THE FRANCONIA RANGE FROM LONESOME LAKE. *(Courtesy of Sawyer's Studio)*

State of New Hampshire

BIENNIAL REPORT

OF THE

FORESTRY COMMISSION

FOR THE TWO FISCAL YEARS
ENDING JUNE 30, 1932

CONCORD
December, 1932

PRINTED BY
GRANITE STATE PRESS
MANCHESTER, N. H.
1932

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REPORT

To His Excellency the Governor
and the Honorable Council:

The Forestry Commission herewith presents its report for the two fiscal years ending June 30, 1932.

During this period of industrial depression the work of the Forestry Commission has increased, due to some rather disastrous fire periods, the program of unemployment relief on State reservations, special investigations and projects, and the growing use by the public of the recreational facilities which our forests offer. Because of the depression, the presence of many idle people and low forest values, forest protection has been more difficult than in other years, though it is by no means less important. Our forests have emphasized new values in public use and in furnishing work to unemployed men. The desire to conduct our various lines of work efficiently and economically and in a way to benefit people generally has a special appeal at this time.

Timber values and the cutting of timber have reflected the market conditions which exist. The lumber cut of the state for 1931 was 112 million feet or about one-half the cut for 1929. The number of portable saw mills in operation decreased from 248 in 1929 to 148 in 1931 and 125 in 1932. With the continued decrease in demand for box boards, lumbermen remaining in business are being forced to consider new methods of logging, manufacture, grading and marketing in an effort to win back the building public to the use of native lumber. Sales efforts and persistent advertising are important requirements if this is to be accomplished. For many years our forestry interests have pointed out the ultimate effect of portable mill operations and clear cutting methods. There was little interest in selective cutting and the consequent saving of immature

growth as long as low grade box boards had a ready market. There was no incentive to produce and stock a variety of lumber for construction purposes with the result that western and southern lumber has come into general use. There is no easy road to the restoration of the lumber market. Thoughtful lumbermen understand what they must do and are already getting together. In time they will work out solutions for themselves. In the various problems of marketing the State should in a measure be a clearing house of information based on concrete knowledge of the supplies of timber and growing stock and of the markets to consume it. In order to render this service a marketing specialist should be employed and supported in part by the industries of the state.

Forestry has been more concerned with forest land problems, helping to rebuild or sustain prosperous conditions in rural communities, and working for the future welfare of the State as a whole. Its protective efforts are to safeguard growing stocks that future generations may have timber to use and enjoy. Our forests in earlier years played an important part in the practical success of the farmer and rural dweller. Local stationary mills, wood working plants and home industries furnished a ready market for all kinds of products from farm forests. The more recent stripping of timber lots, leaving nothing, does not tend to build up the country and it has resulted in impoverishment and farm abandonment. There are unmistakable evidences that the trend is toward the use of selective trees hauled by trucks and manufactured in well established plants.

This period of depression has emphasized the seriousness of the land problems, particularly high taxation and low income. Throughout the United States and in New Hampshire, where the general property tax prevails, tax delinquency is increasing. Forest land owners are not only unwilling to carry their cut over lands but maintain that their merchantable timber holdings cannot support the carrying charges. Unless the system of taxation is changed or values

increase, large areas of forest land will eventually revert to public ownership, from which they originally came, and should be under management by the Forestry Department.

The department and cooperating agencies have from time to time during years passed undertaken to determine the timber producing value of the forests of New Hampshire. Estimates brought up to date justify the belief that this value is perhaps 75 million dollars under more normal conditions. With the present market and stumpage prices the value is of course much lower. It has never seemed possible to measure those other values which forests have in relation to water conservation and the manifold uses of water, or to wild life protection and the various aspects of recreation and the enjoyment of country life. Suffice to say that without forests or a substantial forest cover on over 4½ million acres of our forest land area, New Hampshire could make no claim for consideration as an important recreational state and industry would approach a negative value. Living might even be intolerable in rural communities. Our forests are therefore a primary asset which must be protected by public agencies and which should be improved for the production of higher future values. Private agencies should and do make contributions for protection and improvement in their own behalf.

The general public does not realize that in return for the taxes paid, forest lands receive far less benefit from the expenditure of public funds than most other property. In fact, expenditures for forestry, especially for protection from fire and blister rust, are about the only public expenditures which represent a direct return to the benefit of the forests. Since woodlands cannot be insured against damage or total loss the only protection they have beyond the efforts of owners themselves is that furnished by the federal government, state and towns, largely through the Forestry Department.

The average annual expenditures of the Forestry Department, cooperating agencies of the Federal Government

and the various towns for the two years 1931 and 1932 amounted to about $156,000. This does not include expenditures by the University for education and extension or the cost to the Government for its protection and management of the White Mountain National Forest or private expenditures. Neither does it include the expenses of gypsy and brown tail moth suppression by town and other public agencies which are only indirectly related to forestry. This amount of $156,000 may be roughly divided as follows: forest fire protection $52,000 or 33%; blister rust control, $68,000 or 43%; reforestation and nursery $15,000 or 10%; improvement of state forests and reservations, largely from income, $11,000 or 7%; and the balance $10,000 or 6% for other projects and administration. This represents a cost of less than four cents per acre, exclusive of the National Forest, and about one-fifth of one per cent of the forest value.

The several public agencies share these costs in varying proportions and in different ways. The state with aid from the government pays for fire prevention. The towns and state share the cost of fire suppression. All agencies share in blister rust control while reforestation and other projects are state or local costs, with a small amount of aid from the government in maintenance of the state nursery. These amounts likewise vary from year to year according to state and town appropriations, the federal allotments available and the actual costs of fire suppression. The amount of federal funds is contingent upon state and local appropriations.

The fire season of 1931 was much more favorable and consequently less expensive than the season of 1932. The average of all cooperative fire expenditures for the past six years, including those of the Timberland Owners Association in the north country, is about $66,000. This amount is about the same as the cost of maintaining the municipal fire department in an average city in New Hampshire. It represents a cost of about one and one-half cents per acre

for the forest area of the state outside the National Forest. It protects values far beyond just timber values alone.

Many rural towns where hazards are great are without adequate fire fighting equipment, some of them preferring to pay nearby communities for aid and the use of motor pumps and other equipment in emergency. With the marked increase in use of various types of power equipment which are useful for building as well as forest fires, better protection is available today than ever before but the cost is also increasing and there is a tendency for communities owning such equipment to charge well for its use in neighboring towns. High charges are often aimed at forcing poorly equipped towns to provide for themselves. While the Forestry Department shares with towns in the purchase of hand pumps and other small fire equipment and keeps a few power pumps for emergency use, it is unable to share in the purchase of expensive equipment or become a party to the increasing cost of its use without very much larger appropriations than have heretofore been made. One of our difficulties in fire control work as well as in other cooperative town projects is the inability or unwillingness of some towns to do their share. Since forest protection is always likely to be more important as well as more difficult in poor and backward towns, the time may well come when the state should discriminate in its aid and favor those towns where the need is greatest.

Blister rust control was considerably more expensive in 1931 than in 1932 because special efforts were made to complete as much as possible of the initial work that year. Relatively few towns appropriated in 1932 and no compulsory measures were resorted to. Control of this disease has been a long and difficult task which has been systematically pursued, without serious burden to any one town, with the federal government the largest contributor, and with results of far-reaching and important value to the state. The situation at present is that about 450,000 acres in 111 towns remain to be cleaned up the first time. Dur-

ing the years past, 2,670,912 acres of potential pine land and protective strips in 214 towns have had the initial work completed. Initial work has been finished in 103 towns and rechecked in 32 of them.

It is of the utmost importance to complete the work of initial control in backward towns and very important to check areas covered five to ten years ago. By means of advance scouting methods whereby the work of a full crew is confined to particular ribes areas, the actual cost of initial eradication as well as of rechecking is greatly reduced. For the immediate future the towns and the state should regard blister rust control as an unemployment relief measure and permit the employment of local men who are being aided or are likely to require aid by the town so that this important work may go forward and at the same time benefit those in need.

It is our confident belief that the state nursery and the policy of supplying small trees at cost for reforestation of private lands, as well as free trees for public lands, is generally approved by the public. For several years past the nursery has furnished free trees to boys' and girls' club organizations. It is not intended that state trees shall be either sold or given away for ornamental planting except for roadsides and school grounds. A portion of the state nursery is given over to the production of trees and shrubs for the Highway Department's use along the public highways. It is an advantage to be able to supply free trees as well as to have plenty of available state and municipal lands to plant, since in that way surplus stock can generally be disposed of. The sale of trees increased in 1931 and only fell off 13% the present year.

The total area of state forests and reservations is now 33,148 acres. No funds for purchase have been available for some years but gifts during the biennium amounted to 3,500 acres, the most important of which is the Hemenway reservation of nearly 2,000 acres in Tamworth. In line with the state-wide policy of advertising our New Hamp-

shire attractions for the enjoyment of the public, the department has done a great deal in the last two years to encourage people to visit our more accessible state reservations by the use of attractive signs, furnishing suitable parking and camping places and approaches, well brushed out trails to points of interest, and in many other ways. Some of this work and much of the needed releasing of plantations and other young forests by cutting inferior wood were made possible by the use of state and federal unemployment funds supplied by the Governor and Council.

During the past season the Governor and Council caused a survey to be made of public bathing facilities throughout the state and later the construction of simple bath houses and sanitary closets at three widely separated places. There should be facilities for public bathing under supervision and proper sanitary conditions at certain other lakeshore and seashore places well distributed over the state particularly near large centers of population or accessible to through routes of travel. Some sections are well provided for by commercial interests or by communities for the general public. This is not true of other sections where those who are unfamiliar with local conditions or unable to pay for the use of private facilities are at a loss to know where they may enjoy legitimate and sanitary bathing. On some of our prominent and most accessible lakes there are few or no means of access or accommodations. The few good beaches used freely by the public are crowded, lack dressing rooms and provisions for parking and are most unsanitary. Because they are not supervised, such places are a nuisance to nearby property owners. It is the duty of the state to make available for general public use under state supervision a sufficient number of public beaches well distributed and carefully selected so as to benefit the largest number of people without unreasonable interference with legitimate commercial resorts. At the Wellington Reservation on Newfound Lake, more than 26,000 people took advantage of the bathing and other facilities

this season. Other states are improving their recreational facilities and New Hampshire cannot afford to be negligent in this regard. There is a tendency in some states to make these facilities return sufficient income to pay for supervision and upkeep, which seems reasonable and proper for certain benefits enjoyed.

The Forestry Commission has joined in active co-operation with many other public and private organizations and individuals in the interest of industrial and aesthetic forestry. Recreational and park activities have grown with the years. Much of the interest in forestry shown by the public is the result of a kindred interest in outdoor life. Forest plantings have been more frequently started through a love of trees. Gifts of land to the State express a desire of the donors to perpetuate forest areas which they have long cherished.

The following are important lines along which our efforts should continue to be directed in the future:

To study our land problems, taxation, tax delinquency, uses for marginal lands and the relationship between forest capital and growth, and help to promote those markets which best utilize our timber income to the advantage of the State.

To improve the recreational opportunities of our public forests and reservations and acquire additional property for recreation, particularly with bathing facilities at strategic and much needed lake and seashore locations.

To recognize in all public forest ownership a means of furnishing employment to local labor during dull periods of the year, especially to needy men in times of distress.

To complete our initial program of blister rust control as an unemployment measure.

To establish sanctuaries on our larger forest reservations in order to encourage game and wild life for the public to enjoy.

To improve and beautify our public roadsides and bring

into town and state ownership many additional roadside areas and strips having unusual interest and appeal.

To provide permanent town forest committees, to be responsible for town forests, parks and roadsides and to whom relief or other funds may be allotted for worthwhile public projects.

To further the ownership by rural communities of suitable equipment for fire fighting as a protection against both forest and building fires; also storage of supplies of water throughout each community.

W. R. BROWN,
B. K. AYERS,
H. K. ROGERS,
Forestry Commission.

JOHN H. FOSTER, *State Forester.*

AMENDMENTS TO FOREST LAWS—1931

HE following changes in the Forest Laws were made by the Legislature of 1931. Chapter 191, Section 35 was amended by adding a new Section 35-a.

35-a. **Dropping Inflammable Material.** No person shall drop or throw from any vehicle while the same is upon a public highway or private way, or from any steam, gas, or electric car where the right of way is adjacent to woodlands, as defined in Chapter 197, Section 35, of the Public Laws, or drop, throw or otherwise deposit on or near woodlands as just defined, except as permitted by law, any lighted match, cigar, cigarette, live ashes or any other substance liable to cause a fire. Whoever is found guilty of violating the provisions of this section shall be fined not more than twenty-five dollars.

Chapter 192, Section 5. **Gifts.** Was amended by adding two new sections 5-a and 5-b.

Section 5-a. **Donation of Funds.** The state treasurer is hereby authorized to receive at any time such sums of money as may be donated for the purpose of purchasing, maintaining and improving state forests or state reservations and buildings thereon, or any other forestry project, and money so received shall be converted into a continuous fund or funds from which payments shall be made in accordance with the stipulations of the donor upon warrant of the governor for such purposes as are approved by the state forester.

