spread type. That is, twelve men slept under one spread. Field beds, if you please.

The cut was nearly all spruce with a small percentage of pine. There was no hemlock, but in other sections of the state hemlock trees were being cut during the bark peeling season. The bark was taken off for the tanneries and the logs left on the ground to rot.

But, about this time a change began to take place. The next winter we had two four-horse teams hauling on "two-sleds," also sometimes called "wagon sleds". It was said that we must get into

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camp a bit earlier in the winter in order to cut our logs earlier. That the snow had bothered much the winter before and that our stumps had been left too high.

Not long after this, cross-cut saws began to be used for felling the trees. In the driving of logs it was urged that more care be taken, so that fewer logs would be broken and destroyed. The first sawmill was built in Maine in 1623. For years, we are told, there was no marked improvement in sawmills. But, by 1880 there had been some real improvements. Circular saws had been installed and now and then a band-saw.

On September 10, 1875 the American Forestry Association was organized, and it would seem that this may have been the real beginning of conserving the forests of our country. The "Eighties" seems to have been an important period for the foresters of the Northeast. By this time sawmills of some kind had consumed the bulk of our stumpage. Maine had been the principal lumber producing state. But Maine reached her peak in 1907 and New York became the leading lumber producing state for a time.

About 1900 an industry, destined to be one of the large ones of the country, began to come into its own. For years paper had been made on a small scale from rags. Experiments to make paper from wood had been going on for a long time. It has been estimated that in 1870 about two thousand cords of wood were used for paper making in the United States and that in 1880 more than forty thousand cords were used for this purpose. By 1890 the pulpwood and paper industry had become a real business. The sawmill business had begun to decline considerably. In 1920 nearly 8,900,000 cords of pulpwood were used in North America. This may have been about the peak of wood consumption for paper making. Surely, it was an enormous drain on the forests of North America. But, I am to talk about New England, so I must be careful not to wander out of the forests that I am acquainted with and get lost.

Up to the 'Nineties" there had been no great change in the method of transportation of logs and lumber. However, soon after 1900 the steam log-hauler was developed. The log-hauler or crawler type tractor was invented by the Lombards of Waterville, Maine. Well do I remember my first visit to a camp on Dead River, West Branch of the Kennebec, to see this strange machine at work. It showed lots of power and hauled logs. It was steered by a horse in thills. The horse being used on the day of my visit was very balky but he had to go. Some of the visitors were unkind enough to say that they thought it would be a better machine to make balky horses go than

to haul logs. This was the beginning of the present crawler-type machines. Then came the gasoline engine, gasoline tractors, and the truck and trailers with which we are all familiar. More recently the Diesel engine has come and we may expect the wood gas engine in due time.

Some wood is now being rossed in the woods by portable rossers. Probably, seventy-five to eighty per cent of the pulpwood used in New England arrives at the mills in the sap-peeled state.

All this time saw-logs and pulp-logs were being floated down the streams and rivers to the sawmills and paper mills. When one's stumpage is located within a reasonable distance of a drivable stream one is furnished with the very best and cheapest transportation there is for logs and pulpwood. Not so long after 1900 it became somewhat necessary to work back into the more remote sections for a certain amount of the wood required for the mills.

Then came the sawing of the trees, or logs, into four foot bolts. By this method much smaller streams could be driven thereby saving a part of some of the long hauls with horses and tractors.

At the present time a considerable amount of wood is transported by trucks directly to the mill. Some of this wood is moved forty miles or more. Notwithstanding the fact that more can be done with trucks on the long haul, much of the wood for the mills still is driven down streams and transported by railroads. Some of the coastal wood is transported to the mills in small steamers, vessels, and barges at a reasonable transportation cost.

This, briefly, is the industrial evolution of the forest products of New England for the last fifty years.

Now, have we conserved our forests as we should have? No, not as we should have, but maybe we have done fairly well, everything considered. Years ago most people thought we needed to get rid of our forests so that we could have more farm land. Now it would seem that we have more farm land than we need. Anyway, as I said at the start, we began to wake up about fifty years ago and since that time we have shown a slow but steady improvement, and we will continue to show improvement.

