



50<sup>TH</sup>

*Anniversary*

1909 - 1959

HISTORY OF FORESTRY  
IN VERMONT

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IN VERMONT

1909 - 1959



By  
PERRY H. MERRILL

# VERMONT STATE FORESTERS



WILMOT G. HASTINGS  
1917-1923



ROBERT M. ROSS  
1924-1929



AUSTIN F. HAWES  
1909-1916



PERRY H. MERRILL  
1930-1955\*



ALBERT W. GOTTLIEB  
1956 —

\* DIRECTOR 1956 —

## FOREWORD

This is the story of the Vermont Forest Service. It tells about its growth and accomplishments during the past fifty years and mentions those who played an active part in the building of a Forest Service which every Vermont citizen may be proud of. We realize that probably many interesting facts have been passed over in its preparation and many names not mentioned which should have been. We plan to keep a record of all such omissions as they come to mind or are brought to our attention so that they may be included in a future and enlarged edition. This history of the Vermont Forest Service is being published as we approach the end of our Golden Anniversary Year, a year in which Vermont had the honor of being host to the members of the National Association of State Foresters. While it was a pleasant task to welcome to Vermont the Chief Forester of the United States, Richard E. McArdle, and State Foresters from nearly every state, it was an even greater honor to have with us and to present to them our first State Forester Austin F. Hawes, our second State Forester Wilmont G. Hastings, and Mrs. Robert M. Ross, the widow of our third State Forester. These men together with Perry H. Merrill and Albert W. Gottlieb, our present Director of State Forest and Parks and our present State Forester, are the five men responsible above all others for the development over the past fifty years of our well-rounded forestry program in Vermont. Those of us who were fortunate to have had an opportunity to know these men and to have worked beside them, believe it most fitting that we dedicate this story of the Vermont Forest Service to them in appreciation of their loyal service, past and present. We are confident that the people of Vermont join with us in this dedication.

### STATE BOARD OF FORESTS AND PARKS

DONALD W. SMITH, *Chairman*  
WALTER A. MALMQUIST  
HAROLD E. HAYNES

Montpelier, Vt.  
Dec. 18, 1959

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## HISTORY OF FORESTRY IN VERMONT

Vermont was originally entirely forest land except for small burns, rocky areas or marshes. When Samuel D. Champlain sailed down the lake which bears his name and when he first saw the green forest-clad slopes, he exclaimed, "Viola les verts monts," (Behold the green mountains). Tradition has it that from these words abbreviated first to "Verdmont" and still further by the omission of the "d", was derived the name of the state.

The most important of the woods was the white pine (*Pinus strobus*) which grew to a height of 250 feet, and six feet in diameter. Trees 140 to 180 feet tall were not uncommon. The white pine was abundant in the Champlain and Connecticut River valleys and along the tributary streams which flowed into them.

Throughout the Champlain valley, the red oak was an important tree. The higher areas were covered with balsam fir and red spruce. Throughout the plains and on the lower slopes were the birch, beech, and maple trees often intermixed with spruce, hemlock, ash, elm, bass, butternut, cherry, and hornbeam. The red pine appeared on the sandy shores along Lake Champlain and extended far up the Winooski River.

During the early days before 1760 King George of England declared that "all white and other pine trees fit for masting the Royal Navy" should be saved.

As settlement progressed in Vermont, man needed lumber for his homes and buildings. The first primitive sawmill was built in Westminster in 1738 or 1739. The census of 1840 showed 1081 sawmills in Vermont. By 1840 to 1850 the height of clearing land for farms had been reached and since then, abandonment has continued to this day.

The first settlers in Burlington found there a dense growth of oak and pine. The first persons to open the lumber trade with the Canadians, by getting out large pine trees for ship masts and floating them in rafts to St. John, were two Germans who settled on two points of land in Shelburne in 1766. The markets for all these trees were in Europe, which was easier to communicate with than any place in this country that was large enough to create a demand for timber in quantity. Ira Allen built the first sawmill in the vicinity of Burlington in 1786. The first raft of oak timber was taken to Quebec in 1794. In 1796 a raft of Norway pine was taken. It required 12 months to cut and prepare a raft of logs which were floated from below the Winooski Falls.

In 1744 Sieur Levasseur visited the shores of Lake Champlain in search of timber for ship building, particularly pine suitable for masts.

Soon after 1749 Sieur Levasseur constructed the first sawmill built by the French in the Champlain Valley at the Mississquoi Falls, Swanton. In 1754 the Intendant Bigot was granted permission by the King of France to purchase lumber from this mill. This mill was later burned by five Englishmen sent out from Massachusetts.

Between 1765 and 1775 James Robertson and Simon Metcalf

employed fifty men of French descent in the lumber industry at Missisquoi Falls at a mill built on the site of the old French mill.

In 1822, the Champlain canal was opened to trade and the younger generation built schooners and canal boats in place of rafts.

Burlington developed into the center of the lumber industry of the United States. With the construction of the Central Vermont, the Rutland and the Burlington and Lamoille Valley railroads, Burlington continued to be an important milling center. In 1870 Burlington was importing about 150,000,000 board feet of lumber. The lumber was brought from the mills in the Ottawa and St. Lawrence valleys without sorting and was here sorted and finished to meet the requirements of different markets. Lumber was shipped from Burlington, on boats, through Lake Champlain and the Champlain Canal and later via rail direct to the embarkation port, Boston, for export to Australia and the West Indies. This business continued with slight ups and downs until the duty of \$2.00 a thousand feet on lumber from Canada went into effect in 1897. It immediately dropped off to about fifty million feet a year until today most of the lumber coming into Burlington is used in that vicinity.

As far as Vermont was concerned, the Connecticut River was mainly a logging stream. Large numbers of the logs in the early days were floated down to mills located in Massachusetts. In later years the river could be seen filled with pulpwood in the early spring.

Considerable sums of money were expended to make the Connecticut navigable above the falls at Bellows Falls.

A growing country needed roads and later railroads for its development.

#### *Wood Used by Roads, Railroads, etc.*

Energetic people got busy in the middle of the nineteenth century to build toll roads and to cover them with planks. A turnpike was a road made by individuals or by a corporation on which tolls were collected. Occasionally to avoid the payment of tolls other people or communities laid out alternate routes between the same points. These were known as "Shunpikes." Large quantities of lumber were needed to build these plank roads.

In 1849 the legislature passed an act incorporating the Lamoille County Plank Road Company for the purpose of building a plank road from Waterbury to Hyde Park. In 1850 Stowe gave permission to use the then present highway through Stowe provided the Stowe people were given free use and the company would pay all damages. Waterbury voted likewise. By 1851 a plank road using hemlock three inches thick was built on timber foundations from Waterbury to Stowe. It is estimated that about 2,000,000 board feet of lumber was used on this road alone.

The 1870's were heydays in railroad construction. Charters were granted for many more railroads in Vermont. Most all of them were never built. However, for those which were in operation wood was in great demand for fuel.

In 1874 the Vermont Central railway used 167,485 cords of wood to fire its engines and 2,300 cords to heat the depots at a cost of \$815,-303.00. As a rule the price per cord ranged from \$2.50 to \$3.75 per cord delivered to the railroad site. By 1887 the Vermont Central had followed the changing trend and had reduced the annual wood consumption to 68,000 cords and the coal consumption was then 37,000 tons.

It is estimated that at the height of use the Vermont railroads burned annually over 500,000 cords of fuelwood.

From the first settlement at Fort Dummer up to 1850 there was a great demand for timber to construct homes, at first crude log cabins; in later years pretentious mansions which grace our landscape today.

As Vermont was originally forested, the early settlers burned much fine timber to clear their lands for agriculture. There was a great demand for potash and lime and iron ore which required great quantities of wood. Clear cutting was the practice of the day. Trees were an impediment to settlement, a lurking place for the Indian.

Beginning about 1820, with the advent of the iron industry which extended eventually from Monkton to the Massachusetts line, large quantities of wood were burned for charcoal. Here again the clear cutting of our forest continued. McDonough's fleet which was outfitted at Vergennes depended upon iron brought from the nearby Monkton Iron Works. High grade iron ores were brought over the Lake from Port Henry, New York, to mix with the low grade, local bog ores.

As early as 1820 about 10,000 bushels of charcoal were burned in Glastenbury for the Bennington Iron Works. As the demand for charcoal grew the Bennington and Glastenbury railroad 8.97 miles long was built in 1872 especially for transporting charcoal and lumber from Glastenbury to Bennington.

In 1882-3 eleven and one half miles of railroad were built from North Concord to East Haven primarily as a lumber railroad and known as the Victory Branch of the St. Johnsbury and Lake Champlain Railroad.

In 1885 Deerfield Valley Company built eleven miles of railway from Hoosac Tunnel to Readsboro to reach its wood pulp and saw mill plants at Readsboro. In 1892 the road was extended to Wilmington and named the Hoosac Tunnel and Wilmington Railway.

Other lumber railroads included the Lye Brook Hollow branch in Manchester built by the Rich Lumber Company.

During the period of World War I the New Hampshire Stave and Heading Company built a logging railroad from North Stratford up the Nulhegan.

The census of 1820 gave statistics for Windsor County as follows: "The value of articles manufactured from white pine and hemlock, \$3,200.00." The quantity of sawn material consumed was 1,200 logs and 500,000 board feet valued at \$3,300.00.



As the land was cleared, the need of more lumber for building and commercial use increased until 1907 when the lumber cut reached a peak of 373,660,000 board feet. There was a gradual diminution to 1930 when the lumber cut was only 94,217,000 board feet. Since then there has been a gradual increase to a high in recent years of 342,000,000 board feet in 1946. In addition, in 1951, there were 210,183 cords of pulp wood cut, which is equivalent to about 105,000,000 board feet.

#### *Development and Growth of Forestry Department*

Any public movement has to have some leading spirits. The activities of persons is as interesting as the fact that a law was passed. Who were the moving forces and what was their interest in developing Vermont's forestry program. There were many people who assisted the leaders. Professor L. R. Jones, who was botanist at the University of Vermont from 1890 to 1910, was a dynamic leader during that period.

George Aitken, a native of Scotland, Superintendent of the Billings farm of Woodstock, and a member of the State Board of Agriculture, was also an active promoter of forestry.

Dean J. L. Hills, formerly of the State College of Agriculture, who served as Secretary of the State Board of Agriculture for many years and later director of the Vermont Agricultural Experiment Station, played a very important role in the development of forestry in Vermont.

The changes over the years in most laws were made usually to improve a situation and make the work of the forestry department more valuable to the public. Occasionally some changes carried a political tinge. The development of forestry stemmed from those persons interested in agriculture, so some history of agricultural development is not amiss. There was much interest in the administration of agriculture as is noted in the changes from 1871 to 1908.

In 1871 the State Board of Agriculture, Manufacturers and Mining was established. It was comprised of the Governor, President of the State Agricultural College and six others appointed by the Governor and confirmed by the Senate. The appropriation to the Board was \$2500.00 per year. In 1878 the board was abolished and a state superintendent of agricultural affairs was established.

In 1880 the Vermont Board of Agriculture, with the same composition of membership as in 1878, was established upon the repeal of the Act of 1878.

The first legislative step in regard to forestry was taken when Colonel Joseph Battell of Middlebury introduced a resolution in the House in 1882 to appoint a committee to investigate and report in regard to the forestry situation in the state.

Governor Barstow was authorized by the 1882 legislature by Joint Resolution No. 133 to appoint a committee of three which was composed of Senator Redfield Proctor, Phelps and one other. The report was made in 1884 by former Senator Redfield Proctor.

In 1884 both the House and the Senate appointed a joint committee on forestry. The House members were:

Mr. Carpenter .....	Barton
Mr. Conland .....	Brattleboro
Mr. French .....	Woodstock
Mr. Perry .....	Brookline
Mr. Tice .....	Holland

In 1884 an act (H28) to encourage the planting of shade trees on public squares, parks and highways was passed.

In 1886 the first Arbor Day in Vermont was proclaimed by Governor Samuel E. Pingree.

In 1888, by joint resolution No. 170, the Board of Agriculture was directed to make the subject of forestry, including the planting of forest trees on the worn out, or waste or rock lands in the state and the improvement and the protection of all forests, one of its topics of instruction in their public meetings about the state. Agreeable to the legislative resolution forestry was discussed at the Cabot Institute by Professor W. A. Deering, U.V.M., his subject being "Forestry as a Means of Abundant and Equal Rain Supplies." At the Waitsfield Institute, Mr. William Chapin of Middlesex discussed "Forestry and Maple Sugar Making."

In 1892, by Senate joint resolution, the Board was directed to inquire into the effect of stripping a county of its forests, upon the soil, climate and health, the necessity and advisability of protecting the same, probable expense and such other facts as they may deem necessary for a clear understanding of the subject and to employ the same together with recommendations in their next report.

In 1894 Governor Urban H. Woodbury devoted a part of his message to the legislature to the subject "Our Forests," which might as well have been expressed thirty or forty years later. "The owners of timber lands in our state are pursuing a ruinous policy in the method used in harvesting their timber. There is no more valuable crop produced from land than timber, especially spruce lumber. By the preservation of spruce trees of ten inches in diameter and under, when the large timber is cut, a good crop can be cut every fifteen years at least. Every decade will see timber more valuable and it is of great importance to the owners of timberlands, as well as to the State as a whole, for what increases the wealth of a class increases the wealth of the State — that some measure should be adopted to lessen the wanton destruction of our forests. The value of our water powers and the attractiveness of our scenery and the preservation of game and fish also call for reform. I invite your earnest attention to this subject." How true his forecast turned out to be.

In 1884 a bill to abolish the State Board of Agriculture and set up a Commissioner of Agriculture in each county was defeated.

In 1904 the legislature authorized the Governor to designate one member of the Board of Agriculture as Forest Commissioner. Ernest

Hitchcock of Pittsford, also an officer of the Vermont Forestry Association, became the first Forest Commissioner on January 1, 1905. He was succeeded on July 1, 1906 by Arthur M. Vaughan of Randolph.

Forest Commissioner Vaughan made the following recommendations to the legislature:

"1. We should secure accurate information as to our present forest condition.

"2. It will be observed that about half the fires of last year were caused by railroads. Legislation to lessen this danger seems to be called for.

"3. One great obstacle to the planting of waste lands at present is the excessive cost of little trees. If the State would cooperate with the Agricultural College in the establishment of a forest nursery (a beginning has been made already by the College) material for planting could be furnished our people at less than half present cost.

"4. x x Perhaps the matter of most pressing importance, the present legislature should not adjourn without making adequate provision to fight any invasion of gypsy moth and brown tail moths x x."

In the June 1908 report of Commissioner Arthur M. Vaughan recommended the employment of a technical forester and the purchase of waste land for state forest planting.

Two former members of the State Board of Agriculture, F. C. Williams of Newport and Ernest Hitchcock of Pittsford, served in the legislatures of 1906-1908. A movement was started to have a commissioner instead of the Board. The bill was written and rewritten and finally toward the end of the 1908, a Board of Agriculture and Forestry, consisting of the Director of the Agricultural Experiment Station (Dean J. L. Hills) and two members were appointed by the Governor, with the consent of the Senate. Governor Fletcher Proctor had much to do in getting legislation to establish the position of state forester. In the legislature were two former members of the Board, Arthur Vaughan and C. F. Smith of Morristown who were very helpful in getting a legislature, which was somewhat opposed to change, to act. From 1908 to 1917 Dean J. L. Hills acted as secretary to the Board.

The establishment of the position of state forester was probably partly the result of the serious forest fires during 1903 and 1908.

The main duties of the state board were to appoint a Commissioner of Agriculture and a State Forester, professionally trained, at \$2,500.00 per annum and expenses, and to apportion the appropriation between agriculture and forestry. The first appropriation of \$25,000.00 was divided equally. The meetings, held once a year, lasted for only a few minutes.

Governor Prouty first appointed Fred L. Davis of Hartford as Commissioner of Agriculture but he declined. Mason Stone, then State Superintendent of Education suggested to Governor Prouty the name of Orlando L. Martin who was appointed forthwith. Professor L. R.

Jones of the Botany Department of the University of Vermont was the person who contacted Austin Hawes, then State Forester of Connecticut, and persuaded him to come to Vermont. Mr. Hawes was interviewed by Governor Prouty in Newport and on April 1, 1909, he was appointed by the Board.

Mr. Clifford Pettis, later State Forester of New York, assisted the Vermont Agricultural Experiment Station in establishing its nursery. Mr. Pettis was an applicant for the job of State Forester but Professor L. R. Jones felt that his knowledge and interest was too much confined to nursery practices in which he was a leading expert.

As a result of a joint resolution of the 1910 legislature a committee appointed to make a report on the Conservation of Natural Resources was comprised of John M. Thomas, Charles P. Smith and Franklin S. Billings. The report of 21 pages made to the legislature two years later was written under the following titles by the authors as note.