Section 5-b. **Rules and Regulations.** The forestry commission and state forester are hereby authorized to establish such rules and regulations as they deem necessary, not inconsistent with law, concerning the use of all state forests and reservations by the general public. Any person found

guilty of violating any of such rules or regulations shall be fined not more than twenty-five dollars.

Chapter 192, Sections 16-17-18. Minor amendments were made to these sections relating to the abatement of taxes to towns in which national or state forests are situated.

Chapter 19, Section 28. **Property Now Held.** Was amended by adding a new Section 28-a.

Section 28-a. **Department Lands, Disposal of.** Upon recommendation of the head of any state department having jurisdiction over the same the governor and council may sell, convey, transfer or lease any real property owned by the state. The funds accruing from such disposal shall revert to the credit of such department. This section shall not apply to sale of institutional lands as provided by Section 5, Chapter 9 of the Public Laws, as amended by Section 1, Chapter 40 of the Laws of 1927, and Section 1, chapter 5 of the Laws of 1931, nor to real estate given or bequeathed to the state under provisions of trust.

PUBLIC FORESTS

ARETHUSA FALLS, ON BEMIS BROOK, CRAWFORD NOTCH STATE FOREST.

PUBLIC ownership by the State and Federal Governments of the most important scenic portions of New Hampshire's forest lands seems to be the only means to reconstruct, manage and preserve them for future generations. There are many notable examples of public interest taking action and saving important scenic features in New Hampshire. In 1903 a granite company purchased White Horse Ledge in North Conway and began to quarry the lower slopes. Public agitation became so acute at the thought of losing these rocky formations that voluntary subscriptions were quickly forthcoming to buy out the granite company and save this picturesque mountain. The White Horse Ledges were later deeded to the State and the late Daniel Merriman of North Conway was made the resident custodian. In 1911 insistent demands were made by the public for the purchase of Crawford Notch. Some feared that the remaining valuable stands of timber would be cut; others thought that commercial developments would be initiated. The Legislature of 1913 purchased the upper portion of Hart's Location of about 6,000 acres and saved the beauties of the region for all time. Again in 1923 after the burning of the Profile Hotel in Franconia Notch, interest was general for the State to acquire this property, but it was not until 1928 that the Legislature and the Society

for Protection of New Hampshire Forests were able to purchase these valuable properties and manage them for the enjoyment of the public. The acquisition of a half million acres by the Federal Government, now the White Mountain National Forest, came about in a similar manner. Private interests had exploited the vast timber holdings and only public ownership could take over and bring back resources that remained and protect them for future generations.

There are many other valuable scenic and forest areas that have been given to the State for similar reasons. Timberlands have been deeded to preserve them from being cut, recreational areas for development and management, wild inaccessible tracts for bird and game sanctuaries, abandoned cut over lands for reforestation, and roadside strips for preservation. The towns likewise have received gifts of land for similar purposes. A new use is being made of public forests which is developing into a problem that requires much planning and thought: namely, the recreational. Little if any consideration has been given the public in their right of access to lakes and ponds. Few of these lakes and ponds are open to the public for bathing and boating. Private interests have acquired during a period of years practically all the desirable locations. The State is now taking means to open and develop places for the public to enjoy. The increased attendance at Wellington Beach indicates how the public appreciates these opportunities.

There has also been an increasing interest in winter sports. The Boston & Maine snow train has accelerated this movement. Several hundred persons visited Lonesome Lake in Franconia Notch last winter and used the newly opened ski trail back to the highway. Through the influence of Mr. Robert P. Peckett of Franconia a thrilling ski run is being opened on the north slopes of Cannon Mountain and will terminate at the Profile farm; a run of about two miles when completed.

These recreational demands of the public should be carefully studied by the State and should be met provided funds are available.

White Mountain National Forest

JAMES E. SCOTT, *Forest Supervisor*

The necessity for a sharp reduction in federal expenditures has brought about a suspension, for at least the current fiscal year, of the Forest Service program of building up the White Mountain National Forest through purchase of land from private owners. Up to June 30, 1932, a total of 528,483 acres had been acquired by the United States within the National Forest boundary, and a few small purchases still in the stage of title condemnation will slightly increase this area within the present year. When the country has recovered from the present period of economic distress it is confidently expected that the National Forest purchase program will again be resumed and that White Mountain National Forest will steadily grow or expand to include the approximately 830,000 acres within the proclaimed forest boundary.

The administration of White Mountain National Forest is entrusted to the Forest Service of the United States Department of Agriculture. This great public forest now represents an investment of public funds in excess of $4,500,000. Locally, its protection and administration are in the hands of the Forest Supervisor at Laconia, assisted by district rangers at Gorham, Conway, Littleton and Plymouth, and staff assistants handling specialized features of forest management and development.

White Mountain National Forest continues to be very fortunate in regard to the number and severity of forest fires. Seven fires have occurred within the National Forest during the calendar year 1932, and yet less than one acre of National Forest land has this year been burned over. During the past five years, less than fifty acres of National

Forest land has suffered fire damage. The educational work of fire prevention is aggressively prosecuted by the Forest organization, thorough-going measures of preparedness are instituted each year so that the organized fire units in the various ranger districts may be ready at a moment's notice to respond to any fire call, and it has happily been possible for many years past to suppress promptly and effectively every fire which has been detected or reported. The National Forest organization very gratefully acknowledges the splendid co-operation it has always received from the state and town forest fire organizations within White Mountain National Forest territory. Normally, one or two periods of exceptionally severe fire weather are encountered each season in this section of New Hampshire, and in coping with the dangers attendant upon or incidental to such periods the Governor's ban upon public use of the woodlands of the State has been forcefully applied by state and national officers and has been proved exceedingly helpful as a fire prevention measure. Primarily to focus the attention of people using the National Forest for outdoor recreation upon the ever-present fire hazard, all campers, except within the improved public camping grounds, are required to secure a free permit from the nearest guard, district ranger, or the Forest Supervisor at Laconia, before building a camp-fire within White Mountain National Forest.

The National Forests are for use and it is the avowed purpose of the Forest Service to produce maximum crops of timber within the National Forest area and to harvest such crops for the uses of local industries up to the limit of sustained annual yield. In the development and application of this policy, due consideration is given to scenic and esthetic values. Large areas within White Mountain National Forest are now set aside as protection forests in which no cutting will be done. Timber sale cuttings are kept well back and screened from the roads through the forest, the more important hiker trails and the banks of

streams heavily frequented by campers, fishermen, hunters and other recreation users.

Although the annual cut of timber is at present far below the annual production, the local National Forest organization has now completed the third year and the first major unit of a ten year intensive study of the timber resource of White Mountain National Forest designed to provide a perfected working map of the forest, an effective system of management control, a complete inventory of the timber now available and of that approaching merchantability, complete data as to areas which should be reserved against commercial operation, and all other data essential to a well-balanced plan of timber resource management which will provide adequately and harmoniously for the enjoyment of this National Forest as one of the nation's most important out-door recreation areas, and for the use, as commercial forests, of such portions of the property as are the best adapted to that use and from which New England industries, and particularly local small industries, should be able to draw for necessary supplies of raw material.

Revenues from the sale and use of White Mountain National Forest resources grew steadily from a few dollars back in the fiscal year 1914 to approximately $108,000 for the fiscal year 1930. Commercial use of the forest, in common with all forms of commercial activity throughout the country, declined sharply during fiscal year 1931 and fiscal year 1932, and during the present fiscal year which ends June 30, 1933, the annual receipts will doubtless be less than for any one of the past ten years. From the gross National Forest receipts 25% is returned each year in lieu of taxes to the towns within which lands have been purchased for National Forest purposes. Until the present business depression came upon the country, the annual return to the towns was steadily approaching the point where their losses of tax revenues as a result of National Forest land purcheses would be largely offset. This year's return to the towns will of course be very small. With the

return of normal business conditions, however, there is every reason to expect that the annual revenues of this National Forest will exceed $50,000 and, whenever market conditions warrant, a materially greater volume of use of the timber resource of this forest can be handled without any sacrifice of scenic or out-door recreation values.

In considering the effect of the establishment of White Mountain National Forest upon the local counties and towns, a number of the more important factors should be mentioned. First, as indicated above, there is a direct return annually of 25% of the gross National Forest receipts. In addition, 10% of the gross receipts is annually returned to the local National Forest organization for expenditure upon local roads and trails. The existence of White Mountain National Forest within the states of New Hampshire and Maine has entitled these states to important shares in four additional special federal aid appropriations for roads construction and maintenance. Since the establishment of White Mountain National Forest, up to and including the current fiscal year, the existence of this National Forest has resulted in the following direct cash returns to the state of New Hampshire.

1. The direct return of 25% of the gross National Forest receipts, approximately $135,000.
2. The 10% fund for local roads and trails, $52,676.
3. The Section 8 appropriation, a special appropriation made a number of years ago for road construction, $365.
4. The Federal Forest Roads Construction appropriation, $10,941.
5. The Forest Highways appropriation, $329,835.
6. The Forest Roads Development appropriation, $176,371.
7. A Special Improvement appropriation, $20,611.

These special apportionments to the state of New Hampshire, resulting directly from the creation of this National

Forest, are thus seen to approximate three-quarters of a million dollars.

One of the most interesting features of the current year's activities in White Mountain National Forest is the extensive program of roads construction which has been undertaken with funds provided by Congress as an emergency measure of assistance in the handling of the wide-spread problem of unemployment. Approximately $150,000 is being expended by the White Mountain National Forest organization this year in such a way as to bring about the opening up of many miles of much-needed new road through the forest and at the same time give employment to large numbers of local men, many of whom would otherwise have been compelled to seek aid from the town treasuries. During September 1932, approximately 150 men were given employment on National Forest roads, during October and November, about 200, and during December, 100 to 150. This work is to be continued through the spring of 1933, terminating on June 30, the time-limit set by Congress upon these Unemployment Relief appropriations. Among the projects initiated under this program the Swift River Road is being brought into the town of Conway over a new and greatly improved route, the Tuckerman Ravine Trail is being extended toward the summit of Mount Washington, the North and South Road between Benton and Glencliff will be opened throughout its entire eight miles of length, and a new road is being brought through the Evans Notch from Gilead, Maine, to Stow, Maine, and Chatham, New Hampshire. Minor projects are under way in practically all portions of the National Forest territory. In all of this work, only local men have been employed.

White Mountain National Forest is the great central reservoir from which the drainage system of New England flows. Here are the sources of the headwaters of the Saco and the Merrimack and of the most important tributaries of the Androscoggin and Connecticut. All four of

these great rivers have their principal importance and use beyond the borders of New Hampshire. All of them are noteworthy because of the vital relation which they bear to the industrial development and domestic life of New England. Protection of these streams against excessively irregular flow and against heavy silting of the channels, which would result from erosion, is obviously a matter of grave concern to all New England. That necessary protection is definitely insured by the existence of White Mountain National Forest.

White Mountain National Forest, embracing the highest points of our Northeastern highlands, continues to be one of the most intensively utilized public recreation areas in our country. Approximately two million people annually spend all or a portion of their summer vacation within or closely adjacent to its boundaries. The use of the Forest for public recreation occupies a position of major importance in the National Forest system of protection and administration. As pointed out earlier in this statement, large areas within the Forest are definitely set aside and preserved against cutting. The development work engaged in by the National Forest organization has steadily provided increased opportunities and better facilities for the vast number of people who come to this forest for recreation purposes. Nineteen especially attractive areas, seven of them along main highways, have been set aside and carefully improved for public camping. On all of these areas, ample supplies of pure water are insured and sanitary conveniences are provided. At some of the more intensively used camp areas, notably the Dolly Copp Forest Camp six miles south of Gorham on the Glen Road, water has been piped to many convenient points throughout the camp area, chemical toilet systems have been installed, refuse collection and incinerating systems have been established, and efficient camp police are continuously in service throughout the busy summer months. With the steadily increasing recreation use of this National Forest, many

new and difficult administrative problems are being encountered. With this in mind, the Forest Service has decided within the past few months to undertake a most comprehensive survey of the recreation resource of White Mountain National Forest with a view to production of a master recreation use plan designed not only to safeguard adequately every recreation value, but to provide an adequate basis for a program of year-by-year recreation development, insuring maximum permanent public benefits from this great recreation resource.

Detailed information concerning any feature of the protection, administration or development of White Mountain National Forest will be cheerfully supplied to any interested citizen by the Forest Supervisor at Laconia, N. H., or by the district rangers at Gorham, Conway, Littleton or Plymouth.

State Forests and Reservations

The Forestry Department has been unusually fortunate during the last biennial period in receiving valuable tracts of forest land. These areas are gifts to the State as the Legislatures since 1927 have not furnished appropriations for the purchase of lands.