Maine has tried to preserve her forests since 1891, New Hampshire since 1881, Vermont since 1908, Massachusetts since 1904, Connecticut since 1902, and Rhode Island since 1906. New York began fully fifty years ago. You all know the story of this short article will not permit going into farther details.

Then comes the question, what have we left in New England and the Northeast? Dangerous ground we are treading on now. In my 1917 report, as Forest Commissioner of the State of Maine, I ven-

tured to make an estimate of the volume of timber then in the state. This estimate follows:

	Cords
Spruce (six inches and over)	50,000,000
Pine (six inches and over)	12,000,000
Cedar	6,000,000
Hemlock	1,000,000
Total	69,000,000

I am now sure that this estimate was much too low. We lost in Maine nearly one-half as much as that from the ravages of the bud worm. I also estimated that there then were many million of feet of the common hardwoods and much hardwood volume still remains.

I presume that the Society expects me to make some sort of an estimate of timber volume for the New England states. I may as well disappoint you by over or under estimating the volume as by not estimating it at all; so, I will take another chance as I did twenty years ago.

AVAILABLE SOFTWOODS

Table 1 shows the volumes of spruce, fir and hemlock available today in the forests of New England and the annual consumption for each state. These estimates are based on the best judgment of men who are familiar with the conditions in New England.

It would seem that these states are reasonably well supplied with pulpwood species for many years to come because, by the time the above volumes are consumed another crop will be ready for the harvest.

In addition to the above quantities of pulpwood species there should be at least 20,000,000 cords of white pine and 150,000,000 to 200,000,000 cords of hardwood all suitable for pulpwood, if and when it is needed. Intelligent leadership, better roads and modern equipment will make this timber available.

I have given no pulpwood estimates for Connecticut and Rhode Island, as I understand these two states have no appreciable volume of spruce. Both states, however, are fairly well supplied with hardwood stumpage and, if hardwood comes into its own for pulpwood purposes, Connecticut and Rhode Island will have a goodly amount for the future. Many factors are responsible for this supply of timber.

Previous cuts have been selective in that the bigger trees were removed and in most cases the younger and smaller trees were left to

grow, even where some of the old cuts were heaviest. Good yields are being harvested today. Many old farms, abandoned fifty to sixty years ago are yielding twenty-five to forty-five cords per acre, but, of course, this is the exception and not the rule.

Table 1

Available Volume of Softwoods in New England

State	Available volume in cords	Annual consumption in cords	Supply for No. of years
Maine	45,000,000	1,100,000	41
New Hampshire	9,000,000	320,000	28
Vermont	6,000,000	115,000	52
Massachusetts	800,000	100,000	8
Total	60,800,000	1,635,000	Aver. 37

The mixed character of the stands also is partly responsible for the continuous forest cover and present timber supply. A sufficient and well distributed rainfall has had much to do with the thrift and quality of our timberlands. The soil is excellent for forest growth. Federal and state activities in fire, insect and disease control have played and will continue to play, a very important part in the preservation of our forests. As time goes on we are realizing more and more how necessary these activities really are.

Lumbering in the Northeast is very diversified. There is a large variety of wood products for which the forests furnish the raw material. Cuts for these specialized products are necessarily selective. These result in minor thinnings of the forest which stimulate the remaining growth. Much can be done in the future to improve our forest conditions.

The mature and over mature stands of softwood can be removed in a manner to give young stands a chance to develop. Old growth and second growth hardwoods should be removed from mixed stands as fast as markets and operating conditions will allow, even though the stumpage returns received from them is not great.

Much can be done to save young growth and reproduction by exercising more care during logging operations. The supply of valuable species can be conserved by using inferior species and trees for bridges, skidding, and camps. Much has been done in this line, but there is more to do. High stumps and long tops still result in con-

siderable waste. The mills can do much to help the situation by adapting themselves to the timber supplies available and by utilizing the trees more closely.