THE CONSERVATION OF THE FERTILITY OF THE SOIL OF VERMONT

Professor Joseph L. Hills  
*University of Vermont*

THE RIGHTS OF THE PUBLIC IN WATERPOWER

Colonel Franklin S. Billings  
*Woodstock*

SHORT-SIGHTED LUMBERING

Austin F. Hawes  
*State Forester*

CONSERVATION AND TAXATION

Honorable Joseph A. DeBoer

VERMONT'S WEALTH IN HER FORESTS

Honorable Allen M. Fletcher

THE PROTECTION OF SOURCES OF WATER SUPPLY

Dr. Henry H. Vail

SHORT-SIGHTED FARMING

E. S. Brigham

THE CONSERVATION MOVEMENT

President John M. Thomas

Mr. Fletcher, in his report, stated: — "Our forests by reason of mismanagement are so rapidly disappearing that any estimate of the wealth we possess in them today will be valuable tomorrow only as the record of a condition already changed. However, a comparison of the condition of our forests today with those of fifty years ago, shows conclusively that if we continue our present method or lack of method in dealing with them, we shall, in another fifty years, have few forests on which to place a value."

"There are two ways of increasing production. To increase the

forest area by planting and to increase the output of the original area by care in management.

“If our schools would give the children a knowledge of the products of the forest and of the great number of industries dependent on those products, the younger generation would appreciate both the value and the necessity of good forests. While it is probably impracticable to introduce a complete course in forestry in our already crowded public school curriculums, we should at least, after awakening pupils' interest in the importance of the forests, give them practical ideas about forest maintenance and preservation by improvement thinnings and reproduction cuttings.”

The legislature of 1917 abolished the Board of Agriculture and Forestry and set up a new one which imposed the duties of State Forester upon the Commissioner of Agriculture. Mr. Hawes resigned effective February 1, 1917. A. B. Chandler Assistant State Forester, served as Acting State Forester until he resigned on April 7th. On April 10th Deputy State Fire Warden, Robert M. Ross, was appointed to succeed Chandler. In August, 1917, W. G. Hastings was appointed Chief Forester, a position authorized under the new law.

Amos J. Eaton of South Royaltown was employed as Deputy State Fire Warden on March 1, 1918.

The General Assembly of 1923 enacted a new law creating a Forest Service and in this service a Commissioner of Forestry, who had the rights, powers and duties formerly vested by laws in the State Forester (Commissioner of Agriculture). Honorable Redfield Proctor, then Governor, was interested in the passage of this law. Mr. Hastings resigned on September 25, 1923, and Robert M. Ross was appointed Commissioner of Forestry on February 4, 1924, by Governor Redfield Proctor. The state appropriation was \$23,000, just double what it was in 1909.

On November 30, 1929, Robert M. Ross resigned and Perry H. Merrill, Assistant State Forester, who began work with the Department on August 1, 1919, was appointed Commissioner of Forestry by Governor John E. Weeks.

As a result of a recommendation of Governor Charles M. Smith, the legislature of 1935 enacted a law establishing a Department of Conservation and Development supervised by a Board of three persons. The Department included the Forest Service, Fish and Game Service, Publicity Service and State Geologist. The title of Commissioner of Forestry was changed to that of State Forester. By virtue of his office the State Forester was State Geologist (this was repealed in 1937) and State Nursery Inspector.

The original members of the board were J. J. Fritz, Chairman, W. D. Woolson and Edward H. Mason. In 1940 the board was comprised of Donald W. Smith, Chairman, John L. Keeler and Samuel R. Ogden.

The legislature of 1943 abolished the Department of Conservation and Development and established a department of Natural Resources with the same divisions, but with a Board of five members. They were

Francis J. Morrissey, Chairman, J. Brower Hall, John P. Locke, J. Harold Stacey and Chester M. Way.

In 1945 the Vermont Development Commission was created and the Publicity Service was transferred to that department.

In 1947 a separate Forest Service was established. The members of the Board appointed by Governor Ernest W. Gibson were Donald W. Smith, Chairman, Edgar H. Park and Crosby M. Sargeant. In 1951 Governor Lee E. Emerson made appointments to the Board as follows on six years staggered terms:

Donald W. Smith, Chairman, Walter A. Malmquist and Harold E. Haynes.

The same board has been continued with Donald W. Smith as Chairman to date by reappointments as terms expired under Governors Lee E. Emerson, Joseph B. Johnson and Robert T. Stafford.

Over the years there had been a great increase in the recreational use of our forest lands. The demands for an increased number of facilities gave the recreational aspect of the Forest Service greater importance. The 1955 legislature established a Department of Forests and Parks with two divisions, a forest service and a park service to be administered by a Director of Forest and Parks with a three man Board of Forest and Parks as a policy making body. The Board appoints the Director for a term of six years with the approval of the Governor. The Director appoints the State Forester and the Supervisor of Parks for terms of six years with the approval of the Board. The personnel changes were chiefly in title, viz. — Perry H. Merrill from State Forester to Director; Albert W. Gottlieb from Deputy State Forester to State Forester, and Robert G. Simon from Assistant in Charge of Parks to Supervisor of Parks. Mr. Robert B. Williams was appointed as Assistant to the Director of Forests and Parks in 1956. The personnel of the Park Service has increased in numbers. Mr. Merrick Smith was hired in 1958 as Assistant Supervisor of Parks.

#### *Historic Sites*

The Director has served as Executive Secretary of the Historic Sites Commission since its establishment in 1947 and previous to that as Secretary of the Hubbardton Battlefield Commission which was set up by a legislative act in 1947.

#### *State Forester's Powers and Duties*

Such powers and duties as the state forester has, have been built up by new laws and amended six times since 1904.

He has charge of a nursery for forest seedlings. He is state fire warden and, in his discretion, may exercise all the authority of the fire wardens and may do any act which such wardens may do. Every person and town is governed and bound by such acts of the state forester as if the same had been performed by such warden.

The state forester shall be a graduate of a recognized college of

forestry with practical experience in forestry. He is appointed by the director with the approval of the board for a six year term. He may conduct and report upon experimental investigations pertinent to forestry in cooperation with the Vermont Agricultural Experiment Station and the United States Forest Service. He shall manage the state forest. He may advise owners of forest in regard to their management. Until July 1, 1953, the state forester was inspector of nurseries. The state forester appoints town fire wardens, with the approval of the selectmen. He appoints the wardens in unorganized towns and gores.

### Forestry Conferences

On October 1, 1949, a conference was called at Montpelier by the Vermont State Chamber of Commerce with the following co-sponsors — American Forestry Association, Vermont Bankers Association, American Forest Products Industries, Vermont Development Commission, Vermont Forest Festival Week Committee, Chamber of Commerce of the United States, Vermont State Farm Bureau, New England Forestry Foundation, Vermont State Grange, State Board of Forests and Parks, and the Vermont Timberland Owners' Association.

“Our forests ought to be put to work and kept at work. I do not minimize the obstacles that have to be met, nor the difficulty of changing old ideas and practices. We must all put our hands to this common task. It is not enough that the Federal, State, and local governments take the lead. There must be a change in our National attitude. Our industries, our land owners, our farmers, all our citizens must learn to treat our forests as a crop to be used but also to be renewed. We must learn to tend our woodlands as carefully as we tend our farms.”

BY PRESIDENT GALVIN COOLIDGE IN A  
PROCLAMATION FOR AMERICAN FOREST  
WEEK, APRIL 27 TO MAY 3, 1925.

The chairman of the conference Charles P. Smith, Jr. appointed a committee to draft a Forestry Plan for Vermont to be presented to the conference. The committee consisted of the following persons:

DONALD W. SMITH, Chairman  
*State Board of Forests and Forest Parks*  
MORTIMER R. PROCTOR, Director  
*U. S. Chamber of Commerce, Ex-Governor*  
THOMAS FARWELL, Manager, Ryegate Paper Co.  
*Chairman Forest Festival Committee*  
CLAUDE FARR, President,  
*Bradford Veneer and Panel Co.*  
GERALD RICE  
*Granville Manufacturing Co.*  
W. R. ADAMS, Professor of Forestry  
*University of Vermont*

FORTIS ABBOTT  
*Sec. Vermont Sugarmakers Association*  
GERALD S. WHEELER, Supervisor  
*Green Mt. National Forest*  
SAMUEL R. OGDEN, Chairman  
*Vermont Development Commission*  
MERLIN WARD  
*Ward Lumber Company*  
CHARLES P. SMITH, JR., Ex-officio.  
*President Vermont State Chamber of Commerce*  
PERRY H. MERRILL  
*State Forester served as secretary to the committee*

The committee report was adopted with a few minor changes which were authorized and concurred in by the members of the committee.

#### GENERAL

Of the land area of Vermont 62.5% or 3,713,400 acres are covered with forest growth. The forest areas have been cut over several times without too much regard for the next crop. Up until the last twenty-five years chiefly softwoods were taken. Some areas were cut very lightly, if at all, until the second world war. Beginning then everything was taken to fill our war needs.

The result today is a forest area (1) of much timber of the less desirable species, (2) of stands with an insufficient number of trees per acre, (3) with a growth rate of  $\frac{1}{2}$  to  $\frac{1}{3}$  of what it should be, (4) with a large volume of our timber in the lower diameter classes, and (5) of cull timber left from cutting only high quality trees.

From the Forest Survey we learn that of the total board feet volume of our timber ten inches and over in diameter, 16 per cent is soft or red maple and beech, and an additional 11% is hemlock, making a total of 27% of these less valuable species.

Our highest annual cut was 375,809,000, board feet in 1899. In 1946 the total cut from our forests, excluding fuelwood was 342,000,000 board feet. As yet we do not have any figures on the annual timber losses due to fire, insects and diseases which is a large quantity. Nor have we received from the Forest Survey the growth figures. However, in Windham county, with 407,000 acres of forest land, there were just over 100 sawmills which cut 46,119,000 board feet in 1946.

Land is held in fee simple and the owner has certain responsibilities to leave it to succeeding generations undiminished in productive capacity. There are certain types of industries such as the veneer industry which need high quality logs requiring a long time to grow.

To provide our present and future generations with fully stocked forest lands and adequate forest resources, a plan governing our present actions is essential. A fully coordinated Forestry Program for Vermont requires the cooperation of the owners of our forest lands, the woodusing



industry, the operators, the state and federal agencies. Each has a definite responsibility in such a program to insure continued supplies of timber and the multiple benefits obtained from our forested lands. The statements which follow offer a means whereby our forest lands may continue to produce our forest resources.

#### A. PRIVATE OWNERSHIP

We believe that the bulk of our forest lands should remain in private ownership. However, there are both private and public responsibilities that must be carried out to keep an ample supply of timber on these lands.

##### 1. *Owners' and Operators' Responsibilities*

It is the responsibility of forest owners and operators:—

- a. To harvest timber under approved cutting practices.
- b. To properly fence farm woodlots and maple sugar orchards to keep the area ungrazed so as to let new trees grow to replace old ones as they become mature and are cut.
- c. To be careful with fire.
- d. To protect white pine from blister rust by the removal of wild and cultivated currant and gooseberry bushes.
- e. To keep the land productive by reforestation of those areas unsuited for the production of agricultural crops or pasture.
- f. To improve the timber stand and increase its growth by the removal of inferior species and unmerchantable trees where possible.

##### 2. *Public Responsibilities*

There are public responsibilities to forest landowners, some of which are now operative and should be continually improved and strengthened and others which are not provided for but are considered as necessary.

- a. *Taxation.* The tax on timber lands should be equitable and based upon the ability of the land to produce.
- b. *Forest Credits.* At the present time money can be borrowed to destroy a forest property by complete cutting. However, long time credits at low rates are needed so that the owner can maintain his forest holdings and carry out the necessary pruning, weeding and thinning of his forest.
- c. *Protection.* The state, together with the towns, has a responsibility to detect and suppress forest fires. They are also responsible for the control and suppression of insect and disease attacks which are beyond the means of the individual.
- d. *Federal Cooperation.* Federal cooperation under the Clarke-McNary pattern of grant-in-aid for reforestation, forest fire prevention, farm forestry, extension forestry and research should be continued.
- e. *Reforestation.* The state should continue to furnish trees at a price which makes it economical for the forest owner to rehabilitate his waste lands.
- f. *Assistance to Private Land Owner.* The county forestry program

should be strengthened to extend improved management practices to all woodlands.

g. *Forest Cooperatives.* The formation of forest cooperatives which can give assistance to the land owner beyond that available from the public agencies should be encouraged.

h. *Research.* Research should be continued in the field of forest management, production and utilization.

i. *Sugar Maple Tree Census.* The listers should take a census of economically tapable sugar maples.

j. *Education.* Without an informed public, the proper management of our forests will never succeed. Such education does not end with the school text books but must continue with the adult in the form of demonstrations.

The State Board of Education of this state should immediately adopt into the curricula of teacher training, integrated courses in forestry and other conservation subjects.

For those teachers who desire it, a summer course in conservation should be made available.

Conservation should be taught as an integral part of our primary education system.

Our extension forestry work should be increased and strengthened.

## B. PUBLIC OWNERSHIP

The following types of lands should be held in public ownership:

1. Lands where the productivity of the soil is very low or the logging expense so great that it is not attractive for private capital to hold and properly manage.

2. Areas where excessive cutting would be detrimental to municipal water supply.

3. Areas where the tax return is not great enough to warrant the service of roads and schools.

4. Forest areas of recreational, historical and demonstrational value.

5. Areas already set aside by legislative enactments.

### 1. *National Forests*

The legislature of Vermont in 1925, and by later amendment, established the purchase area of the Green Mountain National Forest and the conditions under which it can be procured. The towns in which lands can be purchased are listed. Approval prior to purchase must be obtained from both the selectmen and the state board on National Forests. The gross area includes 509,500 acres of which about 209,000 acres has already been acquired and it will probably take at least twenty-five years to complete the purchase program. Since this type of ownership appears to be advantageous to the State of Vermont, we recommend its continuance as legislatively defined.

## 2. *State Forests*

There are many areas of forest land of 1,000 acres or more outside of the National Forest Purchase Area, which fall under the five conditions listed above, that should be in state forests. From a recreational standpoint, Bennington county is lacking a state park area. In other parts of the state, especially in Rutland county, on our lakes, the state should acquire sufficient frontage for public bathing beaches.

## 3. *Municipal Forests*

In many towns in the state there are areas which would be of economic advantage to them if they were placed in a town or village forest. Year round road maintenance and school transportation costs amount to more than the tax returns from the lands in some sections of towns. Hinesburg is a good example of what a town has done in purchasing lands for town forests and reforestation in a section of low economic value for agricultural purposes.

It is recommended that the towns take advantage of No. 86 of the Acts of 1945 which grants money to a town to establish a town forest.

## C. FOREST TAXATION

The 1945 legislature authorized the tax commissioner to make changes in the grand list book. No progress in the formulation of a more equitable forest tax law can be made until the grand list book is set up with columns which separately show the acres and assessed valuation of forest lands. The set-up should be similar to the land classification of the Soil Conservation Service which indicates the acres of pasture, cultivated and forest land. The tax commissioner should prepare and distribute a manual of forest taxation to all the listers as previously recommended in the 1946 report of the Commission on Forest Taxation. Before embarking on any different method of forest taxation it might be well to observe the results of the recently adopted New Hampshire tax law which is in the form of a low annual land tax plus a severance tax when the timber is harvested.

## D. TIMBER CUTTING

The economy of the State of Vermont and the needs of our permanent woodusing industry demand an abundant and continuing supply of quality timber.

We cannot continue to cut out only the high quality timber and leave the poor shaped and diseased trees and expect to have sufficient quality timber. With a doubling of the world population every century and the development of new uses for wood, the demands for timber will increase. Our average growth rate of timber is now not much over one-third of what it should be.

The owner and operator, in order to improve and increase timber growth, should adopt approved cutting practices. To accomplish this he should avail himself of the services of all private and public agencies such as the consulting foresters and county foresters.

To maintain and develop this natural resource, Vermont should

take legislative action that will insure the adoption of approved cutting practices.

Therefore, it is recommended that the rules for improved cutting practices drafted by the forest service in 1947 and in accordance with Section 3 of No. 6 of the Acts of 1945 adopted by the state board of forests and forest parks on February 16, 1949, following revision after two years of operation in the field, be printed and distributed to forest land owners for study and recommendations as to possible changes.

It is further recommended that the state board of forests and forest parks hold meetings through the state to consult with the forest land owners, operators and other interested citizens in regard to the Forestry Plan for Vermont.

Under this forest practice act the state board of Forests and Parks adopted the following rules on February 21, 1949.

### **Cutting Practices**

Each acre of forest land may need individual treatment due to many complex factors; soil depth, fertility, drainage, texture, elevation, economic conditions and past treatment and present condition of the stand. Trees react favorably on fertile soil and to good treatment the same as any agricultural crop.

Due to the many kinds of trees that are found growing together in different mixtures in a stand, a knowledge of how each one reacts to the factors mentioned above, together with the frequency of seed years and the effect of letting more light into the stand is required.

Forest lands must be protected from fire, insects, and diseases. A heavily grazed sugar orchard never can reproduce itself.

The spruce bud worm thrives on balsam fir. If a spruce and fir stand has all of the spruce cut out of it, there is consequently a chance of losing all balsam fir trees which have been left. The best cutting practice will fail if protection is not given to the forest. Heavy slash from a clear cut area leads to greater fire hazard.

Cutting practices must be established with due consideration being given to all these factors.

#### **OBJECTIVES**

- (a) To protect and maintain young immature timber for the next crop.
- (b) To obtain natural reforestation by proper cutting methods.
- (c) To increase the growth of uncut timber to the full productive capacity of the soil.
- (d) To aid in the control of water run-off and the maintenance of a sufficient water table.
- (e) To develop and maintain an ample and continuous supply of merchantable timber for our woodusing industries.
- (f) To preserve the tax base.