The following tabulation gives the list of tracts and acreages with a brief description of each tract:—

STATE FORESTS AND RESERVATIONS
Acquired in 1931 and 1932

Name	Location	Acreage	Year
Ames	Henniker	15	1931
Wellington	Bristol	97	1931
Province Road	Groton	546	1931
Binney Pond	New Ipswich	81	1931
Casalis	Peterboro	245	1931
Bowditch	Tamworth	54	1932
Meadow Pond	Gilmanton	42	1932
Leighton	Dublin	55	1932
Kearsarge Mountain Addition	Wilmot	19	1932
White Horse Ledge Addition	North Conway	16	1932
Clough	Weare	339	1932
Hemenway	Tamworth	1,991	1932
	Total	3,500	

Changes in acreage due to new surveys:

Cardigan Mountain	—	former acreage	2,786	new acreage	2,924	=	138
Welton Falls	—	former acreage	208	new acreage	223	=	15
Pawtuckaway	—	former acreage	857	new acreage	918	=	61
Pot Holes	—	former acreage	93	new acreage	98	=	5
Grant	—	former acreage	6	new acreage	8	=	2
					Additional		221

Previously reported		29,427
Additional gifts	3,500	
Corrections in surveys	221	3,721
Correct Total		33,148

Description of Tracts acquired in 1931 and 1932

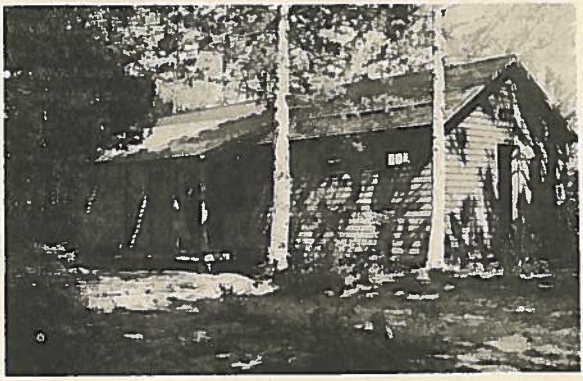
Ames Tract

Mrs. Flora Ames of Henniker in 1921 gave to the State a tract of 15 acres for the purpose of reforestation according to the provisions of Chapter 163, Laws of 1915. The whole area was planted to white pines and maintained in good growing condition. At the end of the 10 year period Mrs. Ames decided not to take back the tract and it remained as State property. This tract lies just off the main Hopkinton-Henniker highway and to the south of the Craney Hill lot. Over 18,000 trees have been planted on this tract.

Wellington Beach

One of the first summer residents to build and occupy a home on the shores of Newfound Lake in Bristol was the late Aaron A. Wellington of New York City. For many years he came to New Hampshire for his vacations. Several years before his death he acquired a tract of land on the westerly shores of the lake that is still known as "The Point." This tract of about 100 acres included an attractive wooded point of land and one-half a mile of the finest beach on the lake. This valuable piece of property was inherited by his daughter Miss Elizabeth R. Wellington many years ago. Although many flattering offers were made by parties wishing to purchase this property, Miss Wellington refused to part with it or permit anyone to occupy the premises. The attention of agents of the Fores-

try Department was called to this tract and negotiations were immediately started to interest Miss Wellington to make a gift of this property to the State. The idea of making this property a State Reservation and Bird Sanctuary appealed to Miss Wellington at once and the deed was passed in the spring of 1931. This property became the first bathing beach reservation owned by the State. The public welcomed the announcement of this gift and several thousand visited the tract the first season. Immediate improvements were the building of a cabin for the caretaker and a parking area near the entrance. Sanitary toilets were



THE NEW BATH HOUSE AT THE WELLINGTON STATE FOREST, WHERE OVER 26,000 PERSONS ENJOYED THE SPLENDID BATHING FACILITIES.

later added. The caretaker kept the premises clean, supervised the picnic grounds and bathing beach and attended to the many duties of the reservation. During the season of 1932 a public bath house for both men and women was constructed, a diving raft and a portable wharf for the landing of passengers arriving by boat. Paths have been made through the tall pines and hemlocks following the shore to "Breezy Point" and "Hornet's Cove." A new parking area has been made at the southerly end of the property and a trail cleared to the upper end of the beach. The estimated attendance during the past season was over

26,000 persons. In spite of this large attendance, no accidents of any importance occurred, no disorderly conduct required the attention of the caretaker and no complaints were received. The public, local and non-resident, appreciate this most attractive reservation and desire to assist the State in maintaining this valuable property.

Province Road

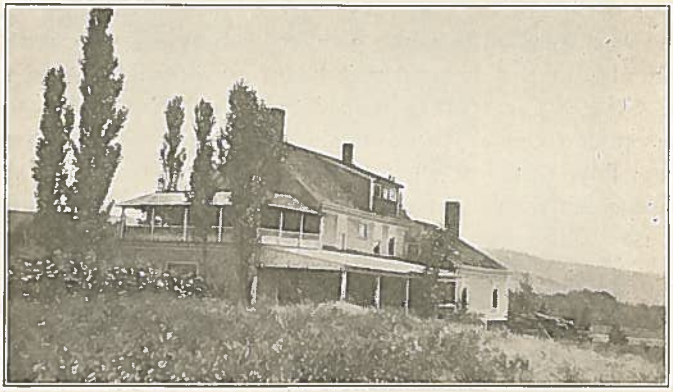
Mr. Clarence Hibbard of Lebanon gave to the State in 1931 several lots of cut-over land comprising 546 acres in the town of Groton. The Langdell Lumber Company was still operating this property and released all their rights when the lumbering was completed. Portions of these lots have been planted to white pine and ash and it is expected that ultimately this tract will be of considerable value to the State. The tract is named "Province Road" for the reason that this was one of the first roads built in New Hampshire and over which it is understood Governor John Wentworth drove from his home in Wolfeboro to Dartmouth College in August, 1772.

Binney Pond

The Society for the Protection of N. H. Forests deeded to the State in March, 1931, a tract of woodland surrounding Binney Pond in the town of New Ipswich. The timber is mostly mature spruce with scattering pines and hardwoods. The Appalachian Mountain Club's (Wapack) trail along the Temple range passes through this lot and offers unusual advantages to the camper and the ski enthusiast. Although not directly on the main highway, cars may be parked a short distance from this tract where the Appalachian Mountain Club trail crosses the old Binney road. Improvements for camping were made during the past summer.

Casalis Tract

The State received a generous gift of 245 acres of forest land and a large dwelling and barn from Mrs. Isabel A. Casalis of Peterboro, N. H., and Lyme, Connecticut, during the summer of 1931. Mrs. Casalis made the gift in memory of her father, the late George Adams, who was at one time one of the most prosperous country gentlemen of Peterboro. This tract is located in part on the main highway leading from Peterboro over Temple mountain and comprises valuable woodlands extending to the old Sharon road. Wood roads intersect this tract and in the summer



THE CARETAKER'S HOUSE AT THE CASALIS RESERVATION, NEAR PETERBORO.

months are used by horseback riders. During the winter of 1931-32 a caretaker was engaged by Mrs. Casalis to occupy the Day place which was part of the gift. Crews of the unemployed from Peterboro were used on this tract for cutting cordwood which was given to the poor of the town. The Society for the Protection of N. H. Forests assisted in the transfer of this property. Part of the open land is being used for experiments in reforestation. The Forestry Department hopes later to rent the Day place to some recreational organization.

Bowditch-Runnells Tract

A joint gift to the State of 54 acres of land in Tamworth in 1931 was made by the Society for the Protection of N. H. Forests and the heirs of the late Charles P. Bowditch and the late John S. Runnels. The gift from the Society comprises 100 foot strips of fine timber for a distance of half a mile on both sides of the highway just north of Chocorua Lake. The Bowditch-Runnells tract lies adjacent to the east and contains some excellent young growth. The Public Service Company of New Hampshire has a 10 foot right of way crossing this tract. The State appreciates a gift of roadside forest in this section which is one of the scenic spots in New Hampshire.

Meadow Pond Tract

A tract of 42 acres of forest land in Gilmanton came to the State through the Society for the Protection of N. H. Forests in March, 1932, as a gift from interested residents of Gilmanton. The forest is located a half mile from Gilmanton Village on the road to Meadow Pond now called Shellcamp Pond. It contains stands of young pine and hardwoods and offers opportunities for improvement cuttings which are now being carried on by the unemployed. An admirable spot near the highway will be developed for camping purposes. Professor Curtis H. Page of Gilmanton has helped greatly to bring this area into public ownership and has offered his services as resident caretaker.

Leighton Tract

The late George B. Leighton of Dublin, for many years a member of the Forestry Commission, deeded in 1925 to the State 25 acres on the main Keene highway under the Reforestation Act of 1915. Mr. Leighton did not care to take back this tract and it remained in State ownership. Mrs. Leighton held the title to 55 acres of woodland adjoining to the north which she deeded to the State as a gift

in January, 1932. There are stands of mature spruce and hardwoods on the larger tract which lies adjacent to the old Chesham road.

Kearsarge Mountain Addition

Mr. W. B. Douglas of Boston and Wilmot, N. H., presented as a memorial to his sister, Miss Catherine Raynore, a tract of 19 acres in the town of Wilmot including what is known as the "old Winslow Hotel site." This tract extends from the parking area adjacent to land now owned by the State down the mountain road on the easterly side to an open field. A large part of the public climbing Kearsarge Mountain choose the Wilmot approach and drive their cars to the Winslow site. A most impressive and largely attended outdoor vesper service was held Sunday afternoon, August 21, 1932, at this location at which time Mr. Douglas formally presented his gift to the State. Mr. John H. Foster, State Forester, accepted the gift and others assisting were former Governor Charles W. Tobey and Mr. Philip W. Ayres of the Society. The open air meeting was undoubtedly one of the largest ever conducted on any of the State reservations. It has been estimated that there were more than 1,000 people present. The available parking area was completely filled with cars. During the summer improvements were made to the cottage permitting the mountain watchman to occupy the building and supervise the parking and camping. Fireplaces were built at the old Winslow site, the old barn demolished, sanitary conditions improved and the water supply extended. The State and Society now own about 1,360 acres on this mountain which forms an important recreational link in the New Hampshire trail system.

White Horse Ledge Addition

Miss Marion Howard of North Conway gave to the State 16 acres of forest land in 1932 located on the west

side road near Echo Lake. This tract includes a wood road which extends from the main highway to a point near the White Horse Ledge. This gift of Miss Howard is the initial effort to improve and better conditions on some of the areas near Echo Lake. For many years this section has been used as a depository for all kinds of refuse. Many of these places have in so far as possible been cleared up and every effort will be made to keep this area attractive and inviting. The forest fire of 1931 damaged some of the forest growth on this tract which has now been cleared and the area put in condition for planting. A small wooden bridge over Elm brook was constructed by some of the unemployed in North Conway.

Clough Reservation

The John Clough farm is located in the town of Weare on the main road from Goffstown to East Weare. The Piscataquog River and the Henniker branch of the Boston and Maine Railroad pass through his farm. For over 50 years Mr. Clough has been paying taxes on his woodlands; the taxes in 1876 being $16.96 which increased during this long period to $491.83 in 1929. No timber has ever been cut except cordwood and old chestnuts for poles. Mr. Clough has had many offers to sell his woodlands but desired to see his timber standing. Interested in forestry he wished to see his forests preserved and deeded as a gift in 1932 to the State his 339 acres. This tract is admirably adapted for recreational uses as there is a wide expanse of the river forming an excellent swimming pool. Nearby is an open field ample for camping and parking of cars. Raymond Cliff lies to the west of the river and contains a famous cave which is well described in the History of the Town of Weare. After the State had received the deed, a claimant appeared presenting an unrecorded deed and stated that he was a part owner of the property. After several conferences with the Attorney General it is expected that this claim will be adjusted with possible changes

in the acreage. This reservation has the markings of unusual attractiveness and on account of its location and accessibility to the cities of Manchester, Concord and large towns nearby should be popular with the public. The tract will be known as the "John Clough Reservation."

Hemenway Reservation

In 1898 the late Augustus Hemenway of Boston became interested in establishing a summer home in the town of Tamworth. During the next five years he acquired several farms containing almost 2,000 acres of woodland including Great Hill. On the slopes of this hill he built two lodges where he lived when in Tamworth. Until his death in 1931 he often visited this place and made many improvements in the property. Mr. Hemenway's desire to make this a State reservation was known to his family and friends and his heirs in 1932 deeded to the State this valuable tract of land. One of the conditions of the gift is the lease of an area around Great Hill to be used by the Boston Council, Boy Scouts of America, for a wilderness camp. There are two sets of farm buildings, excellent stands of large mature pine and hardwoods and areas of young growth. Several roads intersect the tract, the main one being the Tamworth-Wonolancet road. This gift is undoubtedly one of the largest and finest that the State has ever received.

A new arrangement of tabulating State Forests and Reservations has been made. In past years the separate tracts have been listed in order of acquisition by the State. Fourteen groups have now been named giving the acreage of each group and the acreage and location of each tract within the group.