The burden of taxation is a serious one, especially in the organized towns. In many places timberland owners are stripping and dumping their lands. Taxes should be readjusted in some way so that they will be distributed to other kinds of property that are better able to bear them. Forests are a very important factor of any state. Their burdens should be shared by all.

The major part, by far, of the timberlands in the Northeast are privately owned. Present forest conditions indicate that they have not been too badly handled in the past, and it is my belief that the people of the Northeast, and especially New England, would choose to have these lands remain as in the past, privately owned.

The Northeast is not a great devastated wilderness, as is thought by some. It is a great storehouse of raw materials, which, with proper care and consideration, will supply indefinitely its share of raw materials for all kinds of wood using industries.

Fifty years ago we were told that our timber would be gone in twenty or twenty-five years but, I am sure, New England and the Northeastern states are not entirely destitute of merchantable trees.

We are not going to let all the paper and lumber business go to the South or the West. We expect them to have their fair share of these industries but remember that we have the eastern spruce and it is the real tree for making newsprint and high grade papers.

New York, New Jersey, and Pennsylvania are generally included with New England in the Northeastern states. I do not believe I am qualified to say much about the situation in these three states.

We should remember that there are left in Nova Scotia, New Brunswick, Quebec, and Ontario, millions of cords of pulpwood. I do not believe an export tax will be placed on this wood for a long time, except on that from Crown Lands. It seems reasonable to expect that we shall continue to receive substantial quantities of pulpwood from these sources.

In concluding this article, so brief for such an important subject, I wish to stress the following factors as those of major importance in the maintenance and improvement of our forests in the Northeast.

1. Adequate fire protective systems.
2. Selective and careful distribution of cuts.
3. More care in operating in order to save good growing stock.
4. More complete utilization of the good trees cut and of inferior trees in the stand.

5. Control of forest insect pests and diseases.
6. Use of mechanical equipment for logging and transportation.
7. Coöperation of industries in the closer utilization of the forest.
8. Forest planting on carefully selected areas in some of the states, or parts of some of the states. In Maine I do not believe we need to think much about planting as our forests are producing naturally. It has been my experience that planting is pretty expensive.

DISCUSSION

Mr. W. R. Brown: It is of great interest to me to hear reviewed the essentials of the industrial evolution and forest practice in the New England States, by one that I know as an owner, operator, and state official of wide experience and long standing. His given name was a premonition of a lifetime spent in the woods. Consequently, his practical forecasts should be given the greatest weight.

My experience does not date quite so far back as the 80's, but in the late 90's our company did start Austin Cary as the first private forester to wage his battles with the woodsmen for cutting to a stump diameter and saving waste and advanced growth. In those days foresters were rare birds and he at once acquired the title of the "bug hunter" because he carried a bark beetle in the cover of his watch, as a demonstration of what was killing great areas of fine spruce trees.

Our company also bought from the inventor Lombard, his second, seventh, and ninth Loghauler, christened by the men "Slippery Jim," "Rosy Cogwheel," and "Old Pickup," and ran them experimentally day and night all of one winter on Stetson Town in Maine, with an elaborate layout of roads, turnouts, and landings, with telephone and switchboard control, to demonstrate that they could do the work of 60 horses.

The conclusion we arrived at then I think holds good today, that in comparison with horse transportation, log haulers are valuable in inverse proportion to the length and steepness of the road.

The modern truck, together with the Diesel roadbuilder, is fast coming into its own to again revolutionize logging.

And I could reminisce with Forrest, if time permitted, on the first mountain lookout and horizon map, the first state forestry law passed, the first land sold in the East to the federal government, the first timberland owners association, the first forest fire insurance company, the first certified seed, etc., but all that is water over the dam.

The most significant statement in his paper is the bold statement by one well qualified to make it, that the results of two estimates he

made of the New England timber stand many years apart, show that there occurred but a slight diminution of the available pulping woods during that time and that in the next 37 years required to complete the removal of the present merchantable stand of softwoods at the present rate of consumption, there will have matured approximately as much more. With the hardwoods there is undoubtedly an abundance of advance growth that will come into maturity during the next 37 years.