- (g) To lessen the hazards of forest fires.
- (h) To alleviate soil erosion and maintain the fertility and productivity of the soil.

Under these rules a mature tree is defined as follows:

Balsam fir over 6 inches in diameter breast high.

Aspen (poplar), cedar, over 8 inches in diameter breast high

Spruce, paper (white) birch, over 10 inches in diameter breast high.

Pine, hemlock, white ash, over 12 inches in diameter breast high.

Other hardwood saw timber, over 16 inches in diameter breast high.

## TYPES OF CUTTING

### A. *Clear Cutting*

Clear cutting is defined as the removal of all trees over 6 inches in diameter breast high (4½ feet above the ground).

Clear cutting may be done:

(1) Where the stand is even aged and there are 1,000 or more young healthy, vigorous trees of commercial species per acre. These little trees should be two feet or more in height and fairly well distributed over the area.

(2) When artificial reforestation is guaranteed by the owner. Further, the owner should guarantee to take care of the plantation. (See Intermediate Cuttings).

(3) When the land is to be used for agriculture. The approval of the supervisors of the Soil Conservation District will be needed.

(4) When an even aged stand is to be cut in strips or spots in order to get natural regrowth. The width of the cutting strip should not exceed twice the height of the bordering trees. Spots should not exceed ¾ of an acre.

(5) When the trees of an area are afflicted with insects or diseases.

(6) When a stand is damaged by ice, snow or wind so as to make partial cutting impracticable.

(7) When a stand is over-mature and in the opinion of the forester it should be clear cut.

(8) When the area is to be used for roads, trails, buildings or other commercial or public improvements.

(9) Where clear cutting is the only economic means of operation.

### B. *Partial Cutting*

Partial cutting is defined as a harvest cutting which leaves an acceptable growing stand:—

(1) For a future cut in ten to thirty years, depending on rate of growth and similar succeeding cuts (selective cutting).

(2) To reproduce the stand in two or three successive cuts. The last cut is made when the area has 1,000 or more seedlings per acre as required under Clear Cutting.

Partial cutting is the generally recommended practice to follow. This

method removes chiefly the large mature trees and leaves the smaller, sound, well shaped trees for the next crop. This type of cutting is well suited to a sugar orchard where thrifty, new sugar trees are necessary for the future sugar production.

The minimum number of trees to be left in different forest types is as follows:

Spruce-Fir Type (60 per cent or more of the trees are spruce and fir)

There should be 400 thrifty trees of spruce and fir (3-8 inches D.B.H.) or a proportionate mixture of this sized trees with trees over 9 inches (D.B.H.) up to 250 trees 3-8 inches (D.B.H.) and 15 trees over 9 inches (D.B.H.)

Northern Hardwood Type (over 60 percent sugar maple, yellow birch, paper birch, beech, cherry, white ash, basswood.)

There should be over 300 thrifty trees per acre of hardwood 2 to 6 inches (D.B.H.)—or—30 trees per acre over 12 inches (D.B.H.)—or—120 trees 6 to 11 inches (D.B.H.) or graduation of these sizes on the basis of 4 trees 6-11 inches (D.B.H.) equal one tree 12 inches and over.

50 thrifty trees per acre 10 inches D.B.H. and over (hemlock and hardwood in the minority)—or—300 stems per acre 6 inches D.B.H. and larger.

Best results are obtained by individual tree selection rather than on a diameter limit basis. Diameter limit cutting is permissible under some cases. The trees left should be well distributed over each acre.

### C. *Intermediate Cuttings*

Intermediate cuttings are made in immature stands to improve the density, composition, quality of the stand and quantity of wood grown in any given period of time. The material harvested may or may not be marketable.

#### Definitions and Recommendations:

(a) Weeding is a cutting to remove undesirable tree species. Weeding is carried out during the first fifteen years of age. About 200 of the tallest and best shaped trees per acre will be left for the crop trees. Enough other trees of good shape will be left to properly cover the ground with shade.

(b) Thinning is a cutting which removes unneeded trees from a stand to improve the quality, composition and rate of growth. Thinnings are made in stands over fifteen years of age.

(c) Pruning is the removal of branches to improve quality of lumber.

(d) A liberation cutting removes trees which compete with crop trees.

## Forest Practice Act

Under No. 6 of the Acts of 1945, "An Act to Assist Forest Owners and Operators in the Promotion of Maximum Sustained Productivity of the Forest, to Disseminate Information Relative to Forest Practices," the following policy was enacted.

"Section 1. Declaration of Policy. The forests, timberlands, woodlands and soil resources of the state are hereby declared to be affected by the public interest. It is declared to be the policy of the state to encourage economic management of the forests and woodlands to maintain, conserve and improve the soil resources of the state to the end that an adequate source for forest products be preserved for the people, floods and soil erosion be alleviated, hazards of forest fires be lessened, the natural beauty of the state be preserved, the wild life be protected, the development of the recreational interests be encouraged, the fertility and productivity of the soil be maintained, the impairment of dams and reservoirs be prevented, the tax base be preserved and the health, safety and general welfare of the people of the state be sustained and promoted. It is declared to be the policy of the state to assist the forest land owners in cutting and marketing of the forest growth, and encourage cooperation between forest owners and the department of forestry.

"Sec. 2. Secretary, operation of act. The administration of forest conservation practices on privately owned forest lands and the management of publicly owned forest lands is vested in the Vermont Forest Service. The state board of forests and forest parks shall appoint a secretary and executive officer to administer this act. This act will be operated on a cooperative basis with only those landowners who so signify their intention.

"Sec. 3. Duties, rules. The state board of forests and forest parks shall study the rates of growth and rates and methods of cutting on privately owned forest lands and when it shall find that the methods employed to harvest the timber are contrary to the policy set forth in section 1 of this act, it shall adopt, issue and from time to time amend rules not inconsistent with the purposes of this act. Such rules shall be designed to prevent wasteful and dangerous forestry practices and shall have as their purpose the conservation of the natural resources of the state, provided that consideration is given to the necessity of assuring continuous supplies of forest products and to the rights of the owners or operators of the land. All rules when issued shall be advisory in character and not mandatory.

"The state board of forest and forest parks shall have power:

(1) To require the filing of annual reports by mills and operators covering timber products cut and lumber produced. Such reports shall be in conformity with reports required by other agencies.

"(2) To employ such technical, clerical and other assistance upon such terms and with such compensation, including traveling and other expenses while away from home on official business, as it shall deem

necessary and proper to the efficient conduct of its work and discharge of its duties.

“(3) To accept specific management plans presented by forest owners and operators as alternative to compliance with the rules issued under this act. Such plans, when approved by the state board of forests and forest parks, shall be regarded as equivalent to full compliance with the regulations issued under the authority of this act so long as the specifications of the accepted plan are observed and complied with.

“Sec. 4 Duties of Landowners. For the purpose of facilitating the state policy with respect to forest lands set forth in section 1 of this act, it shall be the duty of all land owners and operators of forest lands so to manage, operate and harvest forest crops upon their respective lands, as to provide conditions favorable for regrowth.

“I. All forest lands on which lumbering operations are conducted after the passage of this act shall be left by the operator in a favorable condition for regrowth by reserving trees of commercial species sufficient under normal conditions to maintain continuous forest growth or to provide satisfactory restocking, so as to assume continuous or successive forest crops.

“II. So far as practicable, all desirable seedlings and saplings shall be protected during logging operations.”

### **A Forestry Program**

In 1947 a Program for the development of Forest Resources in Vermont was drawn up.

#### *Objective*

The ultimate purpose of forestry is to so manage the forest lands of this state as to insure an adequate timber supply for our wood-using industries and to obtain and conserve for the owners and the public the maximum subsidiary benefits such as watershed protection and recreational and scenic values, to be derived from such lands. More specifically stated the objectives are as follows:

1. To grow timber of good quality indefinitely, with certainty and at reasonable cost to be used as raw material for existing wood-using industries.

2. To assist our wood-using industries and to attract to the state and to develop new wood-using industries as needed to provide a degree of utilization of forest products consistent with the production of forest products in terms of volume, species and quality.

3. To maintain, and where necessary create, an environment suitable for the needs of wildlife.

4. To make adequate provision for recreation, aesthetic and inspirational values.

5. To make proper use of forest cover as a means of preventing soil erosion and deterioration on lands poorly suited to intensive forms of agriculture.

6. To make full use of forest influences in the protection of water supplies and in the amelioration of flood conditions.



## *Means*

A. The creation of more favorable conditions for the private owner of forest land, which will encourage him to preserve and improve existing forest, and to reforest additional land.

1. The improvement of fire prevention and suppression methods until the average area burned annually becomes negligible and the forest property becomes an insurable risk at reasonable rates.

2. The modification of tax laws and the tax system so as to secure equality of tax burdens on forest land owners as compared with other types of ownership, so that forest lands will not be assessed beyond their value to produce and thus cause destructive logging.

3. Advice and assistance to the landowners in marking and marketing their timber.

Funds, both federal and state, to increase the number of county foresters of the Vermont Forest Service should be appropriated so that all of the forest landowners in each county may receive equal benefits in forest management and protection of their woodlands from fire.

4. The continuation and improvement of protective measures against forest insects and diseases.

5. The study of markets for forest products and of possibilities of increasing the income from timberlands. Assistance to small mill-owners in the manufacture and grading of their timber, to conserve much timber now lost through improper manufacture.

6. The continuation of the state policy of supplying nursery stock for forest planting at the lowest possible cost.

7. Forest Cooperatives. The formation of forest cooperatives for the orderly marketing of forest products. The members of such cooperatives should plan to insure continuous yields from their forest lands.

8. Land Management. When it is in the public good, local groups should have authority to associate themselves together to prevent any individual from misusing his lands to the public detriment and welfare.

B. The extension of state ownership of forest land to include at least 300,000 acres, which is about 9% of the forest area of Vermont, in order

1. To build up in regions of small scattered ownership, large state holdings which will produce dependable amounts of wood to support local industries.

2. To better protect areas affecting stream flow and thus reduce the flood hazard and erosion.

3. To serve as public hunting and fishing areas, as sanctuaries for propagation of game birds and animals and as recreational areas.

4. To serve as demonstrations of forestry practice, and of forest management for the instruction and education of private owners.

5. Ultimately to produce net revenue for the State.

C. The extension of town forests until every town containing suitable forest land shall own a forest (to include approximately 10% of its forested area) to be used as:

1. For demonstration of forestry practice.
2. Ultimately for town revenue from wood crops.
3. Public recreational areas and for bird and game sanctuaries.

D. The protection of the public health, promotion of happiness and the increase of the attractiveness of Vermont to residents and visitors, through recognition of the necessity of public ownership and control of small areas of high scenic and recreational value, by the creation of State Forest Parks embracing mountain scenery, roadside areas, remnants of primeval forests, lake shores, waterfalls and sites of historic interest.

E. An organized effort to educate all elements of Vermont business, professional, civic and social life, to a true recognition of the overwhelming importance of the forests of Vermont in plans for its future stable prosperity and development, by

1. Conservation education course in normal schools and colleges.
2. Integration of conservation in the subjects now taught in the schools.
3. A conservation manual for use in the schools and by boy scouts, 4-H Clubs and others.

#### *Problems Confronting the Practice of Forestry*

1. The major problem confronting the practice of forestry is the fact that it has not been considered from a practical business standpoint. Forests have been considered as mines of wealth to be exploited at the whims of the owner; as an appendage to the farm to be ruined or saved according to personal desire or needs; or as a product to be removed from the land to make way, in many instances, for a dubious agriculture. Until such time as forests are organized into units capable of being handled as a going business or as an integrated part of a going agricultural business, they will continue to be treated more or less on personal ideas and notions rather than on sound scientific facts, with the subsequent patchwork of good, bad and indifferent treatment.

2. Personal ideas, whims and necessities-of-the-moment greatly influence the practice of forestry. The average owner desires to get an immediate cash income regardless of whether the trees would give a much greater income if left to grow. Many owners may be willing to have their forests cut selectively and the mill owners prefer to buy logs

from such an operation. However, the logger or jobber still insists on cutting every tree in sight.

3. Taxation, whether it is a problem or not, is much discussed. The uncertainty of what the listers may do in taxation of forest properties ten, fifteen or twenty years hence acts as a deterrent to the purchase of young timberland or the reforestation of open land. Excessive taxation means premature cutting and loss of taxes to the towns.

4. "Our land-holding system tends towards depletion of our soil and timber resources. A farmer is frequently influenced, or perhaps forced, to sacrifice soil fertility, immature timber, and even his maple sugar orchard to pay a heavy mortgage and reduce high interest payments. The fact that a farm has to pay for itself each time it passes to a new owner keeps adding to the burden on the land. A farm may be free of mortgage today, with the owner able to meet his obligations with relative ease, while tomorrow it may have changed ownership and be mortgaged "to the hilt." This means that several hundred dollars extra must be found each year to pay the principal and interest. This extra money frequently has to come from the soil or the timber, and so depletion takes place. Other burdens on the land resources are heavy property taxes — a relic of our early history when property constituted the only substantial tax source — and the cost of rearing and educating our farm boys and girls who later, when ready to begin productive work, migrate to the non-agricultural industrial centers, which do not raise their own human replacements. These are all burdens on the land which must be lightened or compensated if we are to expect those holding the land to carry on an effective conservation program with respect to our soil and our forests."

5. The long time investment which one must make if he acquires cut over or young sprout land often deters people from buying. This is accentuated by the lack of interest of bankers to furnish long-term capital at low rates of interest.

6. The cutting of maple sugar orchards is also a serious detriment to the practice of forestry. Many sugar orchards are clean cut for lumber, whereas in five years or so they will produce for the owner as great a cash labor-income from maple products. Sugar orchards can be cut selectively as they become mature. The ideal sugar orchard is ungrazed and has trees of all ages from young seedlings and saplings to trees over a hundred years old.

7. As discussed under another heading, past land use has left much of our land unproductive at present and for some time in the immediate future, thus leaving it a burden and a problem for present-day owners and tax payers.

8. Another factor influencing the practice of forestry is the fluctuating normal demands for forest products, i.e., the market. Periodically, exceptionally heavy demands, caused by wars or general economic conditions, occur causing exploitation and denudation of many timber lots. A forest under management will have plans made

for exceptionally heavy cuts when markets are good but will follow this by light cuttings during poor markets, never cutting to such an extent that the timber production capacity is impaired. Under present conditions the cut is so heavy as to impair timber production a full generation or for several cutting periods. Thus, the people who cut for money and because they believe it is patriotic to put their timber on the market during a national emergency, are in the long run impairing their country's wealth and chances for future economic supremacy.

9. Risk of loss through fire, disease and insects, grazing, erosion or floods.

### *Suggested Solutions to Problems*

#### *Confronting the Practice of Forestry*

1. Education of our youth through subject matter on conservation integrated in all courses taught in our schools.

2. Education of groups, such as 4-H Clubs and older Youth organizations, through demonstrations and meetings.

3. Public assistance to landowners in marking and marketing their timber.

4. Control of cutting by the state or federal government either by licensing the timber operators or regulating the method of the cutting of the owners in accordance with rules and regulations which have the authority of law.

5. Public ownership by the municipal, state and federal governments.

6. Credits — Long-term loan of funds by bankers or the government on a timber crop at a low rate of interest.

7. Equitable taxation.

Probably the most important method of attaining good forest practice can be attained through education and assistance to forest owners now given through the county foresters in marking and marketing.

It is recommended that each landowner use a timber sales contract in each sale of stumpage. It will be of much protection to both the buyer and seller. Ask your county forester for a sample timber sales contract applicable to your situation.

However, there are many people who get hard pressed for money so, a means or method of furnishing long time credits either from local banks or the state or federal government should be authorized. In addition there should be some ceiling placed on the appraised value of forest land so that the timber during its growing period will pay only a reasonable equitable tax.

With everyone educated to the value of conserving our forests and how it should be done, sufficient credits and equitable taxation, there is still need of some legislation to prevent destructive cutting of our forests. Further, there are many areas of forest land which will never produce a commercial crop of timber. Too, there are areas more valuable

for watershed protection. All these areas plus areas which are needed for demonstration purposes should be in public ownership.