LIST OF STATE FORESTS AND RESERVATIONS BY GROUPS

Group	Reservations	Towns		Acres
Crawford Notch				5,950
	Crawford	Hart's Location and Livermore	5,950	
Franconia Notch				5,244
	Franconia Notch	Franconia and Lincoln	5,244	
Conway				1,476
	Conway Common Lands	Conway	769	
	Merriman	Bartlett	530	
	Cathedral & White Horse Ledges	Conway	134	
	Redstone	Conway	43	
Black Mountain				544
	Black Mountain	Haverhill	401	
	Sentinel Mountain	Piermont	143	
Plymouth				391
	Scribner-Fellows	Ashland and New Hampton	140	
	Livermore Falls	Campton	134	
	Blair	Campton	112	
	Baker	Rumney	5	
Cardigan Mountain				4,021
	Cardigan Mountain	Alexandria and Orange	2,924	
	Province Road	Groton	546	
	Welton Falls	Alexandria	223	
	Mascoma	Canaan	174	
	Wellington	Bristol	97	
	Sugar Hill	Bristol	57	
Tamworth				2,172
	Hemenway	Tamworth	1,991	
	Huckins	Ossipee	100	
	Bowditch-Runnells	Tamworth	54	
	Green Mountain	Effingham	15	
	Lord	Ossipee	12	
Kearsarge Mountain				858
	Kearsarge Mountain	Warner and Wilmot	858	
Alton Bay				926
	Blue Job Mountain	Farmington	99	
	Alton Bay	Alton	209	
	Belknap Mountain	Gilford	556	
	Meadow Pond	Gilmanton	42	
	Salmon Falls	Rochester	20	
Pawtuckaway				938
	Pawtuckaway Mountain	Nottingham	918	
	Nottingham	Nottingham	16	
	Stevens	Nottingham	4	

LIST OF STATE FORESTS AND RESERVATIONS BY GROUPS

Group	Reservations	Towns		Acres
Concord				2,290
	Bear Brook	Allenstown	413	
	Mast Yard	Hopkinton and Concord	400	
	Soucook	Loudon	50	
	Walker	Concord	47	
	Davisville	Warner	32	
	Allen	Concord	25	
	Glover	Pembroke	7	
	Taylor	Concord	7	
	Harriman-Chandler	Warner	405	
	Craney Hill	Henniker	31	
	Contoocook	Hopkinton	30	
	Carroll	Warner	25	
	Ames	Henniker	15	
	Clough	Weare	339	
	Everett	Dunbarton	56	
	Nursery	Boscawen and Salisbury	257	
	Merrimack River	Boscawen	151	
Washington				5,541
	Honey Brook	Acworth	813	
	Dodge Brook	Lempster	215	
	Hubbard Hill	Charlestown	680	
	Connecticut River	Charlestown	225	
	North Branch	Stoddard	71	
	Pitcher Mountain	Stoddard	5	
	Pot Holes	Gilsum	98	
	Beech Hill	Keene	21	
	Pillsbury	Washington and Goshen	3,085	
	Fox, Caroline A	Hillsboro	328	
Monadnock				2,465
	Binney Pond	New Ipswich	81	
	Russell	Mason	25	
	Kimball	Mason	25	
	Marshall	New Ipswich	20	
	Casalis	Peterboro	245	
	Leighton	Dublin	80	
	Miller Park	Peterboro	3	
	Monadnock	Jaffrey	493	
	Poole	Jaffrey	166	
	Haven	Jaffrey	95	
	Sawyer	Jaffrey	80	
	Gay	Jaffrey	52	
	Annett	Sharon and Rindge	1,092	
	Grant	Fitzwilliam	8	
Lower-Merrimack				332
	Ponemah	Amherst	63	
	Jeremy Hill	Pelham	63	
	Hodgman	Amherst	18	
	Litchfield	Litchfield	122	
	Stockdale	Manchester and Hooksett	66	
		Total		33,148

Unemployment Work on State Reservations

Unemployment in New Hampshire did not become acute until the winter of 1931. Evidences of distress were first noted in the largest cities and towns where mills which had always employed many workers were forced to shut down. There was also a marked decrease in the demand for winter woods work. During the latter part of January 1931, Governor John G. Winant and the Council transferred $2,600 to the Forestry Department for unemployment relief. Forty-four men were given employment on state reservations during the month of February from the following cities and towns: Manchester, Concord, Claremont, Charlestown, Goffstown, Hooksett, Lebanon, Suncook, Sandwich and Bartlett. The work consisted mostly of cutting fuel wood which was given to towns for distribution among the needy. A total of 75 cords were cut on the various reservations.

Unemployment Relief—Winter 1931-32

As the unemployment increased during the summer and fall of 1931, the governor and council made another allotment to the Forestry Department for work on the different reservations scattered about the state. The amount of $8,448.00 was made available for the winter months. Later it was deemed advisable to use also the appropriation for warden conferences; and $974.10 was added making a total of $9,422.10. The work commenced in November on some tracts and did not close until early spring. Various lines of work were carried out on 24 state reservations. The men were selected from heads of families which were being supported by the different cities and towns and were hired for two weeks. The rate was 40 cents per hour for an 8 hour day. Tools were furnished by the towns or by the men themselves. Forestry Department foremen trained in the work of improving woodlots and releasing pine were in charge of this work. Transportation to and from the

work was usually paid by the men. On 16 reservations 418 acres were treated and improved; on 14 tracts, 637 cords of wood were cut; of this 353 cords were given to the towns for distribution to the needy. A total of 313 men were given employment from the 3 cities of Berlin, Manchester and Concord and the 28 towns of Allenstown, Alton, Bartlett, Boscawen, Campton, Canaan, Charlestown, Claremont, Deerfield, Derry, Epping, Epsom, Farmington, Gilford, Greenville, Hooksett, Jaffrey, Lebanon, Littleton, Mason, Milford, Pelham, Peterboro, Raymond, Rindge, Salisbury, Sandwich and Webster.

Special mention is being made of work done on some of the reservations.

Crawford Notch: Several miles of trail were cut from Ripley Falls to Frankenstein Cliffs and continuing on to

THE NEW BRIDGE AND GREATER EXPANSE OF WATER WILL ADD MUCH TO THE ATTRACTIVENESS OF THE CRAWFORD NOTCH RESERVATION.

Arethusa Falls. A dam was constructed opposite the Willey House site to make a swimming pool. A rustic bridge was built on top of this dam to permit the public to cross the river and climb the lower slopes of Mt. Webster. The ice house and laundry were moved to a more central

location near the lower camp grounds. The rest house and main buildings were reshingled and many of the cabins repaired. Most of the men working in Crawford Notch came from Berlin.

Franconia Notch: Boundary lines on the northerly lots were surveyed and a crew was engaged in this work for several weeks. Roadside improvement work was carried on in the vicinity of Profile and Echo Lakes. Twenty-five cords of wood were cut and given to the town of North Woodstock. All the brush was cleared back or burned. The old log road from Lonesome Lake to White House Clearing on the highway was cut and widened and made into an excellent ski run. The men employed came from Littleton.

Nursery: Needed improvements were made on the old barn such as a new floor and replacements of some of the old sills and timbers. Carpenters were used to construct 60 state reservation signs which were placed on the various tracts later in the season. Men were employed from the vicinity of Boscawen.

Pillsbury Reservation and Game Sanctuary: The old boarding house was repaired and put into good condition for use by campers. About five miles of telephone line to Goshen were rebuilt; funds of both the Fish and Game and Forestry Departments were used. Improvement thinnings were made along the roadside to the main highway. The men were hired in Claremont.

Stockdale: About 10 acres of brushy woodlands were cleared for spring planting. The wood was given to the city of Manchester. Old sheds and chicken houses were removed and general repairs made to the farm house and barn. Manchester men were used on this work.

SUMMARY OF UNEMPLOYMENT WORK

Reservation	Winter 1931-32 Number of Man Days	Cities or Towns Assisted	Total Expended
Alton Bay	38	Alton	$126.88
Annett	134	Jaffrey	438.50
		Rindge	
Bear Brook	183	Concord	592.40
		Hooksett	
		Allenstown	
Belknap Mountain	44	Gilford	76.80
Blair	67	Campton	218.40
Blue Job	151	Farmington	493.40
Cardigan	71	Lebanon	227.20
Casalis	153	Peterboro	559.90
Connecticut River	200	Charlestown	654.90
Crawford Notch	597	Berlin	1,450.60
		Bartlett	
Franconia Notch	139	Littleton	444.80
Hubbard Hill	72	Claremont	234.32
Jeremy Hill	78	Pelham	249.60
Kimball	46	Mason	152.81
Litchfield	71	Derry	231.20
Livermore Falls	31	Campton	99.20
		Sandwich	
Mascoma	72	Canaan	230.40
Nursery	238	Concord	772.98
		Franklin	
		Boscawen	
		Webster	
		Salisbury	
Pawtuckaway	104	Deerfield	333.60
		Nottingham	
		Epping	
Pillsbury	123	Claremont	392.00
Ponemah	37	Milford	120.20
Russell	27	Greenville	86.28
Stockdale	352	Manchester	1,206.80
Sumner (Reforestation Tract)	2	Boscawen	7.20
Total, Man Days	3,030		$9,422.10

Unemployment Relief—Fall 1932

During the late summer of 1932 Governor Winant and Council requested the Forestry Department to outline plans for the continuance of unemployment relief. At that time it was realized that unemployment conditions had not improved and would probably be most acute during the coming winter. After a careful study of work which needed to be done, a proposed plan was submitted to the governor giving a list of 34 reservations with an estimate of the number of man days for each tract. The work was subdivided into such items as roads, buildings, trails, camp grounds,

water supply, roadside and improvement cuttings. A total of over 8,600 working days on these reservations were estimated as necessary to carry out the plans entailing an expense of $20,000. It was not until the latter part of October that this plan was finally approved by the governor and council and $10,000 was transferred to the Forestry Department from the emergency fund. The main purposes were to assist as many worthy families as possible by giving them a week's work, to use this fund in sections where unemployment had been of long duration and to continue needed improvements to state reservations. The range of pay was $2.40 to $3.00 per day, transportation and tools to be furnished by the towns or the men themselves. Crawford Notch was the only exception to this program. Here the men were transported from Berlin by bus and charged $1.00 for the round trip of 100 miles. Board was furnished by Mr. James F. Donahue of Bartlett, N. H., for $4.00 per week and the men housed in comfortable quarters near the Willey House Site. This arrangement gave the men an average of $13.00 net a week. In some instances materials and supplies had to be purchased in limited quantities.

The projects were started during the last week of October on reservations where work was necessary before the ground froze. By Thanksgiving this initial fund was about exhausted and arrangements were made to continue the work using Reconstruction Finance Corporation funds obtained by Governor Winant. The sum of $8,000 was at once allotted to the Forestry Department on account of the expenditure of $10,000 of state funds for similar purposes already used. Every effort was made to conform to the restrictions of this federal fund. Of the $18,000 altogether available, practically all had been used and accounted for by the end of the year. A total of 831 men were given employment from 50 cities and towns. The average allotment was $19.85 per man working 6½ days. Over 700 cords of wood were cut and given to the towns. Two men

from the Blister Rust organization have been used to check corners and boundaries of some of the state reservations.

The following is a brief account of important work accomplished on some of the larger reservations:

Crawford Notch: Continuing work already started the winter before on the Willey House pool. The banks of the river were cleared and cut back and gravel removed from the bed of the river. The dam was entirely rebuilt and the foot bridge renewed. The road at the southern entrance was widened about 30 feet allowing excellent parking for a view of Mt. Washington. New trails were opened from the Willey House Site northerly on both sides of the highway; one leading to the summit of Mt. Willard, the other to the Flume and Silver Cascade and finally to the Crawford House. Another trail connects with the Davis path over Mt. Webster. Roadside improvements, cutting of cordwood and general repairs to buildings were undertaken. Most of the men employed came from Berlin; a few were hired in Bartlett.

VISTA OF MT. WASHINGTON SEEN FROM THE NEW PARKING AREA AT THE SOUTHERN BOUNDARY OF THE CRAWFORD RESERVATION.

Franconia Notch: Improvement along the roadside from Echo Lake south to the Highway Camp. Opening vistas and releasing young stands of spruce. The old Speedwell Cottage was demolished saving all usable lumber; likewise part of the ranger station. Cutting and clearing out a ski run from the top of Three Mile Hill down Tucker brook

to the Profile farm and on the north slopes of Cannon Mountain. Seventy-five cords of wood have been cut and given to deserving families of Lincoln and North Woodstock. Men were hired from Littleton, Lisbon and North Woodstock.

Pillsbury: The caretaker's house has been put in good condition and the repairs to the old boarding house completed. A new well has been dug and water piped to the caretaker's house. A dam was built near the mill site to flood the mill pond used years ago. This dam is 115 feet long with piers 12 feet in height flooding 40 to 50 acres and forming a pool which will be used for water storage, bathing and fish culture. This new pond will greatly add to the attractiveness of the place. The Fish and Game Department again co-operated with funds to complete the dam. The unemployed came from Claremont, Newport, Goshen and Washington.

Pawtuckaway: General repairs have been made to the old "Goodrich" house now used as the home of the lookout watchman. A new water supply has been provided and pump installed in the house. The old barn has been torn down and the cellar filled in, the place now being used as a parking place. Through the co-operation of the towns of Nottingham and Deerfield the road leading to the reservation and the road around Middle Mountain were improved. The parking space on the Boulder trail was enlarged and graded. Several foot bridges were built on this tract and add to its attractiveness.

Casalis: Minor repairs were made to the Day property. The foundation wall at the north east corner of the house was rebuilt and the old piazza removed. Improvement cuttings were made taking out gray birches from pines and thinning out the hardwoods along the walls. Wood was also cut from young growing pine on the slope just south of the open field near the Day place. Seventy-eight cords

of wood were removed and given to the town of Peterboro. All the brush has been burned. Work was given to 45 men.

Annett: The work on this tract included roadside improvement, camp site development and wood cutting. Fifty cords of cut wood were given to Jaffrey and 25 cords to Rindge. An opening was made near the dam at Hubbard Pond for a view. The camping place was cleared of dead wood and rubbish. Natural opening were enlarged for camp sites. The roadsides leading from Squantum Village to the Pond were cleared and improved. The men employed came from Jaffrey and Rindge.