While perhaps the estimate of the softwood pulpwood stand in New Hampshire where I am acquainted is a bit strong because of the large percentage of pine in the southern part of the state, the general fact of abundant natural regrowth remains, and raises an important question. What do we really know about regrowth over large areas and what do we know about stands and their usefulness? Mostly guesses, because the facts are, that few states have any detailed knowledge of the percentage of various species in stands on the small units which go to make up the whole, or of the comparative rate of growth of each species in that stand. Where a stand is predominantly of one species the problem is easy. But not so where the stand is mixed. For example, Mr. Colby's paper shows a stand of $3\frac{1}{2}$ cords of merchantable softwoods and from $7\frac{1}{2}$ to 10 cords of hardwood to the acre over Maine. This is because the emphasis has been to cut and evaluate the softwood closely and to leave uncut and hardly estimate or value at all the hardwood. Growth tables that would apply to a solid stand of any one species at various ages become worthless where the stand is mixed. The sum of a total estimate is accurate only as the parts are accurate.

We need more detailed and better estimates of the growth and the stand of each species on all areas before we can know what is the total average annual growth over a great state. In my opinion the growth is greater than we expect.

The second point of great interest is the coming use of hardwoods for pulping both in the North and the South. My company is now using $\frac{1}{3}$ of its whole cut as hardwood, down to 5 inches, and all species in the sulphite process with good results. Other companies are beginning to use hardwoods in increasing quantities in the sulphite, sulphate, and soda processes. This is of far reaching significance for forestry and foresters. In a way, it will revolutionize the laying out of jobs, soil exhaustion, the expected annual yield, the rotation period, the health of the forests, the relation between supply and demand, and many other factors; and it has a real bearing on that hackneyed phrase "sustained yield." This generic term generally means to the

public that it will solve all forest problems, but actually it can be interpreted only when one knows the limiting factors surrounding it, such as the area to which it is applied, the consumption on which it is predicated, and the purposes for which it is intended; most of which are seldom revealed.

For instance, Germany now imports 60 per cent of her raw forest material and is even beginning to cut her forest principal. Yet she is a leader in forestry practice. Perhaps only Russia, Canada, the United States, and Finland will be left to supply their own wants and export to all the rest of the world. Or the poor widow with a one-hundred acre woodlot may need to cut to keep herself from starving—would anyone apply the principle of sustained yield to her?

We should stop this muddy nomenclature and define our terms. Do we mean sustained yield over national, state, or local regions? Do we estimate demands to be larger or smaller? Do we have access to other woods, other products, other processes, and other regions?

Constructively, I suggest that the demonstrated pulping quality of hardwoods has widened our base considerably for the practice of forestry both in the North and South. I suggest the adoption of a more workable formula or forestry slogan which I have long been convinced will be fully adequate, as it has been in Sweden and elsewhere, to conserve our resources. This slogan is: leave all forest land in a good productive condition. It implies an adequate supply of merchantable growing stock. It should apply to all areas, large and small, and it can be accomplished in any number of forestry ways. If universally adopted our problem would be solved.

Mr. Ehrhart: May I ask Mr. Ostrander if he could give us any idea of comparative costs of operating on a sustained yield basis?

Mr. Ostrander: I am afraid I can't give you much enlightenment on that. The difficulty in making this comparison is that prior to 1911 we cut saw lots and after we adopted our management plan we cut pulp wood because it has proved to be a much more profitable method of utilizing our spruce and fir. Then, too, we have greatly reduced the time required to get the logs to Glens Falls with a considerable reduction in interest charges and depreciation. This is about all the help I can give you for the purpose of comparison, but if you come over to Glens Falls some day I can show you some books that will give you a fairly accurate idea of the difference in costs.