*From Twelfth Vermont Agricultural Report by the State Board of Agriculture for the Years 1891-92:*

“Northern Essex county has very few abandoned farms, because she has few to abandon. If the forests of this country had been properly handled in the last forty years, that is, only mature timber cut, the small growth saved, and the fire kept out, there would have been nearly as much timber here now as then, and the land instead of being worth from one to three dollars per acre, would be worth from ten to twenty. The practice has been indiscriminate slaughter. This has left the timber an easy prey to the fire, which has proved to be a greater enemy to the forests than the axe. The principal causes of fire are first, railroad trains; second, new settlers; third, hunters and sportsmen, a class of men for whom I have little love or respect. The railroad fires have been most destructive in this County, having burned over thousands of acres. In very few instances have the railroad companies paid any damages. They will not pay unless forced to do so, and few men have the courage or means to compel them to pay. After the fire has gone over the land once, it is likely to run again and again, as no care is taken to prevent it. I have in mind a lot of land from which the timber was cut thirty-five years ago. The next year a fire went over it. It came up to red cherry and poplar as is invariably the case here. Last year the poplar was cut and sold for pulp making, leaving a good growth of small pines, spruce, hemlock and birch, showing what nature will do when left to herself. I call to mind another lot of land from which the mature timber, both hard and soft, was properly cut twenty-five years ago. The fire was kept out. Last year it was cut again, and fully eight thousand feet of good spruce lumber was cut to the acre. In twenty-five years more a similar crop can be cut. The practice has been for lumbermen to sell lots to settlers at from two to four dollars per acre, usually on time, or for very little cash down. Then begins the clearing. The settler's fires frequently run beyond his lot, and often burn more in value of the lumberman's standing timber than the lot was sold for. As a rule, these settlers have not succeeded. After three, five, sometimes ten years, with small crops, hard work and poor fare, they have abandoned their places to the men holding the mortgage, which is often largely swollen by store bills. I have a case in point. A man bought one hundred and fifty acres of land within one mile of the railroad. The large spruce timber had been cut; there was left of small timber and other growth, twenty to thirty cords of wood to the acre: this wood was worth three dollars per cord on the railroad line. This man worked hard for ten years to cut his wood; he cleared one hundred and twenty-five acres, built poor buildings, and

then turned it over on a mortgage, owing seventeen hundred dollars. An adjoining lot of one hundred and fifty acres was similarly situated. The owner contracted the cutting and drawing of the wood to the railroad, realizing over twelve hundred dollars from the stumpage. This he did not fool away in clearing the land. The settler's fire ran over the other lot. Both lots are now in the same pasture, but the lot that was not cleared is the best. All good woodchoppers are not good farmers, and this is one of the difficulties. A man who can do nothing else thinks he must have a farm."

## Associations

### *Forestry Association*

On January 5, 1904, the Forestry Association of Vermont held its first meeting in Burlington with George Aitken as the temporary chairman. An address by Honorable Gifford Pinchot, Forester of the United States, was the highlight of the meeting. The second meeting was held also in



**State Board of Forests and Parks at 1959 Lumberjack Roundup.**  
L. to R. Donald W. Smith, Chr., Harold Haynes, Walter Malmquist, Perry H. Merrill, Ex. Sec.

Burlington on January 19th with an address by Professor Henry S. Graves, Director of the Yale Forestry School. The third meeting was held in Montpelier on November 10th during the legislative session and was addressed by Dr. B. E. Fernow, Chief, Division of Forestry, and also by Philip W. Ayres, Forester for the Society of the Protection of New Hampshire Forests.

The fourth meeting, also addressed by Dr. Fernow, was held in Montpelier on January 12, 1905.

The Association had as its officers:

President .....	William J. Van Patten, Burlington
Vice Presidents .....	E. C. Smith, St. Albans George Aitken, Woodstock
Secretary-Treasurer .....	Ernest Hitchcock, Pittsford

Members of Executive Committee:

Joseph A. DeBoer .....	Montpelier
Professor L. R. Jones .....	Burlington
C. H. Green .....	White River Junction

The Association drafted a bill to be presented to the legislature to designate a member of the Board of Agriculture to act as Forest Commissioner. It was enacted in 1904.

In 1908, L. R. Jones was elected President followed by Fletcher D. Proctor in 1910. Allen M. Fletcher of Cavendish served as Vice President during those years. Clark C. Fitts of Brattleboro was a member of the executive Committee.

Twelve regular annual meetings of the Association were held, the last of which was at Lyndonville in August, 1916.

At a meeting of the Association in Burlington on January 11, 1922, which was presided over by Amos J. Eaton, acting president, it was voted to disband, not for any lack of interest on the part of the membership in forestry, per se, but rather to be an evidence of its desire to reshape its present organization. State Forester Hastings addressed the Association and outlined the working details of an association of allied interests. A committee was appointed with powers to call such an organization into being in the winter of 1923. The Committee consisted of Mason S. Stone, Franklin S. Billings, Dean Pearl Randall Wasson, Mrs. George Chaffee and W. G. Hastings, Chairman. Since Mr. Hastings resigned on September 25, 1923, the development of the forestry council ceased.

The Green Mountain Club, at its spring meeting on January 10, 1925, appointed a committee on forestry consisting of Mortimer R. Proctor, J. J. Fritz, R. H. White, Burton F. Smith and C. P. Cooper. March 21, 1925, a meeting was held in Rutland which resulted in the formation of the Vermont Forestry Association. On May 8, 1925, the first meeting

of the executive committee was held at the Green Mountain Club house in Sherburne Pass. The officers elected for 1925-26 were:

President ..... K. R. B. Flint, Northfield  
Vice-President ..... Mortimer R. Proctor, Proctor  
Secretary ..... Reginald T. Titus, Northfield  
Treasurer ..... Raymond H. White, Middlebury

Executive Committee:

Above officers  
W. A. Simpson, Lyndonville  
Burton F. Smith, Rutland  
J. J. Fritz, Middlebury  
L. S. Brigham, Randolph  
C. P. Cooper, Rutland

Mr. Titus resigned and Mr. H. Henry Knowles succeeded him on July 1, 1926. Soon after the November 3-4, 1927 flood, the Association was inoperative.

*Vermont Timberland Owners' Association*

The Vermont Timberland Owners' Association was organized on June 28, 1915.

A law was passed in 1919 requiring an extra tax assessment against all unoccupied and forest lands which were not given adequate protection against fire by the owner.

The state recognizes membership in the Vermont Timberland Owners' Association as meeting this condition of the law.

The Association comprises about 30 large forest land holdings companies who own in the neighborhood of 400,000 acres. They make an annual assessment of about one cent per acre to protect their lands and supplement what the state is doing. They have built some fire towers.

*Green Mountain Club*

The Green Mountain Club was organized at Burlington on March 11, 1910, as a result of a meeting of mountain lovers called together by that illustrious citizen of Vermont, James P. Taylor.

The Forest Service started in trail building to mountain peaks early to enable forest fire lookout watchmen to readily approach the summits. Also it was felt that trails extending along a mountain range enabled men to get from one section to another readily where there were no roads. The Forest Service, during 1911 and 1912, blazed out the sections from Killington north to Mount Horrid and from Camels Hump south to Lincoln Mountain. From U. S. 4 to the top of Killington was brushed out at a cost of \$20.00 per mile. The work of trail construction was accomplished during wet weather by the fire patrolmen. During 1913 the trail had been completed from Mt. Mansfield to Killington and a strip to the top of Stratton Mountain, later a lookout tower site.



## Forest Fire Prevention and Control

### *Early Forest Fires*

In 1828 and again in 1903 Mt. Hunger, White Rock and Burnt Mountains were ravaged by fires. In 1903 twelve hundred acres in Lewis, Ferdinand, Bloomfield, Brunswick and Brighton were burned. In 1857 the entire range east of Manchester and Sunderland burned. In 1869 there was a fire of 1,628 acres on Pico Peak in the Town of Sherburne. Extensive fires prevailed in the fall of 1876 in the woods of Vermont. In 1903 Huntington and Duxbury had a 1,900 acre fire and there was a thousand acre fire in Eden.

It is evident that these serious fires were responsible for the ensuing legislation in 1904 which included the designation by the Governor of one member of the Board of Agriculture and Forestry as forest Commissioner. He was given special duties regarding the protection of forest from fire. The total per diem and expenses of the department for the period January 1, 1905, to July 1, 1906, were \$524.43.

The law of 1904 authorized the appointment of the first selectman as town forest fire warden. In the eight unorganized towns and gores the wardens were appointed by the forest commissioner.

Under this law a person was required to totally extinguish a fire built in or adjoining woodland or be subject to a fine. Printed warnings were required to be posted and the fire warden was required to keep records and make reports. The forest commissioner was given authority to publish bulletins on fires, lumbering and conservation. Fires for burning brush were to be kindled only at such times as they could be kept under control. An officer who neglected to perform his duty or anyone willfully destroying fire signs or breaking any other law of the Chapter was subject to a fine of \$10.00 for each offense.

In 1908 there were many fires, the largest of which by town and acreage were as follows:

<i>Town</i>	<i>Acres</i>
Bolton .....	1,315
Mendon .....	1,975
Plymouth .....	5,100
Belvidere and Eden .....	4,900
Lowell .....	1,400
Hardwick .....	1,908
Monkton .....	500
Enosburg .....	1,000
Richmond .....	400
Rochester .....	500
Glastenbury .....	1,400

In 1910 the state forester was given authority to establish fire patrols, to pay the expenses of wardens attending meetings and to pay for the salary of lookout watchmen to man any tower erected by private individuals. Also, towns were divided into districts where necessary and the State Forester could appoint a district warden.

### *Fire Detection — Lookout Towers*

As a result of the experience of the landowners in the State of Maine, State Forester Hawes stated in 1909 — “I believe that we should have such stations in Jay Peak, Mansfield, Killington and on some high elevation in the northeastern and southern portion of the State. These would not, therefore, be of much expense to the state. As supplementary to these, there should be provisions for the employing of patrols for particularly dangerous regions.”

In 1910 a law was passed which gave the state forester authority to employ watchmen to be located at lookout stations established by landowners at a salary of \$2.00 per day.

In 1911 a telephone line was built to the summit of Camel's Hump to serve as the first lookout site. No tower was ever built. Merely a cement table was constructed upon which the map of the country side was placed.

In 1912 Mr. Elmer A. Darling built a camp and the first lookout tower on Burke Mountain. Telephone lines were built on to Burke and Gore Mountains. Nine pulp and lumber companies raised \$686.40 to aid in this construction.

In the summer of 1912 in cooperation with the U. S. Forest Service experiments were conducted with wireless telegraphy from Killington Peak. This venture did not seem to be very successful. This was probably one of the earliest experiments in radio through the country.

A sixty foot steel tower was erected in 1913 on Stratton Mountain from funds raised by private land owners.

There were five patrolmen in 1913; one man covered timbered sections of southern Vermont; another man used Killington Peak as a lookout point; three patrolmen were assigned to railroads. In 1914 the railroad patrolman was paid in part by the railroad, a lumber company and the state.

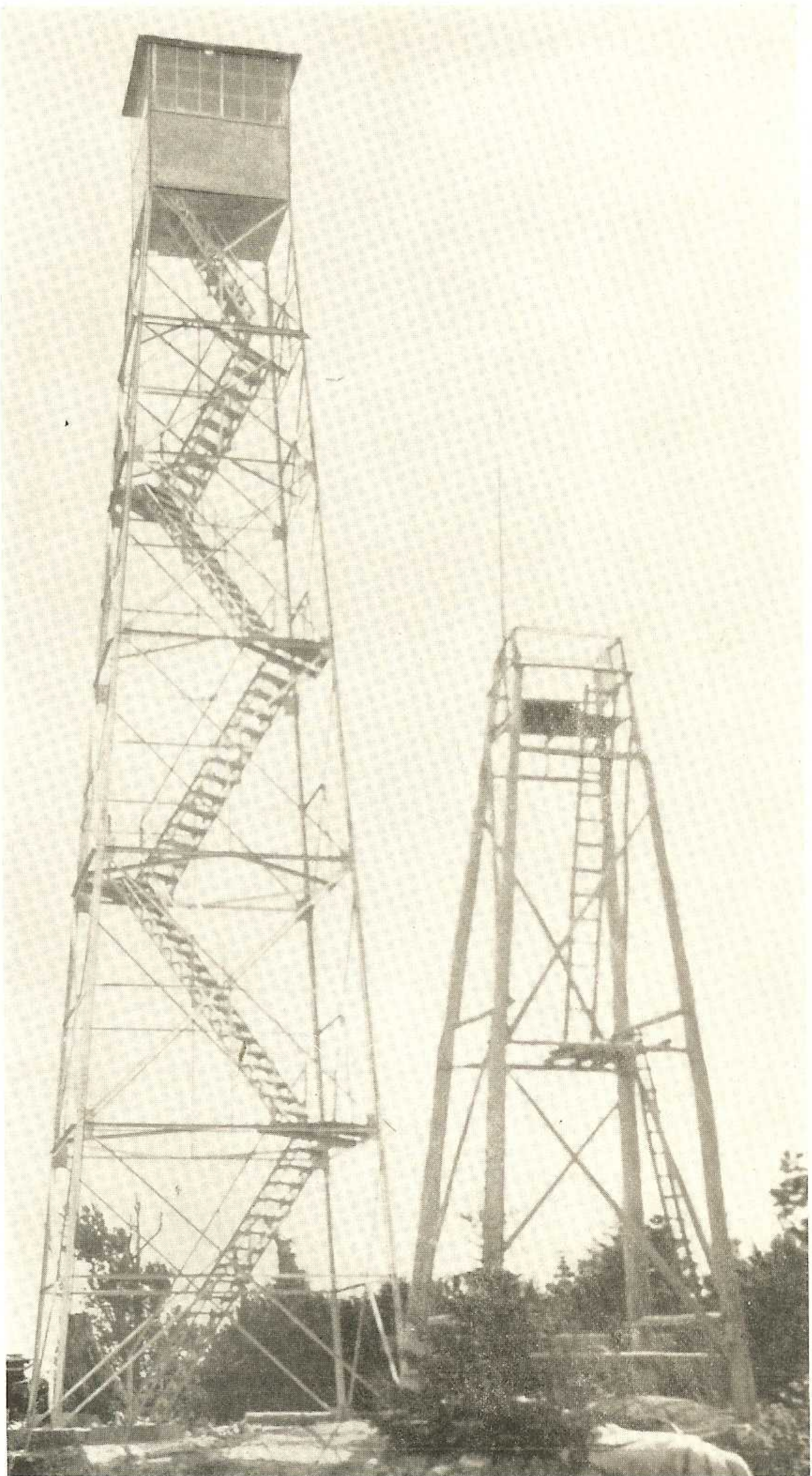
In 1914 West Pond Mountain and Pico were added as lookout points.

Mr. Mortimer R. Proctor paid for the construction of a tower, cabin and telephone line on Pico Mountain. Mr. Newton Chaffee constructed a tower on Mt. Carmel.

In 1918 a study was made of the efficaciousness of each fire lookout station and a number of potential sites. The result led to the construction in 1919 of telephone lines, towers and cabins on Belvidere and Spruce Mountains.

In the spring of 1920 the Vermont Timberland Owners' Association, in cooperation with the Forestry Department, built towers and cabins on Haystack and Cushman Mountains.

The CCC program of 1933-1941 was instrumental in getting many new steel towers, suitable cabins for the lookout watchmen and better telephone lines. In Essex County there were several towns in which there were no commercial telephones. Consequently, a ground circuit tele-



The new and the old West Pond Lookout Towers.

phone system fifty miles long, which lined up five of the lookout towers, the patrolmen headquarters and two town fire wardens with the district headquarters at Maidstone Lake, was constructed.

Funds of the New England Emergency Organization were used to supplement this work.

#### *Northeastern Forest Fire Protection Commission*

As a result of the serious forest fires in Maine and other New England states in 1947, the State Foresters of New England and New York met several times in Boston and drew up a mutual aid compact which was presented to the legislatures of the aforementioned states and passed in 1949.

Each state has three (3) members on the Commission which includes the State Forester, a member of the legislature appointed by the Chairman of the Committee on Interstate Cooperation and a citizen appointed by the Governor.

Training meetings to get uniformity in fire fighting methods in the region have been held annually since.

#### *Federal Aid*

On March 1, 1911, Congress passed the Weeks Act and in 1911 Vermont was allotted \$2,000.00 to be used for forest fire prevention on the watersheds of navigable streams. On June 7, 1911, Governor John A. Mead signed a cooperative agreement with the U. S. Forest Service to take advantage of this act. In the beginning the money could be used to hire patrolmen and lookout watchmen. Federal funds had to be matched by the state. The Forest Service stipulated that protection be given chiefly to land owners who were doing something to protect their own lands. At first the money could be used for a patrol along railroad lines but after 1912 that was not allowed. The federal government made direct payments to patrolmen and lookout watchmen who received \$2.00 per day.

This system continued for some time until grant-in-aid funds were sent direct to the state for reimbursement of expenditures. The amounts of federal aid and payments by the state and cooperating agencies are shown in the appendix.

As a result of the passage of the Clark-McNary Act in 1924, Vermont took advantage of both phases of the proffered programs — forest fire control and reforestation. In late years the federal grant has amounted to \$10,000.00 annually.

The 1959 Congress was the first one to reduce this meager appropriation to \$4,200.00 annually to each state.

Under the Norris-Doxey Act (1935), Vermont was one of the first states to cooperate, and was the first state to have a forester in each forested county.

#### *Private Forest Management*

Mr. E. A. Fisk of Waitsfield wrote in 1877: "In some cases sugar

orchards are fenced from cattle and are soon filled with a dense growth of young trees."

In 1911 State Forester Hawes started private forest management work with those who were interested. Complete sets of working plans, including a map, were prepared for Honorable T. N. Vail, the Vermont Sanatorium, and the Vermont Marble Company lands in Windham, Grafton and Proctor.

The International Paper Company, under the direction of Mr. George Chedel, established a forest tree nursery in Randolph. In the fall of 1911 the nursery contained, 1,575,000 one, two and three year old Norway spruce which they were growing to begin the reforestation of their open lands of which they owned then 10,000 acres. C. C. Putnam and Son of Worcester, in 1912, sold some, 5,000,000 board feet on a diameter limit basis.

In 1914 the department established the following rules in regard to private forest management:

1. The forestry department does not estimate timber.
2. The department will send one or more men to inspect a forest tract and advise on its management, with the landowner paying the travel cost and board.
3. A report on work done under the recommendations of the previous inspection will first be required.
4. The department will supervise the marking of trees which should be cut. On tracts of less than ten acres the owner will be expected to furnish one man, on larger areas, two men.
5. The department reserves the right to publish the reports of such inspections and the results of the work.