Meadow Pond: Eleven men from Gilmanton were used on roadside improvement, trail development, release cuttings and general clean up work. The entire roadside from the Beede lot to the Pond was improved and all slash and brush burned. All the old wood roads and trails were opened. Release cuttings were made along the western side of the tract. Thirty cords of wood were given to the town. Piles of refuse of all kinds were hauled away and buried. Later the boundaries were run out, the corners marked and painted and corrections in the map made.

Nursery: Many improvements made to the old barn last winter were continued. All old sills, floors, sidings and rafters were renewed. Windows were placed on the south side. The roof entirely replaced and skylights added. Stained shingles on the sides gives the barn a modern and pleasing appearance. Needed repairs were likewise made on the house especially to the underpining. The old porch was entirely rebuilt. Four large tool boxes and many state land signs were built.

Stockdale: General overhauling of the house and barn were undertaken as this work was very necessary. A new roof was placed on one of the buildings while the other roofs were reshingled. Much necessary work was done inside the house as replastering, painting and cementing.

The well house was rebuilt and a new pipe laid to the house. General cleaning about the premises was done.

SUMMARY OF UNEMPLOYMENT WORK

Reservation	Fall—1932 Number of Man Days	Cities and Town Assisted	Total Expended
Annett	149	Jaffrey Rindge	$452.00
Blair	58	Campton	174.00
Blue Job	140	Farmington	429.50
Bowditch-Runnells	82	Tamworth	217.50
Cardigan Mountain	170½	Canaan Orange	409.20
Casalis	248½	Peterboro	772.75
Cathedral and White Horse Ledge	33	Conway	100.50
Clough	81½	Weare	244.11
Connecticut River	172	Charlestown	517.75
Crawford Notch	1,324 2/3	Berlin Bartlett Livermore	3,974.00
Franconia Notch	658	Woodstock Littleton Lisbon	1,957.50
Green Mountain	8	Effingham	22.50
Hemenway	47	Tamworth	140.00
Jeremy Hill	60	Pelham	180.00
Kearsarge Mountain	4	Wilmot	12.00
Leighton	28	Dublin	99.00
Litchfield	12	Manchester	36.00
Lord	21	Ossipee	63.00
Meadow Pond	74½	Gilmanton	221.00
Meriman	5	Conway	15.00
North Branch	2½	Stoddard	5.00
State Nursery	674	Hooksett Webster Franklin Boscawen Salisbury Andover Canterbury Loudon Concord Sanbornton Tilton Northfield	2,022.00
Pawtuckaway	165	Deerfield Nottingham Portsmouth	495.00
Pillsbury	617	Claremont Washington Goshen Newport	1,851.75
Peabody River	12½	Gorham	37.50

SUMMARY OF UNEMPLOYMENT WORK

Reservation	Fall—1932 Number of Man Days	Cities and Town Assisted	Total Expended
Ponemah	110½	Amherst Milford	331.50
Stockdale	255	Manchester	766.00
Wellington	91½	Bristol	241.75
Deer Mountain		Pittsburg	606.50
(Lookout station)	202	Clarksville	
Total	5,482	Total	$16,394.31

Town Forests

There are seventy-five cities and towns in New Hampshire owning town forests. The total acreage is about 16,000 acres. Many of these tracts could now be utilized due to the present economic conditions. Selectmen in towns where there are forest tracts of any size should carefully examine the growth and plan to put some of the unemployed improving these areas. In most every community assistance is being given to one or more families. In return for this assistance by the town, heads of families should contribute their services by cutting wood on town forests. This work is already being done in many communities. The town of Warner is attempting to use their unemployed. This town received by gift 800 acres of woodland twelve years ago. A town forest committee has served with the selectmen and an agent of the State Forestry Department has assisted in the plans and management of the tract. Accurate records have been kept of the amount of wood cut from year to year and funds on hand. Several years ago the selectmen decided that savings could be made by using wood from the town forest to heat the town house and the high school. A vacuum heating plant suitable for 4 foot wood was installed in the town house, the same plant supplies heat to the high school. About 150 cords of wood are used during the year. Some wood is sold locally so that about 300 cords of wood are being cut to meet the demand.

The town has use for bridge plank and 25 M hemlock has been cut. Heads of families and young men who are being assisted by the town are set to work cutting this wood. A citizen of the town owning a team and needing work is doing the hauling of the wood. It will require several weeks to complete the operation. Improvement cuttings are also being undertaken. The town of Weare is using some of their unemployed to cut 100 cords of wood on the Town Poor Farm. This work should be followed by other towns owning forest lands.

Many of the towns now have opportunities to acquire forest lands through defaulted taxes. It would be much better for the towns to bid in pieces of forest land for their own use rather than to have some person pay the back taxes and cut off the wood. Selectmen should carefully consider these problems and if necessary seek advice from the State Forester.

Cities and towns owning forest land are listed as follows:

LIST OF TOWN FORESTS
1932

Municipality	Acreage	Municipality	Acreage
Alton	8	Greenfield	22
Antrim	58	Hanover	1,417
Auburn	10	Henniker	50
Boscawen	8	Hillsboro	55
Bow	20	Hollis	201
Brentwood	4	Hopkinton	59
Brookline	374	Jaffrey	506
Campton	25	Keene	1,910
Charlestown	50	Kingston	10
Claremont	488	Lempster	31
Concord	500	Lisbon	5
Conway	10	Littleton	1,087
Danville	75	Loudon	119
Deerfield	5	Lyndeboro	5
Derry	60	Madison	175
Dover	14	Manchester	2,681
Dublin	40	Marlboro	53
Dummer	160	Mason	27
Dunbarton	305	Meredith	175
Durham	65	Merrimack	70
Effingham	120	Milan	350
Errol	150	Milton	140
Exeter	18	Mont Vernon	8
Franklin	810	Nashua	32
Gilmanton	35	New Boston	8
Gorham	220	Newington	112
Grantham	125	Newport	30

(Continued on page 48)

LIST OF TOWN FORESTS
1932
(Continued from page 47)

Municipality	Acreage	Municipality	Acreage
Northwood	400	Sutton	50
Ossipee	76	Swanzey	175
Peterboro	11	Wakefield	110
Pittsfield	54	Walpole	200
Portsmouth	200	Warner	804
Raymond	12	Warren	80
Richmond	592	Waterville	306
Rochester	13	Weare	100
Salisbury	5	Webster	16
Sandown	11	Wilton	5
Sandwich	20	Winchester	66
South Hampton	40	Wolfeboro	34
Somersworth	10	Woodstock	40
Springfield	35		
Sullivan	100	Total	16,760
Sunapee	100		

Photo by Illick

AMERICAN WHITE PINE IN A EUROPEAN TOWN FOREST. MANY COMMUNITIES AND TOWNS IN EUROPEAN COUNTRIES ARE TAX FREE DUE TO THE REVENUE DERIVED FROM THEIR FORESTS.

FOREST FIRE PROTECTION

NEW Hampshire has had an organized and state wide system of forest fire protection since 1909 when the Forestry Department was created by law. In fact, the necessity of reducing the heavy fire losses which had been suffered in the past was one of the important reasons for the establishment of the department. The work then begun has been carried on to the present time with a high degree of success. For the calendar year 1931, only two states in the union had better records than New Hampshire in controlling the spread of fires. Only five states had this distinction for the five years from 1926 to 1930. The following statistics quoted from government reports show in terms of percentage the ratio of total area burned to total area under protection in the United States as a whole, the New England States and New York as a group, and New Hampshire.

Region	1926	1927	1928	1929	1930	1931
United States	1.40%	.77%	1.12%	1.23%	1.46%	1.59%
N. E. and N. Y.	.33%	.33%	.21%	.12%	.55%	.17%
New Hampshire	.21%	.22%	.14%	.06%	.36%	.09%
New Hampshire*	.24%	.25%	.16%	.06%	.40%	.10%

It will be seen that New Hampshire woodland enjoyed comparatively better protection from fire than similar lands in the regions cited, whether the state is taken as a whole or after the area of the White Mountain National Forest is deducted because it is not protected at direct state and town expense.

During the years just mentioned, the average annual total of expenditures for forest fire protection by the state and towns, the federal government and the New Hampshire Timberland Owners Association has been $66,178.47. This

* After deduction of White Mountain National Forest area.

is an average of one and one-half cents per acre protected or nine one-hundredths of one per cent of the estimated value of forest land in the state. Acknowledging that some expenditures by the towns are not reported or available for the purpose of this statement, it is probably true that the total expenditures did not exceed two cents per acre, or thirteen one-hundredths of one per cent of the forest valuation. It is realized that the cost of services rendered by municipal fire departments in many cases is not included in this statement, such costs having been absorbed by the

DEFICIENT RAINFALL CREATED AN UNUSUALLY SERIOUS FIRE SITUATION IN 1932.

appropriations for general fire protection in the municipalities. The claim is made, however, that this expense is not a direct forest fire protection charge. Local fire departments are organized, manned and equipped largely for the protection of dwellings and other improved and insurable property, both for the actual protection to be had and to obtain favorable insurance rates. As such, these expenditures would be made whether or not the problem of forest fire control existed. On the other hand, forest fire control expenditures are made for actual suppression

and prevention of forest fires, enforcement of forest fire laws, operation of mountain lookout stations, acquisition and maintenance of apparatus and equipment especially designed for forest fire control and for other related purposes, many of which cannot be undertaken profitably by individuals and single communities.

In considering public expenditures made to provide forest fire protection, it should be borne in mind that the total is small in comparison to the value of the property protected, as well as in relation to the amount of the annual tax levied against it. Until recently, at least, "bare" land valued at $5 per acre for taxation purposes was not uncommon and at the average rate of $2.77 per $100 in 1932, the owner thereof paid nearly fourteen cents in taxes. It should also be remembered that no more important return for these taxes can be provided by the community than the protection of the owner against fire loss. It should be understood that woodland is one of the few classes of property which cannot be protected against loss or damage by fire through the expedient of purchasing fire insurance. Such insurance cannot be bought at reasonable premium rates. If it were available, and at the most favorable rate charged in New Hampshire for protecting the very best risks, the cost would be about $1.50 per thousand of valuation per year, or slightly more than $110,000 to insure all woodland in the state and considerably more than the total average annual expenditure now being made for fire protection. Because of these reasons, forest fire protection should receive continued and liberal support.

Organization and Personnel

Originally, the state was divided into four Fire Districts but a further division was made in 1921 when five Districts were formed. At the end of June, 1932, a further subdivision was made in the southernmost territory and there are now six Districts in the state. During the biennium, these have been under the supervision of William H. Mor-

rison of Gorham, Frank P. Allard of North Conway, Elmer E. Woodbury of Woodstock, Charles F. Young of Merrimack (Nashua), Walter H. Tripp of Epsom, Stephen H. Boomer of North Conway, James W. Keenan of Berlin and Lewis C. Swain of Exeter.

It is with regret that we record the death on April 13, 1931, of Mr. Allard after a long period of illness. He had been in charge of the East District, chiefly Carroll county, since May 1, 1917, during which time he rendered valuable services in his field. Mr. Boomer succeeded Mr. Allard. He has been in charge of White Pine Blister Rust Control in the territory he now also administers as District Chief. This combination of two major departmental projects under the supervision of one individual approaches the standard outlined in the report of the Forestry Commission for the biennial period ending June 30, 1928. The objective is the gradual combination of all forestry activities in a given territory under the supervision of a District Forester.

It is also reported with regret that Mr. Morrison has had to relinquish his work in the North District as a result of a serious operation which he had to undergo in May, 1932. Mr. Morrison has been located in Gorham since May 1, 1917, before which time he had been in charge of the East District. He was also secretary-treasurer of the New Hampshire Timberland Owners Association. This work, as well as the work of District Chief, has been taken over for the present by Mr. Keenan.

Mr. Swain came into the fire service as a result of the subdivision of the South District. He is another Blister Rust Control Agent whose duties have been arranged as in the case of Mr. Boomer. His territory for fire purposes includes almost all of Rockingham county and a few towns in Strafford county. Mr. Young remains in charge of the western portion of the South District.

There are more than 1,300 Forest Fire Wardens and Deputy Wardens in the towns who are so located that the whole state is under close supervision. They are paid for

actual fire suppression or preventive services. Among the Deputy Wardens are included the state highway patrolmen, railroad section foremen, members of the White Mountain National Forest organization, patrolmen of the New Hampshire Timberland Owners Association and others who are in a position to render valuable assistance in their respective spheres of action.

The state is almost entirely under the surveillance of twenty-eight mountain lookout stations operated by the Forestry Department and five others maintained by the Government in the White Mountain National Forest. Cooperative arrangements also exist between New Hampshire and Maine, Massachusetts and Vermont for the discovery and report of fires occurring on either side of the state lines. Many residents in the towns who live on high elevations also act as auxiliary observers and work closely with the wardens in times of danger. The state and federal stations are thoroughly equipped for the discovery and prompt report of fires. Towers, cabins for the watchmen, efficient telephone service, maps, binoculars and range-finders, lists of names and telephone numbers of the personnel on the ground, etc., are provided. The system was never in better condition and the work of these stations has had much to do with the record achieved in the control of fires.