APPENDIX

CAMP SITES

CAMP SITES AND LUNCH GROUNDS IN THE MAINE FORESTRY DISTRICT

Aroostook County

T. 3, R. 2, (Forkstown), The Bell Field. Route 166. (2)
T. A, R. 2, 10 Mile Brook, Route 166.
Hammond Pl., "B" Road at "B" Stream. (2)
Reed Pl., Pitlock Brook, Route 166.
Macwahoc Pl., Molunkus Stream, Route 2.
T. 1, R. 4, Henderson Brook, Halfway Camp, Route 2.
T. 1, R. 4, Brandy Brook on Slewgundy Road.
T. 1, R. 4, Little Molunkus on Slewgundy Road.
T. 16, R. 4, Carlstrom Hill, on Caribou–Ft. Kent Road, Route 161.
T. 16, R. 4, Carlstrom Brook on Caribou–Ft. Kent Road, Route 161.
T. 16, R. 4, Center Line, on Caribou–Ft. Kent Road, Route 161.
T. A, R. 5 (Molunkus), 3 Mile Brook, on Slewgundy Road.
T. 1, R. 5, Gulliver Brook, Route 2.
T. 7, R. 5, Cold Spring on Patten Road, Route 11. (2)
T. 8, R. 5, Camp Violette on Patten Road, Route 11. (2)
T. 9, R. 5, Road Side Springs on the Oxbow Road.
T. 9, R. 5, field at junction of Oxbow Road, Route 11.
T. 15, R. 6, Hedgehog Mt., Fort Kent Road, Route 11. (2)
T. 16, R. 6, at mouth of Fish River, on Eagle Lake.
T. 9, R. 7, Aroostook River at La Pomkeag Stream.
T. 14, R. 7, Fish River at Hewes Brook.
T. 14, R. 8, Fish River Lake Dam.
T. 16, R. 10 (Allagash Pl.), The Allagash River at East Twin Brook.
T. 15, R. 11, Big Brook on the Allagash River.
T. 15, R. 11, Allagash Falls.
T. 17, R. 11 (Allagash Pl.), Hafford Brook on the St. John River.
T. 13, R. 12, West Shore, Round Pond on Allagash River.
T. 13, R. 12, In Pocket, Round Pond on Allagash River.
T. 13, R. 12, Mouth of Musquacook Stream on the Allagash River.
T. 14, R. 12, Mouth of Five Finger Brook on the Allagash River.
T. 16, R. 12, Pocwoc Stream on the St. John River.
T. 11, R. 13, the Thoroughfare between Umsaskis and Long Lakes.

Franklin County

Dallas Pl., Stratton Road, Route 4. (4)
Twp. D, Elephant Mt., Appalachian Trail.
Twp. E, Sabbath Day Pond, Appalachian Trail.
Sandy River Pl., Piazza Rock, Appalachian Trail.
Jerusalem, The Spring Farm, between Kingfield and Bigelow, Route 27.
Jerusalem, Redington Stream between Kingfield and Bigelow, Route 27.
Jerusalem, Welch Opening, between North New Portland and Dead River, Route 16.
Crockertown, Campbell Field, between Kingfield and Bigelow, Route 27.
Eustis, Cathedral Pines, Route 4. (3)
Jim Pond Twp., Greenbush Pond, on the Arnold Trail, Route 4.
Jim Pond Twp., Alder Stream, on the Arnold Trail, Route 4. (2)
Alder Stream Twp., Seramphos Falls, on the Arnold Trail, Route 4. (2)
*Four Lunch Grounds on Kennebago River.
*Four Lunch Grounds on Rangeley Lake.

Hancock County

Twp. 3, N. D., Grand Falls on Nicatous Road, Route 188.
Twp. 10, S. D., Fish Hatchery on Tunk Lake, Route 182.
Twp. 34, M. D., Bracey Pond on C.C.C. Road north from Beddington.