During 1914 the department reported on the inspection of 43 tracts with an aggregate area of 6,350 acres.

During the succeeding years the department made many private land inspections and recommendations.

On June 3, 1941, federal funds (\$1,750.00) were allocated under the Norris-Doxey Farm Forestry Act on a match basis to cooperate in the employment of a project forester. The first area established under the act, comprising towns in Addison, Chittenden, Lamoille, Orange, Washington and Windsor counties, was under the supervision of Arthur F. Heitmann.

At the end of the first year there were 26 cooperators who owned 8,499 acres. On June 30, 1941 the number of these foresters had been increased to eight.

At the end of July, 1953, there were 12 county foresters, 3 county forester aides and two district foresters. During fiscal 1959, in addition to marking 7,540,000 board feet and 5,094 cords of timber, the county foresters marked several thousand acres for timber stand improvement.

At first the federal government expended their part of the appropriation by a direct payment, by check, to each forester for the government's share of the salary. This system was later changed and the funds came direct to the state treasury as grant-in-aid money to reimburse the state for its expenditures on this project.

### *Reforestation*

The legislature in 1906 appropriated \$500.00 annually for five years to the Vermont Agricultural Experiment Station to establish and maintain a forest nursery. In 1907, 35,000 trees were distributed. In 1908 by law these funds were turned over to the state forester, who operated the nursery. Mr. C. R. Pettis of New York was employed for a couple of years as consulting forester at the Experiment Station to develop the nursery.

In 1909, 350,000 white pine were imported from Germany.

The first plantations on record were made at the Billings Estate in Woodstock in 1880, where they planted Norway spruce with an 8 x 8 spacing. The trees of German origin were procured through a salesman. In 1910 they planted 50,000 trees which they had raised from seed.

About 1912 there were many private nurseries started about the country and there was some discussion as to whether the State of Vermont should continue this project.

In addition to the nursery at Burlington, a nursery was started on the Downer State Forest in the spring of 1910. A nursery was maintained there until 1932.

A number of small nurseries were set up on small areas, notably on Townshend State Forest, on Middlebury College lands and at Proctor. These small nurseries were set up as demonstration areas and to have planting stock ready near the planting sites to avoid costly transportation.

Survival of planted seedlings has been as a rule very successful, however, many of them have succumbed later due to competition with hardwoods, disease, deer damage, grazing, fire and flood.

In 1912 a small experimental nursery was established in Lyndon. A small amount of stock, 120,000 trees, was purchased and transplanted here for use in experimental work on the Lyndon State Forest.

In the spring of 1922 the nursery was transferred from Burlington to Essex Junction to make room for the athletic field of the University of Vermont.

In 1908, 130 pounds of white pine seed gathered chiefly in northern New York were sown.

Due to the finding of blister rust on the European white pine seedlings, no more white pine was imported.

In 1910 the International Paper Company planted 32,000 Norway spruce which were imported from Europe.

About this time the state began to sell Scotch pine and Norway spruce. The raising of Scotch pine was continued until 1930 when it was

found that most of the trees developed bad crooks so that the number grown was reduced to a few thousand.

In 1916 all of the Scotch pine seed sown was the *Riga* variety which comes from straight trees.

Red pine seedlings were started in considerable numbers in 1915 and they continue to be a favored tree.

In 1915 about 100,000 trees raised by the Botany Department of Middlebury College were planted on the Battell Estate.

By 1918 white pine was not being grown for planting due to the white pine blister rust scare. However, today, 1959, we have found that white pine blister rust can be controlled. We are again raising many of these trees.

### *Soil Bank Nursery*

As a result of the Federal Soil Bank Act, the state was allocated in 1957, \$122,215.00 for the increase of facilities for the production of trees for planting on soil bank land.

A tract of about 135 acres in Essex Junction known as the Labelle property was leased for a period of ten years with an option to buy. A cone storage area in one of the buildings on the property was constructed and a modern seed extraction plant installed.

At the old nursery site the following improvements were made. An office building with a refrigeration plant in the cellar for storing seed was constructed. We are now protected from the scarcity of seed in some years and the ensuing high prices. A metal building with concrete floor (30 feet by 120 feet) for grading, sorting and shipping trees and for winter storage of trucks and other equipment was also built at the old nursery site. The entire area producing trees has been placed under an overhead irrigation system.

For the fiscal years of 1958 and 1959 federal funds amounting to \$52,374.00 were expended in the growing of trees for soil bank purposes. The production of trees for this purpose by the fiscal year of 1960 will be about seven million trees.

As of September 1959 the inventory of trees of all ages at the nursery is 20,000,000 trees.

Senator George D. Aiken, in addition to aiding forestry while Governor of Vermont, was instrumental in getting a section in the 1936 Soil Bank Act. This section, numbered IV, authorizes the Secretary of Agriculture to assist the States in carrying out approved plans, giving advice and technical assistance, and furnishing financial contributions. The financial contribution of the federal government may not exceed the amount expended by the State for the same purposes during the same fiscal year.

### *A. C. P.*

Under the federal agricultural conservation started in 1936, the

federal government, among other agricultural payments, has made payments for planting forest trees and forest stand improvement cuttings.

Under this program from 1936-1958, 10,495 acres have been planted to trees and 22,035 acres have received improvements by weedings, thinings and pruning.

The land owner has been paid at a stated per acre sum for the work accomplished. All of this work has to be checked and have the approval of the county forester before the owner receives payment.

### *Forest Regulation*

The Council of State Governments sponsored the Eastern Conservation Congress which developed in 1942 a model state forest regulation act. A bill, patterned after this proposed act, was introduced into the Vermont legislature in 1943 and was defeated. This was the first bill of this nature introduced in any state legislature. After a few other attempts the legislature finally passed a cutting practice act in 1945. It contained most all of the features of the model act but it stated that the act was to be "operated on a cooperative basis with only those landowners who signify their intentions and that any cutting practice rules shall be advisory in character and not mandatory."

In 1949 a bill which would have licensed all operators upon the payment of a small fee provided they agreed to cut their timber in accordance with the rules of cutting practices promulgated by the state board of forests and forest parks, was defeated.

In 1951 the legislature removed the section which stated that the act would be operated on a cooperative basis.

In 1951 and again in 1953, Senator Fortis Abbott introduced a bill somewhat similar to the New Hampshire law. The 1953 legislature finally authorized a seven man committee to hold hearings and report a bill to the 1955 legislature, which bill was defeated.

## **Public Forests**

### *State Forests*

In the 1910 Annual Report of State Forester Austin F. Hawes the reasons for creating state forests were well defined and are as valid today as they were then.

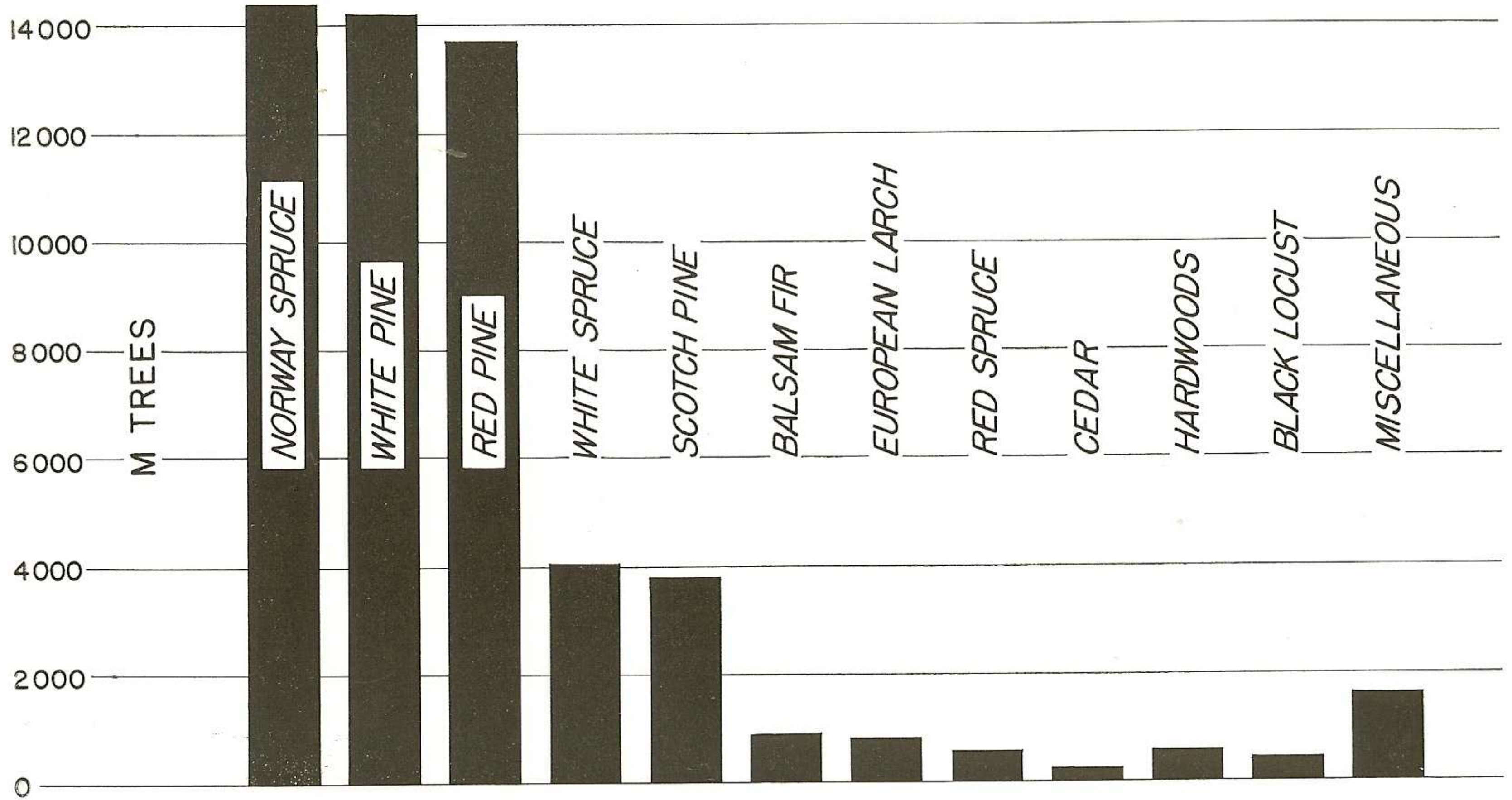
There are several reasons for advocating the creation of state forests in Vermont; reasons which must eventually result in large areas becoming either state or national forests.

In the first place, it has been proved in other states that private forestry practice is stimulated more by example than by any other method. Tracts owned and managed by the state in the various forest regions will soon result in an entirely different attitude toward the forest.

The ultimate object of the state, as well as national forests, must



TREES PLANTED IN VERMONT  
1909-1959  
BY SPECIES



be either for the protection of water sources or for the raising of timber. In order to be of any material value for either of these purposes large areas must be controlled. It is hardly conceivable, for example, that the flow of the White River, our most important tributary of the Connecticut, would be affected by an area of less than fifty thousand acres, even if carefully selected to include the springs and brooks contributing to it. The amount of timber which could be raised on a tract of this kind would be of material value to the industries of the region. Cutting conservatively after a series of years, the annual crop might well be twenty-five million board feet or one-tenth of the present cut of the state (made without regard for the future).

“Not only would the income from such a tract be a handsome asset to the State but many regions that have run down during the past generation would be built up on the industries thus made permanent. The state can wait for a longer term of years than the private owner, and by state ownership of large tracts a supply of large dimension timber would be assured for future generations. Altogether for protection purposes and for the better use of otherwise waste lands, the State of Vermont should unquestionably own at least 100,000 acres. Compared to 5,846,000, the total area of the State, this is a small portion, but if properly selected in the Green Mountain range, it would be of great benefit to the whole state. Its value in preserving the beauty of the state’s scenery is not to be overlooked, and this will undoubtedly be more of a commercial asset of the state in the future than it has in the past.”

There is no question that the last sentence above has become true, perhaps beyond the greatest dream of Mr. Hawes and his associates of 1910. The extent to which recreational and aesthetic values are being developed by this Department will be more fully covered in other parts of this report. Suffice it to say, that forests are necessary even to the casual picnicker, fisherman or hunter. It is possible for forest areas to be used for many purposes under good management. As a matter of fact, foresters usually think in terms of “multiple use” of forest land for the greatest benefit to the most people in the long run when they make management plans.

In the fall of 1909 the state board of agriculture and forestry purchased a tract of about 450 acres in Plainfield at an average price of \$4.00 per acre. This first state forest was named in honor of Professor L. R. Jones because of his deep interest and zeal in the development of forestry in Vermont. In 1910, in Sharon, the first gift of the state forest of 340 acres was made by Mr. Charles Downer. In December 1910 Mr. Marshall J. Hapgood gave the state 106 acres covering the summit of Bromley Mountain. In addition, he deeded to the state the right to control the management on 750 acres of other holdings. These rights were deeded back to the estate of Mr. Hapgood by No. 145 of the Acts of 1927 when the U.S. Forest Service decided to purchase the land for a national forest.

In 1911 Colonel Joseph Battell of Middlebury generously donated about 1,000 acres of forest land, including the summit of Camel’s Hump.

An interesting condition of the deed was, if a road were built to the summit, that there should be a separate one for automobiles.

As a result of the interest in the state forests already established, the legislature of 1912 passed a bill authorizing an appropriation of \$7,500 annually for the purchase, survey and reforestation of state forests. (Could use unexpended balances.)

In 1912 seventy four acres of drift sand were purchased in Lyndon. To determine how to best control such drifting sands, experimental plantings were started. The George Aitken State Forest in Mendon, which was acquired in 1912, was named after that public spirited citizen, a member of the board of agriculture and forestry.

Through the interest of Mr. Howard Rice, Secretary of the West River Valley Association, a 700 acre tract was purchased in Townshend in 1912.

In July 1913 a tract of 225 acres known as the Arlington State Forest was purchased "because there has been less interest in forestry in this section of the state than in most parts."

In 1914 State Forester Hawes said "In a few sections of the state, however, destructive lumbering is progressing on a scale hitherto unknown, and unless prompt steps are taken, considerable areas of Vermont will be turned from productive forests to worthless barrens. The reactionary policy of these large concerns, which pay no heed to the future, force one of two alternatives upon the people. Either the state must assert its right to regulate the cutting of these mountain forests or it must embark more extensively upon the policy of state ownership."

In the fall of 1913 the West Rutland State Forest of 350 acres was purchased. The land consisted of an abandoned farm some distance from the highway. This was the first tract of this type purchased.

On August 1, 1941, 3,000 acres on the west slope of Mt. Mansfield in Underhill carried out the purchase policy stated above.

In the fall of 1914 Mr. C. C. Putnam and son, Ralph, gave the state 1,100 acres in the town of Worcester. The area was severely burned in 1903. In the same year Redfield Proctor gave a valuable tract of 400 acres in Cavendish.

Though additions had been made to the existing state forest, it was not until January 1919 that the first purchase of 6,000 acres to be known as the Groton State Forest, was made at \$15,000.00.

During 1929 there were 1,154 acres of the Mt. Mansfield State Forest sold to the federal government for enlargement of its artillery range. This money, from the sale, was used to acquire 1,238 acres on the north end of the tract.

The following table (July 1, 1959) gives a picture of the date of establishment of each state forest and the names of the donors.

<i>Name</i>	<i>Town Location</i>	<i>Date Established</i>	<i>Acres**</i>	
			<i>Gift</i>	<i>Purchase</i>
Aiken	Mendon	1912		918
Arlington	Arlington	1913		225
Cambridge	Cambridge	1944		22
Camels Hump	Duxbury, Fayston, Huntington, Starksboro, Waitsfield	1911	1,184 <sup>1</sup>	6,177*
Coolidge	Bridgewater, Plymouth, Reading, Sherrewsbury, Woodstock, Sherburne	1925	324 <sup>2</sup>	11,551*
Downer	Sharon	1910	705 <sup>3</sup>	
Emerald Lake	Dorset	1957		482
Grafton	Grafton	1931		190*
Groton	Groton, Marshfield, Peacham	1919		15,490*
Hapgood	Peru	1910	118 <sup>4</sup>	
Jay Peak	Jay, Westfield	1954		1,710*
L. R. Jones	Plainfield	1909		642
Lyndon	Lyndon	1912		80
Maidstone	Maidstone	1938		469
Mathewson	Wheelock	1934	399 <sup>5</sup>	
Mt. Carmel	Chittenden	1957	261 <sup>*11</sup>	
Mt. Mansfield	Bolton, Cambridge, Morristown, Stowe, Under- hill, Waterbury	1914		20,936*
Okemo	Ludlow, Mt. Holly	1935		4,308*
Proctor-Piper	Cavendish	1914	799 <sup>*6</sup>	758*
Putnam	Worcester, Elmore, Middlesex	1914	1,400 <sup>7</sup>	1,909*
Roxbury	Roxbury, Warren	1930		4,584
Thetford Hill	Thetford	1931	362 <sup>8</sup>	
Townshend	Townshend	1912	2 <sup>9</sup>	701
Victory	Victory	1952		3,718*
Washington	Washington	1929	60 <sup>*12</sup>	395*
West Rutland	West Rutland	1913		344
Willoughby	Sutton, Westmore, Newark	1928	55 <sup>10</sup>	1,360*
Williams River	Chester	1931		130
			5,669	77,099

The names of the donors are as follows:

- |  |                                  |
|--|----------------------------------|
| 1. Joseph Battell  | 7. C. C. Putnam & Sons           |
| 2. Mortimer R. Proctor   | 8. Dwight Goddard                |
| 3. Charles Downer  | 9. Otis Dauchy                   |
| 4. M. H. Hapgood   | 10. Town of Newark               |
| 5. Ozias Mathewson   | 11. Redfield Proctor             |
| 6. Redfield Proctor (424),<br>Leon S., Olin D., and Una<br>H. Gay (300), Mary Fletcher<br>Charlton (70). | 12. Nathan W. and Sarah A. Flint |

\*Acreage pending complete mapping.