Patrol

The patrol work which was carried on in the South District during the previous biennial period was also continued in 1931 but was not maintained in 1932. The work consisted of fire investigations, slash and saw mill inspections, warning campers against fire danger and other fire preventive activities. The work was discontinued when the South District was subdivided, as a result of which Messrs. Young and Swain were enabled to intensify their efforts in the relatively smaller jurisdictions.

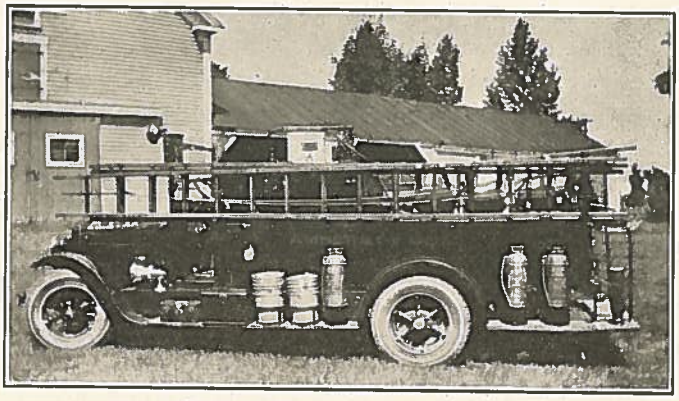
Forest Fire Fighting Equipment

During the biennium, annual legislative appropriations of $1,000 have been available to co-operate with towns in the purchase of the simpler forms of forest fire fighting tools. Sixty-one towns bought equipment in this manner and in sufficient quantity to furnish nearly 800 men with a good fire fighting implement. This phase of co-operation is greatly appreciated by the towns and should be continued. Since the towns pay one-half of the cost of the tools, the net annual state expenditure is only $500.

In 1926, a survey was made of fire fighting equipment available in the state and it was found that out of a total of 235 towns and cities, seventy-five had no equipment whatever. Seventy-nine other towns had only shovels, water pails, hand chemical extinguishers and a few of the larger chemical tanks for hand-drawing on wheels. Less than one-third of all towns owned motor powered equipment of any kind.

Since then, rapid progress has been made in the design and manufacture of small motor driven water pumps and many towns which had been unable to purchase the larger, more expensive apparatus, have now acquired very serviceable units. There are not less than fifty of these in the state, including five maintained by the Forestry Department which are available for forest fire service anywhere on short notice.

The portability of these pumps makes them especially suited to the work of forest fire control. They have the merit of being comparatively low in cost and efficient in service, as shown by the record of performance in many places over a period of several years. Many of the smaller communities have such an outfit with its complement of hose which is mounted on a suitable truck provided with ladders and other equipment for fighting any fire that may occur. The smaller capacity of these pumps is especially useful where water is not to be had in unlimited quantities,



SERVICEABLE UNITS, LIKE THE ABOVE, FOR FIGHTING FOREST FIRES, ARE NOW AVAILABLE TO TOWNS AT A REASONABLE COST.

that condition being true of most suburban sections. Meager water supplies are conserved for more efficient and longer use at fires. The purchase of a fire truck has provided citizens in many places with a center of interest which has resulted in the further development of inexpensive fire protective measures. Maps have been made to show graphically the location of buildings, hazards, risks and water supplies with which to be prepared in time of need. Water supplies have even been increased by damming small streams, deepening water holes and in other ways. As a result of the advent of this less costly motor apparatus, property in the state is protected to a greater degree than ever before.

It is the policy of the Forestry Department to work closely with organized fire departments or companies and to appoint as its Forest Fire Wardens the chiefs of such units when this can be done without prejudice to the work of forest protection.

Review of the Forest Fire Conditions

The biennial period now being reported began with an extremely dry summer and fall. Each month had a sub-

stantial number of fires although these were not numerous enough to cause undue anxiety. Only in October did a rather serious fire period occur and this resulted in the proclamation of a short woodland "ban" by Governor Tobey which was in effect from the 14th to the 16th.

The whole of the year 1931 was comparatively favorable. Rainfall occurred frequently and its total for the year very nearly equalled normal averages.

It was during the spring of 1932 that the most serious fire period of the biennium was experienced. The season started under fairly favorable weather conditions, being retarded by the late departure of the winter snows. Drought immediately set in, however, and while it was not particularly bad in April, rainfall was deficient more than forty per cent in May. During these two months nearly 350 fires occurred, not including railroad fires, and nearly 5,000 acres were burned. For the first time in years, fire danger became acute in the North Country. Bad fires had occurred in Maine and in Canada, in view of which similar outbreaks were feared in Coos county. On May 19th, woodlands were closed by proclamation of Governor Winant but heavy rains in the northern part of the state eliminated the danger there and the "ban" order was suspended for Coos county on May 21st. Elsewhere in the state, the proclamation remained in effect until May 27th.

Fires of Fiscal Years 1931 and 1932

Reports received covering town fires, but not including railroad fires and those on land in the White Mountain National Forest, show that 363 fires occurred during the fiscal year 1931. This is a slight increase of three per cent over the comparative average of twenty-one years, due to the large number of fires during the dry fall of 1930. Area burned, however, was only 4,882 acres or a decrease of forty-eight per cent in the twenty-one year average. Damage was not heavy and the cost of suppression was

$1.87 per acre. This compares with $1.54 in 1930 and $2.59 in 1929.

During the second fiscal period, there were 485 fires, an increase of thirty-eight per cent over the twenty-one year average. Here again, burned area was very low, having been 5,080 acres or only fifty-four per cent of the average for the period just mentioned. Damage was not excessive. Cost of fighting these fires, however, was comparatively high. This was $3.47 per acre and much of the increase was due to fires of the spring of 1932. Because of the drought, water supplies were frequently inadequate or unavailable and many fires which were quickly controlled required heavy patrol for long periods afterward, greatly increasing costs. Insufficient patrol in some instances resulted in further outbreaks and additional costs. In other cases, lack of proper equipment caused increased expense. There were several fires which were notably expensive to suppress, including the Gilsum and Barnstead fires in May which cost more than $3,000 and $1,000, respectively. Many other fires were fought at abnormal expense.

The analysis of fire reports shows that careless smoking continues to lead as a cause of fires, being followed by railroads and brush burning. With respect to the cause first mentioned, it is generally agreed that until public opinion can be aroused to a greater degree than has been true of the past, little progress can be made. Indeed, we may come to consider it fortunate if the record is kept from becoming worse. It is well known that smoking increases with the passing of time and that the tobacco industry is one of the few that has been almost depression-proof. Educational and other efforts will continue to be directed against the smokers whose carelessness is the source of so many fires.

Railroad fires were not so numerous as in the past, undoubtedly due to the reduced operation of trains. Fires that occurred during the biennium were well controlled as a general rule. Costs, as well as damages, are borne by the railroads.

The third worst cause of fires has been the kindling of fires to burn brush, grass and other refuse. It probably should be the least difficult to curb. However, a greater percentage of fires due to this agency occurred during the present biennium that in the previous two year period. The practice is dangerous to a degree not generally appreciated. Especially is this true when the fires are kindled near buildings. The destruction of such property is not infrequent. A permit of the Warden in the town is required by law when a fire is to be kindled in or near woodland and the ground is not covered with snow. This permit is issued subject to conditions which place much responsibility upon the applicant for the proper control of the fire. His improvidence renders him liable not only for damages which may be suffered by his neighbors but also for any costs the town may incur in helping to bring his fire under control. Each year a good number of bills are adjudged payable to towns by the responsible individuals, there having been 110 of these during the biennium. Further efforts will be made to restrain still more the kindling of these fires and to impress upon those who do burn in this manner that whenever their fires break out of control, the settlement of the expense and the damage shall be their responsibility.

Another problem of considerable importance is the control of grass fires. A large acreage of grassland is left uncut each year. During the biennium, 256 fires originated in and were confined to grass and other non-forest land. Area burned was 1,915 acres. While the damage to the land itself was comparatively low, being negligible according to many Wardens, the subject calls for attention because of the danger to which woodland and improved property are exposed when adjoining grassland is ignited. Owners of such property seeking to protect themselves against further danger sometimes attempt to burn grassland but the work is dangerous, even under the very best conditions for burning. Strip cutting of grass adjoining

travelled roads and other hazards is one among several protective measures due to receive increasing consideration.

In the tables which follow, further details are given. The fire record of the present biennial period may be compared with that of previous years by a study of the table which gives comparative statistics for twenty-three years. Other tables will be of interest. For the most part, it will be seen that the organization functioned well, particularly in controlling the spread of fires down to areas well under averages of the past.

Photo by U. S. Forest Service

FOREST FIRES NOT ONLY CONSUME VALUABLE TIMBER, BUT DESTROY VEGETATION, CAUSING A RAPID RUN-OFF OF WATER AND EROSION OF THE SOIL.

FOREST FIRE RECORD FOR TWENTY-THREE YEARS
(Exclusive of Railroad Fires)

Year	No. Fires	Area Burned	Average Area Burned Per Fire	Damage	Average Damage Per Fire
1910	272	9,038A.	33.2A.	$40,000.00	$147.06
1911	462	30,958	67.0	175,000.00	378.79
1912	344	8,474	24.6	62,000.00	180.23
1913	609	14,507	23.8	100,000.00	164.20
1914	315	8,119	25.8	53,000.00	168.25
1915	792	29,480	37.2	174,567.00	220.41
1916	128	6,630	51.8	40,075.00	313.09
1917	197	1,680	8.5	18,205.00	92.41
1918	357	8,693	24.3	94,468.00	264.61
1919	308	3,502	11.4	41,287.00	134.05
1920	138	1,996	14.4	17,681.00	128.12
1921	276	7,172	26.0	59,503.00	215.59
1922	295	9,484	32.1	94,917.00	321.75
1923	199	2,333	11.7	27,786.00	139.63
1924	330	5,351	16.2	83,347.00	252.57
1925	486	8,368	17.2	97,508.00	200.62
1926	295	8,181	27.7	115,614.00	391.91
1927	367	9,420	25.7	75,762.00	206.44
1928	271	4,714	17.4	27,090.00	99.96
1929	192	1,661	8.7	9,188.00	47.85
1930	765	18,750	24.5	93,191.00	121.82
21 Yrs.	7,398	198,511A.		$1,500,189.00	
1931	363	4,882	13.4	38,994.00	107.42
1932	485	5,080	10.5	39,760.00	81.98
23 Yrs.	8,246	208,473A.		$1,578,943.00	

SUMMARY OF AVERAGES

Average	21 Years	1931	1932	23 Years
Fires Per Year	352	363	485	359
Area Per Year	9,453	4,882	5,080	9,064
Damage Per Year	$71,437.57	$38,994.00	$39,760.00	$68,649.70
Area Per Fire	26.8	13.4	10.5	25.3
Damage Per Fire	$202.78	$107.42	$81.98	$191.48

NUMBER OF FIRES BY MONTHS
(Exclusive of Railroad Fires)

Fiscal Year Ending June 30, 1931		Fiscal Year Ending June 30, 1932	
July, 1930	14	July, 1931	14
August, 1930	10	August, 1931	22
September, 1930	19	September, 1931	4
October, 1930	55	October, 1931	32
November, 1930	19	November, 1931	14
December, 1930	3	December, 1931	11
January, 1931	0	January, 1932	1
February, 1931	0	February, 1932	0
March, 1931	5	March, 1932	8
April, 1931	185	April, 1932	160
May, 1931	44	May, 1932	180
June, 1931	9	June, 1932	39
Total	363	Total	485

FIRE RECORD FOR FISCAL YEARS 1931 AND 1932
(Exclusive of Railroad Fires)

County	Year	No. Fires	Total Acres Burned	Average Area Per Fire in Acres	Total Damage	Average Damage Per Fire	Total Cost of Fighting	Average Cost Fighting Per Fire
Belknap	1931	21	485	23.1	$4,166.00	$198.38	$612.04	$29.14
	1932	28	682	24.3	13,337.00	476.32	1,995.58	71.27
Carroll	1931	29	645	22.2	1,319.00	45.48	1,151.63	39.71
	1932	37	242	6.5	808.00	21.84	1,354.34	36.60
Cheshire	1931	29	174	6.0	415.00	14.31	593.67	20.47
	1932	43	739	17.2	3,328.00	77.40	4,706.60	109.46
Coos	1931	15	83	5.6	3,190.00	212.67	216.68	14.45
	1932	23	207	9.0	5,107.00	222.04	1,609.88	69.99
Grafton	1931	42	567	13.5	4,525.00	107.74	1,345.42	32.03
	1932	29	308	10.6	1,188.00	40.97	498.91	17.20
Hillsborough	1931	84	792	9.4	2,757.00	32.82	1,838.21	21.88
	1932	101	532	5.3	2,221.00	21.99	2,052.65	20.32
Merrimack	1931	43	1,212	28.2	4,469.00	103.93	1,187.90	27.63
	1932	68	703	10.3	1,605.00	23.60	1,154.59	16.98
Rockingham	1931	61	565	9.3	1,761.00	28.87	1,046.04	17.15
	1932	101	1,294	12 8	5,530.00	54.75	3,075.19	30.45
Strafford	1931	23	254	11 1	1,205.00	52.39	579.85	25.21
	1932	39	298	7.6	6,236.00	159.90	581.64	14.91
Sullivan	1931	16	105	6 6	15,187.00	949.19	562.95	35.18
	1932	16	75	4.7	400.00	25.00	594.41	37.15
State Totals	1931	363	4,882	13.4	$38,994.00	$107.42	$9,134.39	$25.16
State Totals	1932	485	5,080	10.5	$39,760.00	$81.98	$17,623.79	$36.34