Oxford County

Adamstown, Big Birch Island in Cupsuptic Lake. (2)
Andover West Surplus, Frye Brook, Appalachian Trail.
C Surplus, Squirrel Rock, Appalachian Trail.
Richardsontown, Little Pine Island in Richardson Lake Narrows. (2)
Richardsontown, Student's Island in Mooselucmeguntic Lake. (2)
Twp. C, Spirit Island in Richardson Lake, South Arm.
Lincoln Pl., a small Island in Richardson Lake, West Arm.
Magalloway Pl., Small Island in Umbagog Lake, near Hedgehog Landing. (2)
Lynchtown, Aziscoos Lake at Twin Brook. (2)
Grafton, Screw Auger Falls, Route 26. (2)
Grafton, The Notch Route 26, Appalachian Trail.
Grafton, Cedar Brook, Route 26. (2)
*12 Lunch Grounds on Mooselucmeguntic Lake.

*13 Lunch Grounds on Richardson Lake.
* 8 Lunch Grounds on Aziscoos Lake.

Penobscot County

T. 2, R. 6, Neally Brook on Medway Road, Route 11.
Mt. Chase Pl., Shin Ponds on Shin Ponds Road. (2)
T. 1, R. 7, Rossignol's, on the East Branch, Medway Road, Route 11.
T. 1, R. 7, Grindstone Falls, on the East Branch, Medway Road, Route 11.
T. 6, R. 7, Seboeis Bridge on the Seboeis Tote Road.
T. 1, R. 7, East Branch River.
T. 7, R. 7, Camp Colby, Seboeis Farm on the Seboeis Tote Road.
T. 6, R. 8, ¼ mile west of Hay Lake on Seboeis Tote Road.
T. 7, R. 8, Sawtelle Bridge on the Seboeis Tote Road.

Piscataquis County

T. 1, R. 9, Millinocket Lake, Katahdin Road.
T. 2, R. 9, Rum Brook, Togue Pond Road.
T. 3, R. 9, Avalanche Brook, at the Depot.
T. 3, R. 9, Chimney Pond.
T. 8, R. 9, Aroostook River at foot of Munsungen Deadwater.
T. 3, R. 10, Katahdin Stream, Katahdin Road, Appalachian Trail.
T. 3, R. 10, The Abol Field, Katahdin Road.
T. 3, R. 11, Frost Pond on the Great Northern Road. (8)
T. 3, R. 11, two miles west of Ripogenus Dam on the Great Northern Road.
T. 2, R. 12, Chesuncook Brook, on the Great Northern Road.
T. 7, R. 15, the end of the Seboomook-Caucomgomuc Road.
Elliottsville Pl., Wilson Stream off Bodfish Road, Appalachian Trail.
Squaw Brook, Big Squaw, near Fish Hatchery.

Somerset County

Dead River Pl., Mt. Bigelow Col. Unsurpassed and unobstructed view.
Dead River Pl., Mt. Bigelow Trail. (2)
Dead River Pl., Hurricane Brook, Route 16.
Dead River Pl., The Ledge House, Route 16.
Pierce Pond Twp., Cold Brook, off Long Falls Road, Appalachian Trail.
Mayfield, Kingsbury Pond, Route 16.
Caratunk, two miles south of Caratunk, Jackman Road, Route 201.
The Forks, three miles south of the Forks, Jackman Road, Route 201.
The Forks, the steel bridge, Moxie Road, Route 201.
Johnson Mt. Tract, the spring on Johnson Mt., Route 201.
Dennistown, Graffte Farm, on the Quebec Road, Route 201.
T. 5, R. 16, Lost Pond on the Seboomook-Caucomgomuc Road.
Plymouth, The Pittston-Seboomook Road.
Pittston, Canada Falls Dam on Great Northern Road.
Taunton & Raynham on Brassua Lake, Route 195.
Taunton & Raynham, West Outlet, near Highway Bridge.

Washington County

Twp. 18, E. D., Northern Stream, Route 191.
Cooper, Dead Stream, on Meddybemps Road.
Codyville, Tomah Stream, Vanceboro Road, Route 16.
Forest City Spring Brook, Grand Lake.
Twp. 19, M. D., Montigail Pond, north of Columbia on Barren Road.
Devereau, Lovejoy Hill on the Airline Road, Route 9.
Twp. 30, M. D., The Race Grounds, on the Airline Road, Route 9.
Twp. 27, E. D., The Chopping on Big Lake.
Twp. 27, E. D., The Falls on Grand Lake Stream.
Grand Lake Stream Pl., Cold Spring on Grand Lake Stream Road.
Topsfield, Musquash Lake, Route 16.