\*\*Acreages in this report have been revised in accordance with latest available maps.

#### *Taxes on State Forest*

The state pays taxes to the towns on state forests at an appraised value of not to exceed three dollars per acre at the local tax rate. In addition, ten percent of the stumpage receipts are annually paid over to the town.

The land and lease taxes paid to towns on state forests during the 1958-1959 biennium amounted to \$49,509.36. During fiscal year 1959 a ten percent stumpage tax to the towns amounting to \$3,076.36 was paid.

#### *State Forest Timber Sales*

Standing timber on state forests is usually sold on bids except on very small quantities. During fiscal year 1958 there were sold from state forests 2,097,482 board feet and 1,279 cords for which the state received \$37,867.47.

#### *Transfer of Lands*

With the approval of the Governor and the state board of forests and parks, the state forester may exchange or lease lands under his jurisdiction. A special act of the legislature is necessary to sell a piece of land.

#### *State Forest Parks*

Under No. 14 of the Acts of 1929, the state forester was authorized to accept gifts or purchase land to be held, developed and administered as state forest parks.

In October 1924 the state received a munificent gift, Mt. Philo, in Charlotte from Mrs. Frances W. Humphrey on the condition that it should always be open to the public for recreation.

In 1925 the forest service developed small picnic areas on the Townshend State Forest and in Smugglers' Notch.

On November 11, 1926, Mrs. Mary E. Waterman gave the state 206 acres located in Williamstown Gulf. The deed specified that no buildings or structures for commercial purposes shall be maintained.

Redfield Proctor, in the same year, gave 900 acres bordering Granville on both sides for a distance of six miles. The stipulation in the deed was that no destructive cutting be carried on in view of the scenic gulf highway.

#### *Development*

The following table gives the history of the acquisition of lands for state forest parks up to July 1, 1959.

<i>Name</i>	<i>Town Located</i>	<i>Date Established</i>	<i>Acres</i>	
			<i>Gift</i>	<i>Purchased</i>
Ainsworth†	Williamstown	1926	206 <sup>1</sup>	220
Allis	Brookfield	1931	135 <sup>2</sup>	310
Ascutney	Windsor, Weathersfield	1935		1,530
Branbury	Salisbury	1945	23 <sup>3</sup>	40
Brighton	Brighton	1954		9
Button Bay†	Panton	1957		206
Crystal Lake	Barton	1937	14 <sup>4</sup>	1/2
D. A. R.	Addison	1949	120 <sup>5</sup>	
Darling	Burke, Kirby	1934	1,662 <sup>6</sup>	43
Dutton Pines	Dummerston	1937		12
Elmore	Elmore	1936	30 <sup>7</sup>	197
Emerald Lake†	Dorset	1958		462
Gifford Woods	Sherburne	1931	12 <sup>8</sup>	96
Grand Isle†	Grand Isle	1955		17
Granville†	Granville	1927	930 <sup>9</sup>	261
Hazen's Notch†	Westfield	1934	60 <sup>10</sup>	
Jamaica*†	Jamaica	1937		12*
Molly Stark†	Wilmington	1940	110 <sup>11</sup>	58
Mt. Philo	Charlotte	1924	154 <sup>12</sup>	
Monroe†	Duxbury	1940	222 <sup>13</sup>	
Rood†	Bethel	1938	21 <sup>14</sup>	
Sand Bar	Milton	1933		10
St. Albans Bay	St. Albans	1935	30 <sup>15</sup>	15
St. Catherine	Poultney	1953		16
Silver Lake	Barnard	1954	26 <sup>16</sup>	
Wilgus	Weathersfield	1931	129 <sup>17</sup>	
Cassidy Lot	Brandon	1959	35	
Martha Warren	Castleton	1959	350 <sup>18</sup>	
			3,909	3,514 1/2
TOTAL ACREAGE .....				7,423 1/2

The names of the donors are as follows:

- |                                |                                    |
|--------------------------------|------------------------------------|
| 1. Miss Mary E. Waterman       | 10. Atlas Plywood Corporation      |
| 2. Wallace L. Allis            | 11. Citizens of Brattleboro & Wil- |
| 3. Miss Shirley Farr           | mington                            |
| 4. Barton Improvement Club,    | 12. Mrs. Frances Humphreys         |
| C. A. Nute, F. R. Hastings     | 13. Will S. Monroe Estate          |
| 5. Vermont State Society of    | 14. S. E. Rood                     |
| Daughters of American Rev-     | 15. St. Albans Town and C. of C.   |
| olution                        | 16. Mr. & Mrs. John H. McDill,     |
| 6. L. A. and Henry Darling     | Caroline Field and Margaret        |
| 7. Citizens and Town of Elmore | Crosby                             |
| 8. W. K. Barrows               | 17. Col. William J. Wilgus         |
| 9. Redfield Proctor            | 18. Martha Warren                  |

\*Transfer by Governor under No. 23 of Acts of Special Session of 1936.

†Undeveloped in 1958.

Not much development work on parks had occurred since C. C. C. days until in 1947 the sum of \$10,000.00 was appropriated to improve the St. Albans Dock. \$10,000.00 was earmarked in the general appropriation bill for the development of D. A. R. State Park in Addison.

Skiing had become of greater public import and interest, so in 1953 the legislature appropriated \$10,000.00 for the development of ski trails on Burke Mt. A further \$10,000.00 was appropriated for D. A. R. and \$25,000.00 to purchase St. Catherine State Park.

The increased interest about the state of the value of recreational developments paved the way for introduction of several bills which appropriated funds as follows:

Development of recreational facilities at Jay Peak	....\$ 20,000.00
Construction of bathhouse — Brighton State Park	.... 20,000.00
Construction of bathhouse —	
Silver Lake State Park	..... 20,000.00
Warming Shelter — Darling State Park	..... 7,500.00
Camping Area — D. A. R. State Park	..... 20,000.00

The following appropriations of 1957 show how interest in the development of state parks increased.

Improvement to St. Albans Bay Dock	.....\$ 10,000.00
Improvements to Brighton State Park	..... 15,475.00
Improvements to Silver Lake State Park	..... 15,000.00
Warming Shelter, Jeffersonville Ski Area	..... 12,000.00
Purchase of Emerald Lake and	
Button Bay State Parks	..... 100,000.00
Planning	..... 25,000.00
Bond issue to develop additional	
camping facilities in State Parks	..... 200,000.00
Ski Shelter in Sherburne	..... 30,000.00

Governor Robert T. Stafford had as a campaign issue a \$4,000,000.00 bond issue over a period of eight years for the acquisition and develop-



ment of state parks. The 1959 legislature passed a \$1,000,000.00 bond issue for the purpose.

### *Municipal Forests*

At the end of the first fifty years of forestry in Vermont ninety towns and communities have a total of 33,173 acres in Municipal Forests. Of these, sixty-nine with a total area of 27,224 acres are formally classified as provided by public laws. Not included in the above figures are thirteen other Municipal units with acreages under the minimum of forty required for classification.

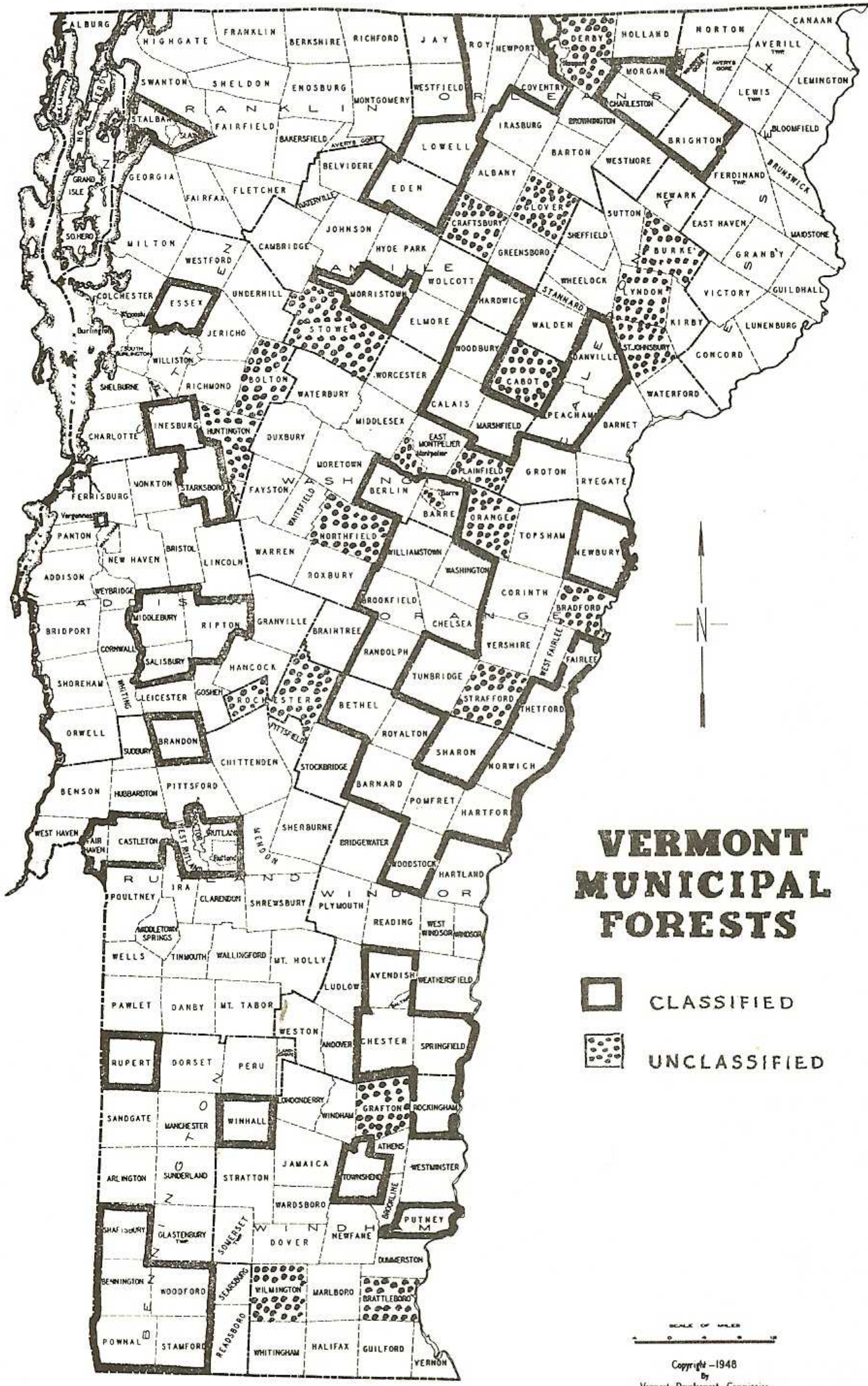
The planting record up to July 1959, shows a total of 4,314 acres reforested. Initial thinnings on many have netted the towns from \$5.00 to \$30.00 per acre. It is only since 1952 that an attempt has been made to maintain records on other phases of Municipal Forest management. Even though incomplete, the record for the last seven years has been impressive with a total of 1,960 acres of Timber Stand Improvement accomplished and a harvest of 8,182,007 board feet of logs and 9,222 cords of miscellaneous products. The net returns to municipalities on whose lands the timber harvest occurred during the seven year period has been approximately \$116,169.43. This harvest income was paid into the treasuries of forty-three towns out of the ninety listed.

As indicated by the existing Municipal Forest laws the State Forester is required to determine the suitability of land for classification as a Municipal Forest, to give advice as to what trees shall be planted thereon, and the subsequent management thereof. He is also to assist with the management of the forest as a whole.



The rapid expansion of the program has placed heavy demands on the State Forester to provide the services required. In order to provide a complete service it was necessary to assign foresters to cover the job. In the beginning of Fiscal Year 1957 a forester was assigned full time to assist communities in the Southern District. On July 1, 1958 another man was assigned full time to the Northern District. These men are available to provide assistance in developing plans for the management of Municipal tracts, mark timber for cutting, assist in selling the stumpage and supervise the sale operation. They also provide valuable assistance in outlining and supervising cultural activities under the timber stand improvement program.

The legislature of 1915 authorized the establishment of endowment forests. Any town or city having 40 acres or more could have the property examined by the State Forester and if he found it suitable, it would be designated as a school endowment forest. The management of such a forest was under the direction of the state forester and its protection from fire under the town fire warden. In the revision of the Statutes in 1917 the term "school endowment forest" was changed to "municipal forest."

In 1945 legislation was enacted which authorized the state to advance up to \$600.00 per biennium to any municipality for purchase and reforestation. The money is to be repaid to the state without interest when any commercial cutting is made.



# VERMONT MUNICIPAL FORESTS

-  CLASSIFIED
-  UNCLASSIFIED

SCALE OF MILES  
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By  
Vermont Development Commission  
For The  
State of Vermont

JUNE 30, 1959

In 1951, through the active interest of Governor Lee E. Emerson, a bill was passed requiring every municipality which has no municipal forest, to vote annually on the subject of acquiring one.

As a result of this law, many communities have either established active committees or purchased land.

The following municipalities have classified their forest lands: Barnard, Barre, Barton, Bellows Falls Village, Bennington, Berlin, Bethel, Brandon, Brighton, Brookfield, Calais, Castleton, Cavendish, Charleston, Chelsea, Chester, Coventry, Danville, East Hardwick, Eden, Essex Junction, Fairhaven, Fairlee, Hardwick, Hartford, Hinesburg, Lowell, Marshfield, Middlebury Village, Middlebury Town, Morgan, Morristown, Morrisville, Newbury, Newport, Norwich, North Troy, Peacham, Pomfret, Pownal, Proctor, Putney Town, Putney School, Randolph, Ripton, Rupert, Rutland City, Rutland Town, Salisbury, Shaftsbury, Sheffield, So. Royalton Fire District, Springfield, St. Albans Town, Starksboro, Stamford, Thetford, Townshend, Vergennes, Waterbury Village, Washington, W. Rutland Town, West Rutland Fire District, Williamstown, Windsor, Winhall, Woodstock, Woodbury and Woodford.

#### *Green Mountain National Forest*

For many years after passage of the Weeks Act there had been agitation in Vermont for the establishment of a national park or national forest. Mr H. S. Wardner of Windsor was an ardent supporter. Senator Frank L. Greene, who was very interested, used all influence possible in Washington to consummate the establishment of the National Forest.

The 1925 legislature passed an act enabling the federal government to purchase lands for a national forest in Vermont. This act was amended in 1935 and 1937. It defines the boundary of the purchase area by naming the towns in which purchases may be made. To consummate a purchase the approval must be had of the local selectmen and a state board consisting of the governor, lieutenant governor, attorney general, state forester and the commissioner of agriculture.

On December 5, 1928, State Forester Robert M. Ross submitted a report to the National Forest Reservation Commission requesting the establishment of the Green Mountain National Forest. The report covered economic and historical data which was collected by Perry H. Merrill. The acquisition was endorsed by Governor John E. Weeks, the Vermont Members of the New England Conference and Council, by Redfield Proctor, Chairman; the New England Section, Society of American Foresters, by Albert Cline, Secretary; The Vermont Commission on Conservation and Development, by Wallace Gilpin, Chairman; The Vermont Botanical and Bird Clubs by E. J. Dole, Secretary; The New Haven, Connecticut, Chamber of Commerce; The Vermont State Chamber of Commerce; The Brattleboro Club; Greenfield, Massachusetts, Chamber of Commerce.

The National Forest Reservation Commission approved a purchase unit which covered a tract from East Wallingford to Manchester, Bondville Highway.

In 1933 the Vermont Forest Service made a request that the purchase area be increased to its present size. This report was approved by Governor Stanley C. Wilson, The Vermont Timberland Owners' Association, the Vermont State Chamber of Commerce and the Green Mountain Club.

The Green Mountain National Forest as of July 1, 1959, had an area of 221,434 acres which lies along the main range of the Green Mountains from Starksboro to the Massachusetts line in parts of thirty three towns where the purchase has been authorized. In lieu of the annual land taxes, twenty five per cent of the receipts from the sale of all products from the National Forest is returned annually to the towns in proportion to the forest acreage owned in each town. Thus, a town receives funds whether timber has been cut in the town during the year or not. The federal government also allots money for roads and bridge building and maintenance. During the past five years the tax payments to the towns have averaged slightly over 15 cents per acre per year.