RAILROAD FIRE RECORD FOR FISCAL YEARS 1931 AND 1932

Year	No. Fires	Total Area Burned	Average Area Per Fire	Total Damage	Average Damage Per Fire
1931	129	395A.	3.1	$560.00	$4.34
1932	149	524A.	3.5	1,902.00	12.77

TOTAL NUMBER OF FOREST FIRES, AREA AND DAMAGE BY CAUSES

For Fiscal Years 1931 and 1932

Causes	Per Cent Total Number of Fires	Per Cent Total Area Burned	Per Cent Total Damage Caused
Railroads	24.7	8.5	3.0
Smokers	42.7	34.9	58.7
Burning Brush	15.9	30.9	29.5
Miscellaneous	7.8	8.7	1.8
Lumbering	.7	.7	.2
Incendiary	2.4	12.3	4.3
Lightning	1.2	.5	.3
Campers	1.5	.6	.5
Unknown	3.1	2.9	1.7
Total	100.0	100.0	100.0

COMBINED FOREST FIRE RECORD

For Fiscal Years 1931 and 1932
All Agencies Reporting

Year	Town	Railroad	White Mountain National Forest	Total
		NUMBER OF FIRES		
1931	363	129	5	497
1932	485	149	10	644
Total	848	278	15	1,141
		AREA BURNED		
1931	4,882	395	18	5,295
1932	5,080	524	29	5,633
Total	9,962	919	47	10,928
		DAMAGE		
1931	$38,994.00	$ 560.00	$30.00	$39,584.00
1932	39,760.00	1,902.00	45.00	41,707.00
Total	$78,754.00	$2,462.00	$75.00	$81,291.00

Portable Saw Mills

The operation of portable saw mills in the woods has not been a serious cause of fires in recent years but the administration of the law provides an interesting by-product in the statistical record of operations which is given below:

Year	No. Mills	Steam	Gas, etc.	No. Permits Steam	No. Permits Gas, etc.
1925*	163	116	47	163	81
1926	240	171	69	267	165
1927	254	177	77	265	194
1928	249	164	85	255	188
1929	248	145	103	207	233
1930	202	111	91	118	192
1931	149	77	72	82	191
1932	125	51	74	47	128

The good fire record of portable saw mill operators is due to several reasons, including the care which operators themselves have come to exercise in preventing fires. The change from steam to other forms of power and the abnormal degree of inactivity which prevails in the industry are others. The table shows clearly the decline in business and the manner in which steam for power is being supplanted by more portable power units.

Conclusion

In general, the forest fire laws are adequate. The kindling of fires in or near woodland, operation of portable saw mills, use of spark arresters on steam mills and railroad locomotives, slash disposal, dropping of burning substances which might cause fires and other sources of fire danger are reasonably regulated to provide for the safety of woodlands. The Governor may proclaim woodlands closed to unauthorized entry of the public in times of drought and owners of large forest tracts may be required to patrol their lands when fire danger exists. Wardens may

*Law in effect from July 1, 1925.

summon assistance of men and order materials to control fires and they may arrest without a warrant persons taken in the act of violating any forest fire law.

Refinements and modifications of the present organization and methods may be expected as time passes and hazards increase, decrease or change. A good example of this kind is the work that has been done to determine the effect of weather conditions upon the combustibility of forest fuels in an attempt to establish a practical system of fire-weather prediction and dissemination of the information. These studies in the East have been made by Mr. Paul W. Stickel, Associate Silviculturist at the Northeastern Forest Experiment Station. Such a service to fire fighting forces would be as valuable as the storm warning service is to shipping. Other developments may be expected in the form of still more improved portable motor fire pumps. Field radio communication sets might be very useful under some conditions in organizing and directing the control of large fires and in other ways. This equipment is already in use in some parts of the country and is a valuable aid to fire fighters. Better educational methods will be devised so as to warn a greater number of persons against fire danger.

In the long run, however, the public at large must be reached and told about the causes and consequence of forest fires. The indifference and heedlessness of too great a proportion of the people cause nearly all fires. If this thoughtless attitude can be overcome, the greatest problem confronting fire protective organizations everywhere will have been solved.

Lookout Service

FOREST FIRE TOWER AT STRATHAM HILL.

During the past two years the number of lookout stations in the state has been increased to twenty-eight by the addition of a new station at Stratham Hill. Owing to unfavorable telephone conditions the station at Sugar Loaf in Odell has not been operated during this period, thus making the number in actual service twenty-six in 1931 and twenty-seven in 1932.

The stations have been manned by an excellent corps of watchmen who have rendered valuable assistance in handling the forest fire problem. They have spotted more than 1,300 fires that needed attention, and telephone calls were made to wardens and others to ascertain the nature of the fires, whether they were due to burning brush with permit and whether they should receive the immediate attention of the fire wardens. In addition to the 1,300 fires for which calls were made, reports of wardens indicated more than 2,000 other smokes observed which did not appear to be in dangerous places or of sufficient importance to require action. Alertness and careful observation of what is going on in their respective locations are the important functions of the watchmen.

Nearly all of the forest area of the state is now under the observation of lookout watchmen from early spring when the fire hazard begins to such time in the fall when the danger is practically eliminated. The department cooperates with Massachusetts at Mt. Grace and Watatic and with Maine at Green Mountain; also to some extent with

Vermont. The Federal Forest Service reports fires from their stations at Pequaket, Carter Dome, Osceola, Middle Sister and Mt. Hale which are within the boundary of the White Mountain National Forest.

The lookout stations continue to be popular points of interest to many thousands of visitors who find an opportunity to visit stations and enjoy the splendid views obtainable at these points. A large part of these visitors come from outside of our state. In fact the registers contain the names of persons from nearly every state in the union and many foreign countries. They show that the number of visitors has increased more than fifty per cent during the past ten years. The opportunity to interest and at the same time educate visitors along the lines of forest fire protection is of inestimable value to the protection of New Hampshire forests. The following table gives a list of stations and the number of visitors reported the past two years.

VISITORS REPORTED BY LOOKOUT WATCHMEN

Name of Station	Town	Visitors, 1931	Visitors, 1932
Agassiz	Bethlehem	*12,000	*12,000
Monadnock	Jaffrey	15,447	10,161
Uncanoonuc	Goffstown	4,074	4,237
Kearsarge	Warner	3,753	3,906
Pawtuckaway	Nottingham	2,562	1,390
Red Hill	Moultonboro	2,425	2,828
Crotched	Francestown	2,013	§375
Cardigan	Orange	1,989	1,728
Pitcher	Stoddard	1,896	1,880
Belknap	Gilford	1,813	2,431
Jeremy Hill	Pelham	1,345	2,158
Green	Effiingham	1,166	1,169
Federal Hill	Milford	881	1,068
Blue Job	Farmington	874	1,889
Oak Hill	Loudon	795	724
Rock Rimmon	Kingston	698	775
Stinson	Rumney	691	764
Black	Benton	642	710
Hyland Hill	Westmoreland	251	536
Jodrie Hill	Milan	249	189
Cabot	Kilkenny	232	222
Croydon	Croydon	218	177
Carrigan	Livermore	181	216
Signal	Errol	98	49
Deer	Pittsburg	78	138
Magalloway	Pittsburg	10	12
Stratham Hill	Stratham	Built in 1931	5,656
	Total	57,281	57,408

*Estimated
§Not open after June 30.

Improvements and New Construction—1931

The policy of permanent improvements to our forest fire service has been continued in 1931 by locating and building one new station, nearly nine miles of insulated wire for metallic circuits to replace pole and tree lines which had become much out of repair, and rebuilding 6 miles of pole and tree line, besides making further improvements in the general appearance and serviceability of the lookout towers and cabins.

Stratham Hill Station

Stratham Hill Park, containing about 35 acres given to the town of Stratham and adjoining towns by Mr. Edward Tuck for recreational purposes, has for some time been an objective point for a lookout station. At the regular town meeting held this year, the State Forestry Department received the unanimous vote of the citizens approving the erection of a lookout station at the top of the hill. Accordingly, a new 52 foot steel tower and a modern two room cabin were constructed. In this construction the department acknowledges the generous co-operation of the town of Stratham in furnishing free of charge the town truck to deliver the material at the point of construction and for many other acts of assistance. The station now furnishes the means for prompt detection of forest fires along the sea-shore towns and in the Great Bay territory.

Telephone Lines

Deer Mountain, the most northern station in the state, has been operated without adequate telephone communication. In order to make a start toward having this station connected directly with a telephone exchange, six miles of new type of insulated wire have been constructed to complete a metallic circuit between the station and Camp Idlewild at the Second Connecticut Lake. This service takes

the place of a grounded line formerly used. It was expected that in the near future a metallic circuit would be built connecting Camp Idlewild with the local exchange at Pittsburg.

The telephone service at several other stations has been considerably improved. At Mount Monadnock two miles of insulated circuit have been constructed and at Kearsarge Mountain nearly a mile of the same type of wire has been used. The new station at Stratham Hill was connected by the use of the same wire.

Cardigan Mountain

On Cardigan Mountain lightning has caused the first substantial damage to a steel lookout tower. This damage was repaired and improvements were made upon the tower and cabin. Also by the use of funds allotted for unemployment work, about one-half mile of road leading from the Orange-Grafton highway to the trail at the foot of the mountain has been substantially rebuilt. Most of the material for this work was obtained from waste found at one of the old mica mines nearby.

Green Mountain

Extensive and much needed repairs have been made to the watchman's cabin on Green Mountain and a portion of the ladder in the tower replaced by stairs. Owing to the construction of this tower it was found impractical to extend the stairs up to the observation room. A platform was therefore erected about 26 feet from the ground, reached by stairs. This furnishes a splendid opportunity for visitors to enjoy the view from this point without going to the enclosed observation room at the top.

Painting Stations

During the year a decision was reached to change the color of the towers from black, which was formerly used

on the steel, and dark green on the observation rooms to aluminum paint for the steel and olive drab for the wood work. These color changes were made on Oak Hill, Blue Job, Pawtuckaway, Hyland Hill, Stinson, Black, Belknap and Cardigan.

Pawtuckaway Reservation

At Pawtuckaway considerable repair work has been done on the "Goodrich House" which is now used as headquarters and to house the lookout watchman when not at the tower. Also a hut was built at the camp site on the trail to the Boulders. Through the co-operation of the Selectmen of Nottingham and Deerfield and with funds from the unemployment fund, the roadway leading to this station and around to the Nottingham Boulders has been greatly improved.

Pillsbury Reservation

The telephone line and buildings on this reservation were given extensive repairs by use of unemployment funds and funds supplied by the Department of Fisheries and Game. About 5 miles of grounded telephone line on the Cherry Valley Road to Goshen were replaced by a new metallic line which now gives the ranger headquarters satisfactory connection with the central telephone station at Goshen. This line is now in excellent condition. Extensive repairs were made to the house used by the caretaker. The old boarding house so-called was entirely remodeled by taking down about half of it and in part restoring the original house which has been there for more than 100 years. Work on the interior has not been completed.

Wellington Beach

At this newly acquired reservation a cabin was built for the use of a caretaker and a well driven to furnish a water supply. The entrance at the highway was opened up and

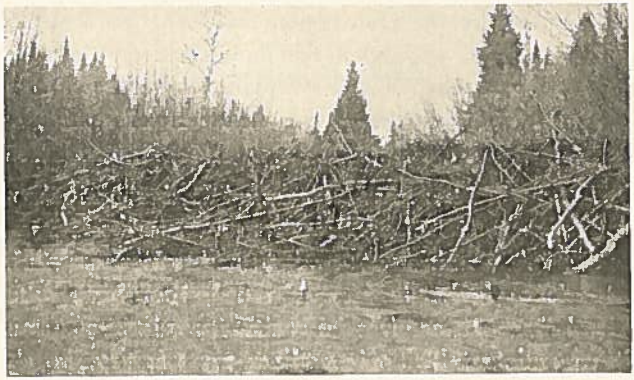
a circular parking place constructed large enough to accommodate 75 automobiles. This was found to be inadequate to accommodate the cars which brought the many thousands of visitors to this splendid bathing beach and must be enlarged in the future.

Improvements and New Construction—1932

During this period one new lookout station has been constructed and repairs made at several other stations. About 18 miles of telephone line have been entirely rebuilt or thoroughly repaired. Registry boxes have been installed at several of the locations where there are large numbers of visitors. Directional signs have been provided for the convenience of the many visitors desiring to reach the summits.

Magalloway Mountain

This has been one of the stations not connected by a metallic circuit telephone line. Accordingly the ground



BEAVER DAMS HAVE FLOODED MANY MILES OF FIRE TRAILS, THUS NECESSITATING A RELOCATION.

line was discontinued and a metallic circuit completed along about 9 miles of trail, half of which was an entirely new

location. This was made necessary because of beavers building several new dams which caused the flooding of the territory over which the old line ran. The new line now consists of 6½ miles of iron wire strung on trees and 2½ miles of Parallel Pair either laid on the ground or strung on small trees. The watchman's cabin at this point is about a mile from the tower and the material has been purchased and is at the summit for building a new cabin near the tower another year.