Note: Unless otherwise indicated by figures in parenthesis, camp sites have only one fireplace.
*Lunch ground only.

CAMP SITES AND LUNCH GROUNDS IN ORGANIZED TOWNS

Androscoggin County

*Livermore, Route 4 (2)

Aroostook County

Castle Hill, near Haystack Mt., Route 163.
Hersey, Hale Brook, Route 11.
New Limerick, Drew's Lake, on county road, off Route 2, 4 miles west of Houlton.
Island Falls, Mattawamkeag Lake, on gravel road, off Route 2.
Dyer Brook, Forks, Route 2, Junction of Pleasant Pond Road.
Dyer Brook, Walker Camp Site, 1 mile on Pleasant Pond Road, off Route 2.

Cumberland County

Bridgton, Moose Pond, Route 18. (2)
*Bridgton, Wood Pond, Route 117. (2)
*Bridgton, Willis Brook, Route 18. (2)
Sebago, East Sebago, Route 114. (2)
*Windham, N. Windham, Route 18. (2)

Franklin County

*Avon, Polar Spring, on Mt. Blue Trail.

Hancock County

Aurora, Bog Dam, Route 9.
Castine, near north town line, Route 175.
Mariaville, Jones Bridge, Union River, Route 179.

Kennebec County

*Readfield, one mile east of Readfield Depot, Route 17. (2)
*Readfield Dead Stream Bridge, Route 134.
*Vassalboro, Oak Grove, Route 201. (2)

Knox County

*Friendship, on road to Martin, Muscongus Bay, off Route 220. (2)

Lincoln County

*Jefferson, Mountain Hill. (3)
*Somerville, Allard Brook, Route 17. (2)
Damariscotta, north on Route 1. (2)
Waldoboro, Route 1. (2)
*Bristol, ½ mile north of Bristol.
Waldoboro, Medomak Stream, Route 220. (2)
Whitefield, Clary Lake, Route 126. (2)

Oxford County

Brownfield, west of village, on back road.
*Brownfield, Shepards River, east of town, Route 160.
Denmark, Pleasant Mt., on lookout trail, off Route 18.
*Bridgton, Highland Lake, in village. (2)
Fryeburg, Canal or New River, Route 5. (2)
*Fryeburg, Little Saco, Route 113.
Hiram, Mill Stone, Route 117. (2)
*Milton Pl., Mt. Zircon, on lookout trail, off Route 120.

Penobscot County

Burlington, at Saponac Lake, Route 188.
Lincoln, on Lee road, Route 16.
Lowell, on Nicatous road, Route 188.
Millinocket, on Route 157 within village limits.

Piscataquis County

*Greenville, on Great Northern Paper Co. road, just out of Greenville.
Monson, Spectacle Pond, Route 15.
Monson, Doughty Pond, Route 15.
Shirley, Shirley Bog, on the Shirley-Moxie Road.

Sagadahoc County

Topsham, Mt. Ararat lookout trail. (2)

Somerset County

Harmony, Route 150.
Jackman Pl., Pierce Farm, Route 201.
Jackman Pl., Owl's Head, Route 201.
*Canaan, Chase Hill lookout trail.

Waldo County

Palermo, Sheepscot Lake, Route 3. (3)

Washington County

Baileyville, Route 9, west of Calais.
Calais, at Big Spring, Route 1, south of Calais.
Crawford, at East Machias River, Route 191.
Crawford, north end of Love Lake, Route 9.
Perry, near Frost Cove, on East Shore road, near Perry.
*Robbinston on Mill Cove, Route 1.
Trescott, at East Stream, on road to Lubec, Route 11.