The purchase of lands for the Green Mountain National Forest is authorized under No. 1 of the Acts of 1925 which as later amended reads as follows:

"The consent of the state of Vermont is hereby given to the acquisition by the United States, by purchase, gift or condemnation with adequate compensation, of such lands in Vermont, as a board consisting of the governor, lieutenant governor, attorney general, commissioner of agriculture and state forester shall first approve of in the following towns: Bristol, Lincoln, Warren, Ripton, Granville, Hancock, Rochester, Pittsfield, Chittenden, Goshen, Middlebury, Salisbury, Leicester, Brandon, Mendon, Stockbridge, Winhall, Londonderry, Peru, Dorset, Danby, Landgrove, Weston, Wallingford, Mt. Holly, Mt. Tabor, Stratton, Somerset, Wardsboro, Dover, Wilmington, Whitingham, Readsboro, Searsburg, Sunderland, Glastenbury, Manchester, Woodford, Stamford, Jamaica, Bennington, Pownal, Shaftsbury, Arlington, Sherburne, and which in the opinion of the federal government may be needed for the establishment, consolidation and extension of national forests in the state. Said board shall approve areas within stated boundaries in said towns and not individual or separate tracts therein. Said board shall act only after it has the written approval of the selectmen of the town or supervisors of an unorganized town or gore within which such land, or a part thereof is located.

"The United States shall have jurisdiction to make and enforce such laws, rules and regulations as the United States shall deem necessary for the administration, protection and management of such national forests.

"In all other respects, the jurisdiction over persons and property within such territory shall not be affected nor changed by reason of such acquisition of title to such lands by the United States."

The gross area within these towns is approximately 580,000 acres of which 485,000 acres are considered purchaseable and desirable for National Forest purposes. Purchases to July 1, 1947 aggregate 168,138 acres. For efficiency of administration the area has been divided into the northern, the central and southern ranger districts.

The land purchased is located in the following towns and counties:

<i>Addison County</i>		Mt. Holly .....	2,611
Bristol .....	4,881	Mt. Tabor .....	23,841
Goshen .....	3,132	Pittsfield .....	2,463
Granville .....	12,970	Wallingford .....	7,310
Hancock .....	19,263		
Leicester .....	2,551		52,300
Lincoln .....	9,433	<i>Washington County</i>	
Middlebury .....	2,444	Warren .....	3,269
Ripton .....	20,819		
Salisbury .....	3,209		3,269
	<hr/>	<i>Windham County</i>	
	78,702	Dover .....	2,066
<i>Bennington County</i>		Londonderry .....	257
Dorset .....	1,450	Somerset .....	8,873
Landgrove .....	591	Stratton .....	2,126
Manchester .....	3,717	Wilmington .....	1,526
Peru .....	17,047		
Readsboro .....	2,016		14,848
Searsburg .....	5,670	<i>Windsor County</i>	
Sunderland .....	16,883	Rochester .....	10,685
Winhall .....	6,431	Stockbridge .....	158
Woodford .....	8,306	Weston .....	8,881
	<hr/>		
	62,111		19,724
<i>Rutland County</i>		<hr/>	
Brandon .....	89	TOTAL FOR VERMONT	230,954
Chittenden .....	15,986		

Under the acts of congress twenty-five percent of the gross receipts from the National Forest are paid back to the state and redistributed to the towns in proportion to the acreage of national forest in the respective towns.

The first national forest land was acquired in January 1932. The receipts and payments from 1932 on have been as follows:

#### *Receipts of Green Mountain National Forest*

(First Land Acquired January 25, 1932)

<i>As of</i>	<i>Acres</i>	<i>Fiscal</i>	<i>Share of</i>	<i>To</i>
<i>June 30</i>	<i>Purchased</i>	<i>Year</i>	<i>National</i>	<i>Towns</i>
		<i>Receipts</i>	<i>Forest Towns</i>	<i>Per Acre</i>
1932 .....	1,842	\$ 6	\$ 2	
1933 .....	31,381	338	84	
1934 .....	31,381	4,531	1,133	3.6¢
1935 .....	58,453	4,944	1,236	2.1¢
1936 .....	74,167	6,496	1,624	2.2¢
1937 .....	138,244	9,929	2,482	1.8¢
1938 .....	160,539	6,261	1,565	1.0¢
1939 .....	160,539	4,234	1,059	0.7¢
1940 .....	160,539	12,325	3,081	1.9¢
1941 .....	160,539	21,229	5,307	3.3¢
1942 .....	167,904	30,593	7,648	4.6¢
1943 .....	168,138	55,012	13,753	8.2¢

1944	168,138	56,330	14,083	8.4¢
1945	168,138	71,983	17,996	10.7¢
1946	168,138	59,737	14,934	8.9¢
1947	168,139	105,659.96	26,414.99	15.7¢
1948	168,139	119,381.89	29,845.47	17.8¢
1949	209,518	104,275.00	26,068.83	12.4¢
1950	209,579	95,586.00	23,896.56	11.4¢
1951	209,851	159,845.78	39,961.44	19.1¢
1952	221,434	141,294.00	35,323.56	16.0¢
1953	225,169	142,992.00	35,747.94	15.9¢
1954	226,735	168,984.00	42,246.02	18.8¢
1955	228,621	145,087.29	36,271.82	15.8¢
1956	228,518	196,320.95	49,080.17	21.5¢
1957	230,366	204,904.77	51,226.19	22.2¢
1958	230,366	92,914.39	23,228.60	10.1¢
1959	230,954	131,879.27	32,969.82	14.2¢
Average for 28 years				11.7¢

During the period 1932 through 1940, the National Forest was being purchased, land was being surveyed and boundaries marked, roads being built and campgrounds, forest fire, wildlife and administrative improvements constructed. Commencing in 1941, additional timber was gradually put on the market and logging operators began to get acquainted with selective cutting methods. These operators have now found that they can afford to operate under conditions that assure another crop of timber in a few years. During Fiscal Year 1946, over 85% of the 12,500,000 board feet of timber sold was to previous purchasers of National Forest stumpage.

The Supervisors with their period employed were:

Gerald S. Wheeler, November 11, 1935-July 1936

Otto G. Koenig, July 1936-July 1943

James K. Vessey, July 1943-January 1945

Gerald S. Wheeler, January 1945-December 15, 1954

Paul S. Newcomb, February 1, 1955-Present

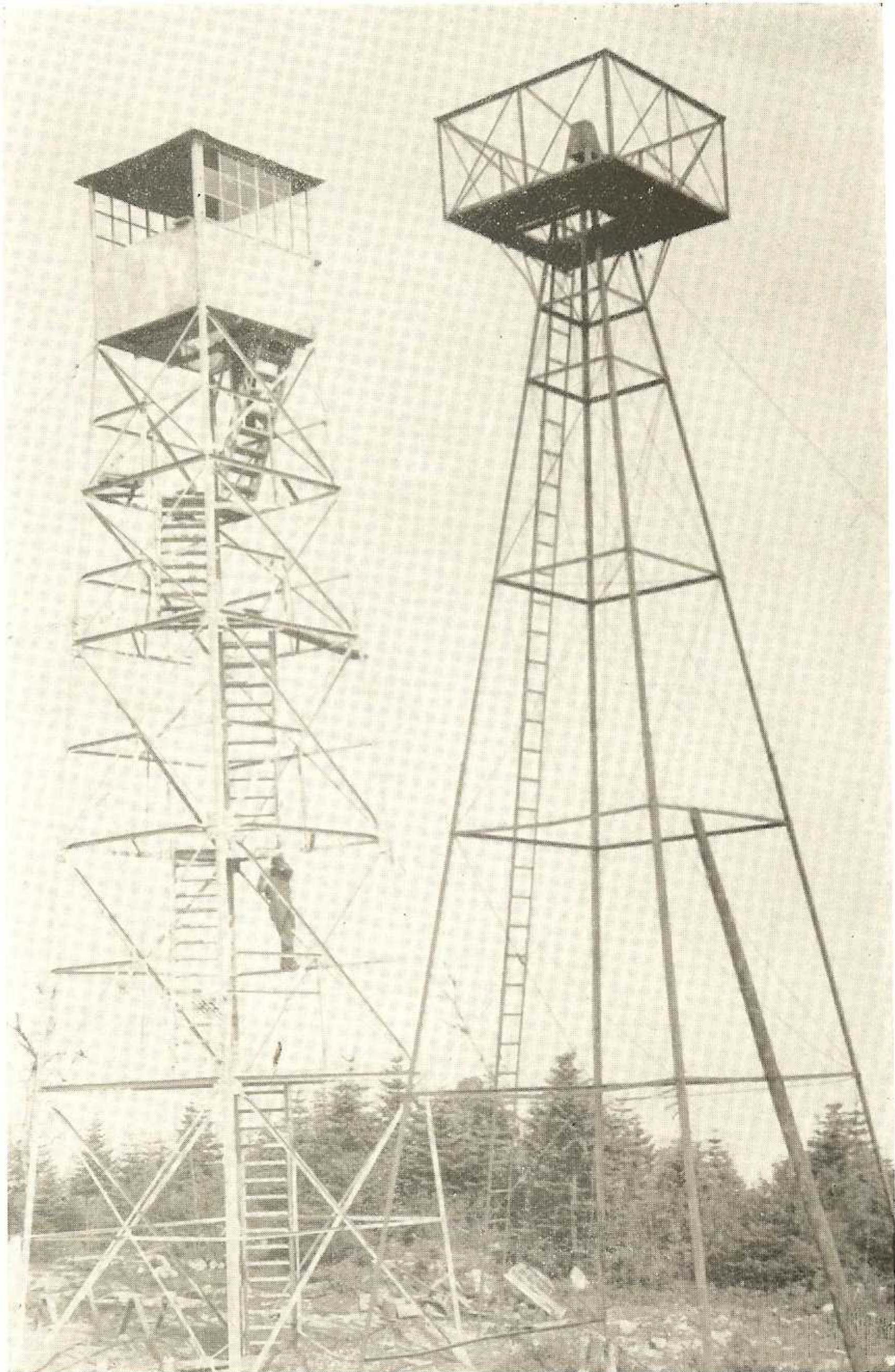
### Education

Immediately upon entering upon the job, State Forester Hawes recognized the immediate need of education which was at once brought to the people in the form of lectures, exhibits at agricultural fairs, on a "Better Farming Special" train which first traversed the Rutland Railway and by publications. Field days were held in many places.

1909. Arbor Day packages of seedlings for planting by school children were sent out with complete instructions for transplanting and caring for seedlings.

1910. Vermont Forestry cards, about 3" x 5" in size, giving the number of trees per cord by diameter classes, cordwood equivalent, shipping weight in pounds per 1,000 board feet for different species of logs and wholesale lumber prices. In all the information was extended and by 1914 included about 22 cards.

In August 1911 a ten day summer school of forestry was held in



The new and the old Gore Mt. Lookout Towers.

Sharon on the Downer State Forest. This school was probably the first in the United States to teach farmers and farm boys the principles of forestry as they should be applied on the farm. There were eighteen in attendance.

No. 157 of the Acts of 1933 directed that the state agricultural school at Randolph give practical instruction in forestry.

State Foresters Hawes and Hastings spent a part of their time teaching a course of forestry at the Vermont State College of Agriculture. This procedure was concluded in 1924 and a Department of Forestry was established at the University with W. R. Adams in charge. Professor Adams also directs work at the Experimental Forest in Jericho which was acquired to replace one adjacent to the Burlington Airport which was taken over for airport purposes.

Professor E. I. Terry, during 1922-1924 taught a forestry course at Middlebury College. Perry H. Merrill filled out the semester when Mr. Terry left. J. J. Fritz carried on this course for some time, along with his duties as forest manager of the Battell Forest.

In 1954 a ten day conservation laboratory for teachers was established with headquarters at the State Ski Dormitory at Stowe. The course is limited to 25 teachers selected by the state board of education. All state and federal agencies participate in teaching the course which includes geology, water, soils, land uses, forests, fish and game, agriculture and recreation.

Forest Festival Week, a week during October, dedicated to an extensive awakening of the public to the need of good forestry, was inaugurated in 1947. One of the projects of this week is an essay on forestry with cash prizes open to all pupils in the seventh and eighth grades in each of the fifty-five supervisory school districts. Over two thousand pupils participated in 1958.

A Conservation Workshop for teachers at the University of Vermont was established in 1950.

Also in 1950 the State Department of Education published a Curriculum Bulletin on conservation for use in the schools.

In accordance with Section 5 of the Clarke-McNary Act of 1924, Mr. Floyd Callward was appointed extension forester on July 1, 1925, with headquarters at the Extension Service in Burlington. The educational work consists of group demonstrations and meetings, to teach boys, since then adults and 4-H boys and girls the rudiments of forestry and public work through publications, exhibits and news releases.

### **Forest Taxation**

There has been much public discussion for a number of years toward some more equitable system of forest taxation. It is felt that first we must know what the effect upon a town's economy any change in taxation will be. Thus, we must determine how many acres of forest land there are in a town by ownership and the appraised valuation.



Forest plantations were exempted from taxation for a period of ten years by a law passed in 1904 and as amended in 1912, applied only to plantations made before 1913.

By Number 40 of the Acts of 1912 an owner could have his plantations or cut-over and other land fully stocked with forest trees not over fifteen years old classified at an appraisal of not to exceed \$3.00 per acre to remain until 1940 when a new valuation would be made. The property was assessed at the local rate. A ten per cent stumpage tax was to be levied.

Number 41 of the Acts of 1912 allowed classification of waste or wild forest lands. The lands were to be kept at the appraisal most recently set, until 1950. A severance tax of one-tenth of one per cent of the valuation but not to exceed seven per cent was levied.

In 1947 Number 40 was amended to include state forest lands.

No. 11 of the Acts of 1947 repealed tax laws that allowed special classification and taxation of young timberlands and waste, denuded and wild forest lands. These sections had been used only by a very small number of forest landowners.

In 1945 the legislature set up a commission to study and report on forest taxation. The committee comprised of Donald W. Smith, Chairman, Harrison Q. Haile, Ernest M. Bowen and Philip Bartlett and Winston L. Prouty. The committee recommended the repeal of Nos. 40 and 41 of the Acts of 1912, except as they applied to state forests. The 1947 legislature repealed the laws as recommended. It found that under No. 40, only 11 parcels comprising 211 acres, had been classified. This optional law did not work because the listers could shift the tax burden to other parts of the owner's property such as meadow land, buildings, et cetera. Under No. 41 there were 13 owners, largely corporations, which had classified 37,749 acres.

The legislature of 1951 agreed with the statements in the first paragraph of legislation authorizing the installation of three columns in the grand list book which will show the acreages of woodland, cropland and pasture land. As yet only a few of the listers have been willing to fill out the columns.

The 1953 legislature directed a study of forestry and taxation by a committee which was directed to present a bill to the legislature.

The committee appointed by Governor Lee E. Emerson comprised the following persons: Walter A. Malmquist, Chairman, Neal Beattie, Leon Bushey, John Clawson, Thomas Lull, Ernest Perley and Albert W. Gottlieb, Secretary.

After an intensive study of the tax situation in many towns and other states, the commission made the following suggestions:

1. That a course in conservation education be made available in the teachers' colleges of the state; that courses already available for teachers in service be continued and that funds be provided by the legislature to support such courses.

2. That Experiment Station funds be increased \$15,000 a year to adequately equip and staff the University of Vermont Research Forest so that facilities may be available to study forestry problems applying to Vermont conditions.

3. That the cooperation of other agencies in the control of forest insects and diseases be continued and that the Forest Service appropriation for this work be increased to \$10,000 per year.

4. That the legislature permit the harvesting of antlerless deer on the last two days of the regular open season in those portions of the state south of U. S. Highway No. 4 where control of the deer herd is required. Such an open season should be limited to residents of the State of Vermont. The Fish and Game Commission should be given authority to permit the taking of antlerless deer only during such years and in such portions of the area as the deer population demands.

5. That the legislature provide additional funds in the amount of \$10,000 for a county forester for Essex county and at least one additional forester in order that the county forester program may be expanded to more adequately supply the need for this type of service.

6. That afforestation of idle abandoned land in the state be accelerated by suitable educational means and that the production of trees from the State Tree Nursery be increased to adequately supply the trees needed. It is recommended that \$15,000 be provided by the Legislature for needed improvements including a seed extraction plant, proper storage facilities for seed and an irrigation system at the State Tree Nursery.

7. That a program be established for the acquisition of high land on the mountains of the state which will provide for the best management of this land for water conservation purposes. It is recommended that the Water Conservation Board in cooperation with the Forest Service make a study of the need and cost and present a budget for the acquisition of such land to be held as state forests to the next session of the Legislature.

8. That logs and standing timber be made exempt from the personal property tax, that the present tax law applying to state forest land be amended to apply to all timberland in the state and that the Tax Commissioner employ an expert familiar with timber and timberland values to aid town listers in setting up valuations and in administering the law.

Legislation embodying the tax principles was defeated in succeeding legislatures thru 1957.

## Industry

In 1888 there were pulp mills at Bellows Falls, Readsboro and Middlebury.

Between 1840 and 1861 large quantities of iron ore from Port Henry, New York, was brought to Lincoln and surrounding towns. Charcoal was used for refining. Logs cut 12 or 14 feet long, piled and covered with hay or dirt were fired. Iron ore was brought to Vergennes by boat and pit iron sent back to Troy. There were three forges in Lincoln. Logs three feet in diameter were put into charcoal.

During the fall of 1909 the department began a study of the wood-using industry in Vermont. The object was to learn what the annual timber cut might be, to learn the products manufactured, who made them and to learn something about prices and markets for logs and lumber.

Franklin B. Hough in 1877 in his report to the Department of Agriculture stated: "It is more than 80 years since a paper mill in Fair Haven, Vermont, made wrapping paper from basswood bark."

At the beginning of the 20th century little attention was given to the uses of wood and statistics on wood utilization were less dependable than at the present time.

In 1909 at the time of the establishment of the Vermont Forestry Department, the major wood users were listed as follows: Cooperage, furniture, lumber and lumber products and custom sawmills. Records of 1909 show there were 25 cooperage plants making butternuts, butter churns, sap buckets, sap holders and gathering tanks and barrels of different types. Today there are no cooperage plants operating, except one plant using a very small amount of cooperage in making colonial reproductions. The loss of our cooperage plants is mainly because of changes made by use of materials such as paper and plastic. Production of sap buckets, churns and butter moulds have been replaced in industry by bobbins, golf tees and novelty items such as wooden bowls and spoons.

Furniture and refrigerator plants then totaled 19. Because of electric power, the use of ice for cooling is little used today. Steel has largely replaced wood in construction of refrigerators, although wooden refrigerator truck bodies are still being manufactured in Vermont.

Modern equipment has made changes in the manufacture of furniture and other wooden products. We now have equipment that will do the work of two or three machines used at the beginning of the 20th century thus reducing costs and increasing production quantity and quality. Discovery of better glues and finishes have also contributed to the present high quality finished furniture and other finished wood items.

Lumber and lumber product plants totaled 593 in 1909. Even at that time a great many mills producing lumber had entered into production of other wooden items, rough and finished, including shingles and lath. Many of these operations had equipment for manufacturing and repairing farm equipment which was made principally from wood. Included in the farm machinery produced in Vermont in the early days was what is known as the wooden "horse power." This was a unit where one or two horses or oxen tread on wooden lags built on an endless chain thus turning a pulley on which could be run a belt furnishing power to different pieces of equipment. The horsepower was used in sawing the wood pile, threshing the grain, turning the grindstone for sharpening farm tools and other uses. The threshing machine for grain was made from wood and used for separating oats, barley, wheat, beans and other products from the straw. Because horses and oxen were used in many

ways in the farm operation other items were needed such as neck-yokes, whiffletrees, wagons, wagon poles, ox bows or yokes. Today these industries have been replaced by veneer plants and turning industries.

Most lumber produced by sawmills was used at local plants. Only a small amount was exported. Today a large amount of lumber is shipped out of the state.

There were many more portable sawmills operating at the turn of the century than at present. Transportation of logs and pulpwood for any distance was difficult. Water was the main source of transportation where any distance was involved. Sawmills operating outside of certain watersheds had to be of a portable nature. Horses and oxen were the main source of transportation from stump to sawmill or to the river bank. The portable sawmills were powered by steam with fuel for the boiler supplied from the mill waste

The stationary sawmills were usually located on a stream large enough for floating logs. The larger streams of Vermont furnished transportation for logs and pulpwood. A very small amount of pulpwood was transported to the pulp mills by railroad. The log drive in the spring was a great event and created a lot of hard work. It is known that on the Black River for a few years duration there were five log drives each spring. The first drive going the longest distance, the others according to the plant location on the stream. The longest drive was to a mill located at the mouth of the Black River in Newport. Because of falling waters in the spring, pressure was put on the first drives to clear streams in order that all logs could be floated to their destination before the river was too low.

There are very few custom sawmills operating today. Nearly all sawmills operating at present will do custom sawing but their main job is producing lumber for commercial sale.

Transportation of logs, pulpwood, lumber and finished products, at present, as compared to that of 1908 is generally by truck or tractor trailers. Trucks haul logs or pulpwood from the woodlot to mills for distances over 100 miles. Trucks and tractor trailers are hauling sawn lumber to many places in New England, New York and New Jersey. In the same manner furniture and other finished wood products are being hauled by the manufacturer to many places in the United States.

The federal census of manufacturers of 1909 gives the yearly earnings of wage earners at \$420.25 (supervision not included) and the average work week in lumber and timber at 60 hours. Today the average work week is 40 hours and the average annual salary well over \$3,000.00.

In the past fifty years there have been changes in types of power used to operate the sawmills. In the early days water and steam was the main power. The flood of 1927 destroyed many dams and in most cases the flume, water wheel and equipment and mill itself. The cost of restoring water power equipment was very expensive and gasoline power units took the place of the water wheel. Because of laws passed about the time of

the flood demanding safety inspection, many boilers producing steam for operating sawmills were condemned. Because of costs the steam mill operators moved the boilers "out back" and converted to gasoline power. When electricity became available, the trend was toward electricity which is often cheaper power than gasoline.

Today the number of Diesel units for sawmill power are replacing most other types of power and are a more satisfactory power.

From 1909 to 1945 very little assistance was available by the Department to the sawmill operators or to the woodusing industries. In 1945 the state forester set up a division of Utilization. Since 1945 a source of current information and assistance has been available to all manufacturers of lumber and wood products. Assistance given has included training in sawmill operation, grading logs and lumber, how to care for lumber to prevent spoilage and degrade, care and maintenance of equipment. Assistance in procurement of equipment, raw materials and supplies and in marketing of finished products and surplus equipment has been available through an exchange bulletin issued every other month. Efficiency studies have been made of many operations and wasteful practices have been pointed out thus decreasing the waste of one of our natural resources.

In 1945 two laws were passed, one requiring the department to make a survey of the timber drain by cutting. The other was a law requiring all portable sawmills to register with the Vermont Forest Service. Out-of-state mills had to post a bond to insure payment of debts in the state.

The general trend in production of logs, pulpwood, lumber and wood products has seen a great change in 50 years. The chain saw has almost completely taken the place of the crosscut saw, bow saw and buck saw. Even many of the farmers today are using chain saws for their small wood operations. Horses for skidding logs and pulpwood are still being used, but most logging is being done with tractors and winches, logging arches and other heavy equipment. Changes have taken place in equipment used in producing the many finished products of the Vermont woodusing industries.

### **Forest Pest Control**

Action by the state government against forest pests was recommended in Vermont as early as 1906 when Commissioner Hitchcock said: " — — — the present legislature should not adjourn without making adequate provision to fight any invasion of the gypsy or brown tail moths."

Since both Agriculture and Forestry were in the same department in the early days, it was natural that one person should devote his full time to both forest and agriculture insects and disease control. Harold L. Bailey was appointed in 1912 to the position which included surveys, investigation, information and education. This work was carried on very successfully until his retirement in 1953. Since there was a greater need and demand for forest pest control work, the legislature of 1953 transferred the jurisdiction over the control of forest insects and diseases from the Commissioner of Agriculture to the State Forester. The first head of this division was Edward B. Walker. Severe outbreaks of the

forest tent caterpillar and the gypsy moth simultaneously in 1952 caused the legislature of 1953 to provide financial assistance to woodland owners on a third of the cost basis for aerial spraying.

Public Act No. 64, passed by the 1955 legislature, provided for the protection of forests and forest values by declaring forest pests to be a public nuisance. In this act it is declared to be the public policy of the state to control forest pests on or threatening the forests of this state.

#### *Porcupine Control*

For many years Vermont had had a bounty on porcupines. Annual bounty expenditures were as high as \$19,000.00 without any control. It would be dropped then reenacted. Finally, in 1953 the legislature appropriated \$2,000.00 to the Vermont Forest Service to be used during the biennium for research and trial of possible methods of controlling porcupine damage to forest trees.

As a result of the above report the legislatures of 1957 and 1959 have each made annual appropriations of \$5,000.00 for control work. In addition to killing porcupines by shooting, trapping and poisoning, the Department is experimenting with the introduction into heavily porcupine populated areas, the fisher cat which is a predator on porcupines.

#### *White Pine Blister Rust*

In 1909 white pine blister rust was noted on some white pine imported from Germany. All plantations of imported white pine were examined. The worst case of the disease was found on the Billings Estate on some trees purchased from a Massachusetts nursery in 1907. After 1910 no more imported seedlings were obtained. In September 1916 Dr. H. H. York found infection on white pine planted in 1913 by T. N. Vail of Lyndonville.

In 1915 an interstate committee was formed in Boston and prepared a program which was presented to Congress with the result that an initial appropriation of \$20,000 was secured for prosecuting the work. Under this act Vermont began cooperation in 1916.

During the summer of 1916 extensive scouting was carried out to determine how extensive the disease was spread. These inspections showed the disease generally widespread on many currant bushes and on the white pine plantations in a number of plantations.

In the spring of 1917 four million white pine in the state nursery were plowed under since infection was found on many of the trees. The field work in blister rust control was under the supervision of Harold L. Bailey from July 1, 1918, until May 1, 1920, when he was succeeded by J. E. Riley, Jr. The control work was started on a cooperative basis in 1920. The land owner paid for the actual labor eradication costs. In addition to the state leader there have been three federally paid agents up to the present time.

In 1924 small town appropriations were made to pay lost time of foremen due to rainy weather. Mr. Riley resigned in 1924. Sharon V. Holden served as state leader until 1930.

In 1933 with the Civilian Conservation Corps and the W. P. A. public work funds, the eradication work was carried on chiefly with emergency funds. With the end of the emergency the individual towns were interested in making appropriations for the work which has been carried forward to date. Solon Conner served as state leader from 1935 to 1950 when the federal office of blister rust control employed a leader for Vermont, Massachusetts and Connecticut.

#### *The Chestnut Bark Disease*

The Chestnut Bark disease was prevalent in Vermont in 1914. By 1924 practically all chestnut trees had been killed. The chestnut was a fast growing, valuable hardwood and covered an area of less than 100,000 acres in southwestern Bennington County and along the Connecticut River as far north as Springfield.

#### *Dutch Elm Disease*

The Dutch Elm disease, so named because it was first found in Holland, was discovered in Cleveland, Ohio, in 1930. It is found in some elms now throughout Vermont. The control of this disease is under the direction of the Commissioner of Agriculture.

#### *Nursery Inspection*

The inspection of nurseries, both forest and plant was with this Department until the legislature of 1953 transferred it to the Department of Agriculture. Professor M. B. Cummings served the many years until his death in 1952.

### **Private Foresters**

The first forester who has worked continuously as a consulting forester in Vermont is Halsey Hicks of Brattleboro who began about 1940. Since that time their number has increased to about twenty-five. Some of them are working as private contractors while others are employed full time by a lumber, pulp or manufacturing company. Seven of them worked for several years each as Vermont county foresters previous to present private employment.

## The Civilian Conservation Corps

On March 31, 1933, just twenty seven days after the inauguration of President Franklin D. Roosevelt, as a result of his request, a law was passed to relieve unemployment through the performance of work in public forests. The federal government appropriated the funds, built housing and looked after the housing, care and feeding of the enrollees thru the War Department. The work projects were approved by the U. S. Forest Service and the National Park Service. The state forester planned the projects to be developed. The enrollment was for a six months period and continued from passage of the Act until 1940, when war clouds hung on the horizon.

On the basis of population Vermont was allotted 750 men out of the original enrollment of 300,000. Thus, Vermont would be entitled to four camps. Since Vermont had state lands, where others did not, thirteen camps were allotted to Vermont. Three were placed on the Green Mountain National Forest at Peru, Danby and Weston under direct charge of the U. S. Forest Service.

The work of CCC camps put Vermont's state recreational development ahead by 50 years and improved the state forests by pruning, thinning and the development of forest roads for fire protection and management purposes. A record of the occupancy of the several camps is listed as follows:

*Cooperating with the U. S. Forest Service:* S-51, Groton State Forest, Marshfield, Company 146 arrived June 13, 1933, and the camp was closed July 22, 1941.

S-52, Coolidge State Forest, Plymouth, Company 145 arrived June 9, 1933, and the camp was closed December 18, 1941.

S-53, Waterbury, Company 191 arrived June 9, 1933, and moved on October 7, 1939, to S-67, Moscow.

P-54, Bellows Falls, Company 119 arrived June 6, 1933, disbanded January 13, 1936. Company 1141 arrived March 27, 1936 from P-66 and disbanded in April, 1941.

S-55, Willoughby Forest, West Burke, Company 121 arrived June 9, 1933, and was disbanded on April 30, 1937. Site used later by Company 1160.

S-56, Downer State Forest, Sharon, Company 197 arrived June 28, 1933, disbanded October 29, 1935. Camp William James operated during winter of 1940-1941.

S-57, Aitken State Forest, Mendon, Company of Veterans arrived June 28, 1933, and moved out May 11, 1934. Company 1107 arrived December 7, 1934 and disbanded February 7, 1935. Company 1164 arrived August 5, 1935, and disbanded October 29, 1935.

S-58, Northfield, Company 198 arrived June 28, 1933, and moved out December 16, 1937.

S-59, Groton State Forest, Ricker Mills, Company 1217 arrived



November 22, 1933, disbanded August 2, 1935. Company 1162 arrived August, 1935 and disbanded September 28, 1937.

S-60, Mt. Mansfield State Forest, Underhill Center, Company 1291 arrived December 8, 1933, disbanded August, 1935. Company 1135 arrived August, 1935 and disbanded April 1941.

S-61, Coolidge State Forest, North Shrewsbury, Company 1219 arrived November 20, 1933, disbanded August 1935. Company 1169 arrived August, 1935 and disbanded May 27, 1937.

P-62, Brunswick, Company 1152 arrived August 15, 1935, disbanded June, 1941.

P-63, Wilmington, Company 1179 arrived August 5, 1935, disbanded September 29, 1937.

P-65, North Thetford, Company 1157 arrived August 15, 1935, disbanded May 29, 1937.

P-66, Bethel, Company 1141 arrived September 5, 1935, moved to Bellows Falls March 27, 1936.

S-67, Mt. Mansfield State Forest, Moscow, Company 191 moved from Waterbury October 7, 1939, and disbanded June 14, 1942.

CCC buildings have been turned over to the State Forest Service as follows: Bethel Side Camp, Sharon Camp, Groton Camp, Brunswick Camp, Plymouth caretaker's quarters and large garage, Proctor Piper Camp, East Burke, two buildings, Aitken Camp, Windsor, 6 buildings.

#### *Cooperating with the National Park Service*

SP-1 Ascutney State Forest Park, Windsor. Company No. 129 arrived July 19, 1933. The camp was closed on August 8, 1938.

SP-2 Darling State Forest Park, East Burke. Company No. 131 arrived June 19, 1933. The camp closed on September 25, 1935, and the company went to Proctorsville. They returned on April 28, 1936 and the camp was disbanded on September 15, 1938.

SP-3 Elmore State Forest Park, Elmore. Company No. 1209 arrived November 23, 1933. The camp was closed January 12, 1936.

SP-4 Sand Bar State Forest Park. Company No. 1289 arrived November 23, 1933. The camp was closed May 10, 1934.

SP-5 Proctor Piper State Forest, Proctorsville. Company No. 1218 arrived November 25, 1933. Camp was closed April 27, 1936.

SP-6 Okemo State Forest, Ludlow. Company No. 1133 arrived August 12, 1935 and left October 1, 1937. On August 9, 1938, the company at Ascutney moved to this site. They left on April 30, 1941.

SP-8 St. Albans State Forest Park. Company No. 1134 arrived August 27, 1935 and disbanded January 15, 1942.

SP-9 Crystal Lake State Forest Park, West Burke. Company No. 1160 arrived from East Burke on September 16, 1938, and was disbanded on August 12, 1941.

Vermont reaped another benefit by preparedness. She was the only State in the Union with a complete plan for Flood Control. The President, as a result of Governor Stanley C. Wilson's efforts, allotted an additional 5,500 veterans to Vermont for flood control in the Winooski Valley near Barre and Montpelier. This work consists of widening and deepening the river channel, and constructing dams to hold back the waters in times of flood and thus prevent another disaster similar to that of 1927. This project is handled by the U. S. Army Engineers. The two large dams are located at East Barre and at Wrightsville. The Clothespin dam has been rebuilt.

Later a camp of 2,000 men was allocated to build the Little River Dam at Waterbury.

Our entire state park system was developed during this period except as noted on page 45.

From 1933 to 1941 the C.C.C. built 105 miles of road chiefly within the state forest and state parks. There were some approach roads built like the one in Marshfield from US 2 for 5 miles into the Groton State Forest. Many of the roads, especially within park areas, received a bituminous surface in addition to a good gravel base.

The work done in the state forests, though not as glamorous as the completion of a park building, has been of great value to the state.

Among the more important forestry projects may be included: reforestation, weeding and thinning, the building of permanent timber access roads also advantageous in fire protection, control work on the gypsy and brown tail moths, and white pine blister rust disease.

The availability of federal funds and man power served as an impetus to acquire state forests and parks.

“A basic objective of a forestry program should be to encourage private enterprise to own and manage properly forest land. I believe in the private enterprise system. In expressing this belief, I make no excuse for bad management. I think that ownership of something gives no man a right to abuse it. That which we own, we own in trust. The owner can use the fruits of that which he owns but he has no right to abuse its productive capacity.

“A group like this has a great opportunity, and a great responsibility, by the way. You can come together and pass some nice sounding resolutions and go home, or, you can come together and prepare a tentative program. I hope you will do it with the thought that it is not the final program, but, rather a program to be sold to the people on the ground through the democratic process.”

From address of  
W. S. ROSECRANS, *Chairman*  
*California State Board of Forestry,*  
at Forestry Conference  
Montpelier, September 30, 1949