York County

*Alfred, Alfred River, Biddeford Road, Route 111. (2)
*Dayton, Salmon Falls, on side road from Bar Mills. (2)
*Waterboro, Ossipee Hill lookout trail. (3)
Old Orchard, on Middle Road. (3)
York, Agamenticus Hill lookout at foot of trail. (2)
*North Waterboro, Route 5, ½ mile north of post office. (3)

*Indicate sites primarily suited for lunch grounds only.

Note: Figures in parenthesis indicate the number of fireplaces.

EARLY CHRONOLOGY OF FIRES AND FIRE PROTECTION

1795 Big West Branch fire near Mt. Katahdin.
1825 Miramichi fires, 1300 Sq. Mi.
1837 Seboeis River fire.
1855 An Act by Legislature to protect forests from fires and to punish the unlawful and careless kindling of fires.
1891 State Land Agent made Forest Commissioner.
Selectmen made forest fire wardens.
County Commissioners to appoint wardens in unorganized towns.
Selectmen required to make report of forest fires.
1903 Beginning of complete record of fire statistics for entire state.
1905 First fire lookout tower erected on Big Squaw Mt.
1908 Crockertown fire and Attean fire.
1909 Maine Forestry District created.
1911 T. 16 and T. 22 M. D., and Enchanted fires.
1911 Federal Coöperation through Weeks Act.
1913 First steel tower lookouts erected.
1925 Federal coöperation through Clarke-McNary Act.
1930 System of coöperation of state with towns through county warden inaugurated.

FOREST FIRE RECORD

	MAINE FORESTRY DISTRICT				OUTSIDE MAINE FORESTRY DISTRICT			
	Year	No.	Acreage	Damage	Year	No.	Acreage	Damage
1	1903	140	200,232	$761,588	1903	209	66,155	$183,500
2	1904	31	6,958	12,665	1904	No Figures		
3	1905	109	14,737	40,518	1905	33	5,579	23,105
4	1906	56	7,250	19,488	1906	11	371	1,540
5	1907	17	2,324	5,257	1907	17	2,200	9,310
6	1908	127	98,691	361,796	1908	111	43,439	257,020
7	1909	68	27,083	63,734	1909	89	11,545	32,965
8	1910	17	267	935	1910	18	581	1,906
9	1911	127	99,654	298,052	1911	75	11,423	48,303
10	1912	63	16,198	57,152	1912	36	4,042	14,096
11	1913	74	9,327	28,477	1913	120	20,887	148,365
12	1914	105	8,311	14,467	1914	52	7,405	14,840
13	1915	80	14,474	22,776	1915	76	11,185	55,340
14	1916	54	8,257	9,460	1916	18	3,359	10,305
15	1917	19	147	1,334	1917	9	311	800
16	1918	58	3,820	7,291	1918	21	5,118	70,600
17	1919	85	4,352	6,305	1919	19	668	2,625
18	1920	118	34,558	143,752	1920	46	6,245	42,155
19	1921	250	56,947	404,555	1921	112	11,883	112,560
20	1922	164	19,198	106,001	1922	52	2,190	8,775
21	1923	132	62,407	289,845	1923	49	7,932	51,521
22	1924	158	38,401	101,986	1924	62	1,956	11,802
23	1925	73	2,328	14,058	1925	38	3,556	28,460
24	1926	83	3,717	34,068	1926	61	8,495	18,113
25	1927	60	9,096	103,650	1927	49	2,524	25,705
26	1928	27	1,562	1,965	1928	37	622	4,070
27	1929	90	1,323	11,363	1929	78	1,142	33,394
28	1930	129	11,677	39,315	1930	134	21,630	104,545
29	1931	86	555	1,490	1931	134	4,275	47,347
30	1932	164	30,343	50,731	1932	157	6,483	10,076
31	1933	165	5,309	8,275	1933	112	9,951	30,216
32	1934	165	130,293	385,126	1934	101	6,077	36,538
33	1935	220	14,473	30,170	1935	82	4,249	10,105
34	1936	84	179	13,270	1936	52	1,461	7,025
35	1937	143	1,358	12,201	1937	100	4,355	18,023
36	1938	92	5,210	7,815	1938	81	10,929	25,706