Milan Hill

A new steel tower 45 feet in height and a modern two room cabin have been constructed and a pole line built for telephone connection at this point. By co-operation with the Brown Company it is expected that the water supply here will be furnished by a gasoline pumping outfit forcing the water about 1,000 feet to a tank which will supply a private camp at this point and the lookout station. The construction of this station is to replace a wooden tower in a less desirable location on Jodrie Hill built about seven years ago. The new station is nearer Milan Village, quite accessible and commands a wide and unbroken view.

Deer Mountain

In co-operation with the St. Regis Paper Company, the New Hampshire Power Company and the New England Telephone and Telegraph Company, a new pole line 5 miles in length has been constructed between the First and Second Connecticut Lakes which will enable Deer Mountain (the last one connected by a ground line) to be given a direct, metallic connection with the exchange at Pittsburg. Three miles of new trail have been cut from Camp Idlewild toward Deer Mountain and an iron wire metallic circuit will be strung here in the early spring. When this is completed, both Deer and Magalloway lookouts will be connected directly with the telephone exchange at Pittsburg. The ma-

terial has been purchased and will be drawn to the top this winter for the construction in the early spring of a steel tower and new watchman's cabin at this station.

Oak Hill

Lightning damage to the telephone line at this station required the rebuilding of nearly the entire line of about three-fourths of a mile. Considerable damage was caused to the observation room from the same cause which required considerable repairs to one side of the room and several of the windows.

Cabot Mountain

Two of the cement piers supporting the steel tower had crumbled to a point which rendered them unsafe and they have been rebuilt. A new telephone has been provided for the observation room and repair work commenced on the telephone line which should be completed early next season.

Black Mountain

Repairs began at this station last year and not finished at that time owing to weather conditions have been completed by installing new windows in the cabin and laying a new floor. Previous to this time only a single floor has been provided. The cabin and tower now compare very favorably with others in the state.

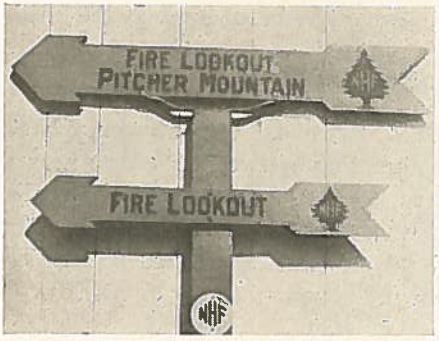
Cardigan Mountain

Work done last year on the road leading from the Orange-Grafton highway to the so-called Hotel Site at the foot of the trail has been continued and completed by graveling the half mile covered with mica waste last year and building an additional half mile. A parking space where the trail starts for the top of the mountain has been constructed. This work was made possible by the use of unemployment funds.

Painting Stations

During this year the following stations have been painted with aluminum paint for the steel and olive drab for the woodwork: Crotched Mountain, Jeremy Hill, Federal Hill, Red Hill, Green Mountain and Uncanoonuc. Registry boxes have been provided at several of the parking places. These have proven quite popular, particularly at the Poole Memorial on Monadnock and at Wellington Beach. It is expected that more places will be so equipped in the near future.

Directional Signs



Directional signs have been provided for nearly all the lookout stations. The larger arrows with the name of the station have been placed where side roads leading to the trails leave the main highways. The smaller arrows have been placed along the side roads at corners and intersecting points, thus enabling visitors to easily find where the mountain trails begin. Circular markers are to be placed along the trails. This will require altogether 120 of the two line signs, about 100 one line signs, and about 250 trail markers.

Wellington Beach

Early in the summer a public bath house was constructed 18 x 42 feet, having 24 separate compartments to accommodate bathers and a room 11 x 18 in the center, which visitors can use in case of sudden storms. Two new toilets have been constructed at the upper end of the beach. The

original parking place has been improved and enlarged and a new parking place has been developed a short distance from the original. A diving raft has been put in the lake and a boat landing built to accommodate motor boats. A public telephone pay station has been installed for the use of visitors.

Pawtuckaway

Further repair work has been done here to the headquarters of the watchman and at the tower. A new water supply has been provided by cleaning out and restoring an old well located nearby and laying a pipe to the house. Through the co-operation of the towns of Nottingham and Deerfield, further repair work has been done on the road.

Monadnock

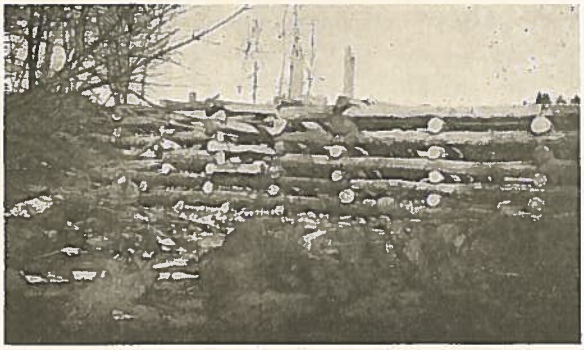
At the Poole Memorial additional improvements have been made, including the building of two new toilets nearer the back part of the area and five open fireplaces for the use of visitors and camping parties at this reservation. The water supply has also been extended about 200 feet which brings it to a convenient point near the new fireplaces.

Kearsarge Mountain

The cottage at the place commonly known as the "Winslow Site" on the slope of Mt. Kearsarge has been rebuilt and fitted for the use of a caretaker, the unsightly old stable has been removed, six open fireplaces have been built and the water supply extended to this location. New toilets have been provided and a general cleaning up has been started.

Pillsbury Reservation

Again this year with the aid of unemployment funds and money furnished by the Department of Fisheries and Game



THE NEW DAM, AT THE PILLSBURY RESERVATION, CREATES A POND OF NEARLY 50 ACRES.

much improvement has been made to the buildings and surroundings at this reservation and game sanctuary. Many years ago this site was a lumber camp on a large scale; in fact nearly all that now remains was built for that purpose. At that time a dam and mill-pond had been built for use in floating timber; both had long since gone out of existence. In order to again develop this pond, a new log dam has been built which will flow all the original area. Some work was done on the road and along the sides of the road leading into the reservation.

Contemplated Construction and Improvements to Fire Lookout Service

Among the more important plans now under consideration for the betterment of lookout service are improvements in the telephones at various stations, the building of a 30 foot steel tower and cabin at Deer Mountain and a new cabin near the tower on Mt. Magalloway. The material is already on the ground for this construction. A low fire tower on the summit of Great Hill on the recently acquired Hemenway Reservation and a new tower and cabin at Smart's Mountain are in prospect. The station on

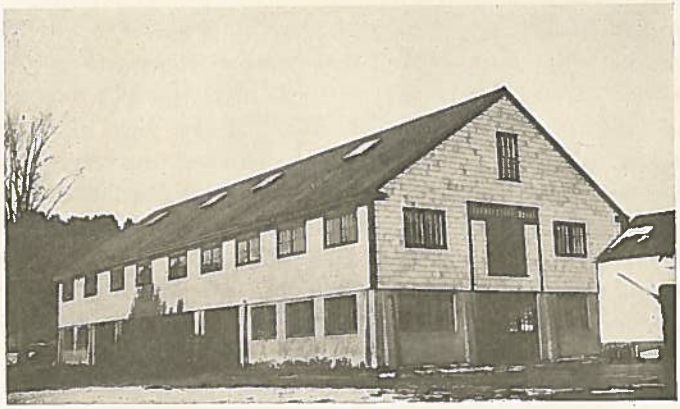
Smart's Mountain was abandoned several years ago on account of inadequate telephone communication in the region and this now appears to be overcome by changing conditions. A new steel tower and cabin will be needed at Signal Mountain in Millsfield, as the wooden tower and log cabin are fast becoming unfit for use. Mt. Sugarloaf in Stratford now discontinued as a fire station should be restored. The building of cabins near the top of Monadnock, Stinson, Pitcher and Uncanoonuc eventually will be necessary. The general upkeep, systematic painting of stations and repairs on telephone lines must always be carried on.

Photo by Blanchard

PORTABLE POWER PUMPERS ARE TRANSPORTED BY TRUCKS AND OWING TO THEIR LIGHT CONSTRUCTION MAY BE EASILY CARRIED BY MAN-POWER INTO THE WOODS. EQUIPPED WITH ADEQUATE HOSE, THESE PUMPS HAVE PROVED OF GREAT VALUE IN FIGHTING FOREST FIRES.

STATE FOREST NURSERY

THE output of trees from the State Forest Nursery during the past biennial period held up much better than was expected under existing conditions, the number for 1931 being slightly more than the previous year, while for 1932 it was 87% of 1931. The legal provisions of giving free trees to boys and girls' educational clubs, municipalities, and other state departments was continued as in previous years. Co-operation with the Highway Department by furnishing land and supervision for growing trees and shrubs for roadside use was also continued. New methods brought about by changes in equipment have developed better nursery practice and experiments are under way with seed from different sources to determine which are the best strains for New Hampshire when local seed of quality cannot be obtained. The policy of hiring help was changed and many unemployed men were given work by staggering the crews on permanent construction of the buildings and during the heavier working periods in the nursery.



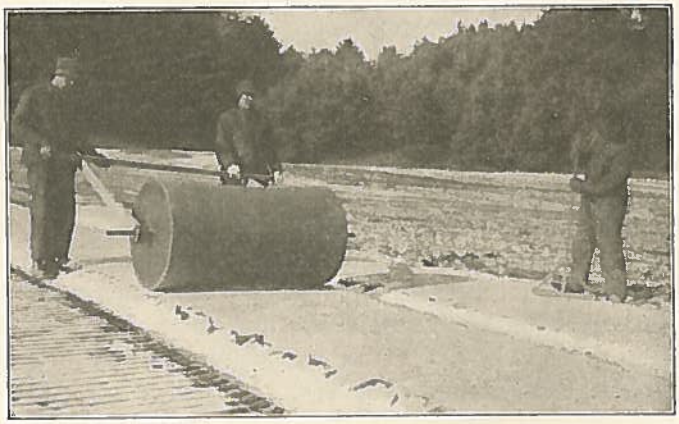
REMODELING OF THE BARN AT THE STATE FOREST NURSERY WAS ACCOMPLISHED AT A REASONABLE COST, AND ASSISTED THE UNEMPLOYMENT SITUATION.

During the winter of 1931 and 1932 unemployed men were used to build a new floor in the nursery barn. The old floor and floor timbers were not strong enough to support the heavier loads and had already given way in several places. Timbers used in the new floor were larger and strong enough to support the heaviest loads and matched boards were laid on top of the floor plank. This was done in order that a smooth tight surface might be had for mixing fertilizer, drying cones and extracting seed. It was possible to purchase good second hand material for part of the heavier timbers and planking, which with the unemployed help reduced the cost of a new floor to a minimum.

During the spring shipping and transplanting seasons, the nursery adopted the plan of working unemployed and needy heads of families on weekly shifts. The custom was adopted during the spring of 1931 and was quite closely followed during the spring of 1932. From an unemployed standpoint, this did a great deal of good, as only men with others to support were given employment. Each applicant was checked if not well known and it was felt that wages were paid only to those in need and where the money would be properly spent. In starting new men on work of so much detail, the work was necessarily slowed up and was not as efficient as when men were employed for a longer period with an opportunity to become accustomed to the work. It was also necessary to use men who were not well adapted for the work, which meant a great deal of checking in order that the trees might be handled properly. This was particularly trying to those responsible for the work.

A tractor with the right amount of wheel spread and sufficient power to root, prune, and dig the trees has been sought for several years. This was difficult to find as the seed beds are four feet wide and the transplant beds six feet wide, with two foot paths between both kinds of beds. Only one foot of path is common to both widths of beds or in other words, the tractor wheels must run in that part of the path farthest from the four foot beds and closest to

the six foot beds. The tractor must also have traction and power enough to draw a steel blade five to seven feet long, (the full width of the axle) under the beds and four to six inches below the surface. These requirements were so exacting that a satisfactory machine was not found until early in the spring of 1932. A Massey Harris tractor with all four wheels power driven and with a wheel spread nearly correct for the work proved to be the solution. The manufacturers were willing to furnish special wheels with eight inch tires, allowing seventy-six inches between treads, an ideal spacing for straddling the beds. The special wheels were not received until most of the spring opera-



A CONCAVE ROLLER FOR GIVING THE CORRECT AMOUNT OF CROWN TO THE SEED BEDS.

tions were over and there was little opportunity to do more than general work and root prune two year old trees which were to be developed as root pruned seedlings. This proved very satisfactory as the roots were pruned evenly and at any desired depth below the surface. In previous pruning with a spade the depth was largely governed by the shape of the bed. A few transplants were dug or loosened for pulling but not enough to give a fair comparison with spading them with a fork. However, it seemed that there

was less damage to the root system by the digger which cut below the roots and loosened the dirt, while the spading fork broke some of the roots.

The use of the tree pruner and digger emphasized the need for beds that were even in shape and with a small amount of crown. To do this a concaved roller five feet wide was built which would smooth and firm the beds and give the correct amount of crown for surface drainage in one operation. This work, which is part of the work of preparing seed beds, was previously done by hand tamping with a piece of board about twelve by eighteen inches and did not leave the beds smooth and even. The picture on Page 79 shows the two methods in operation and gives a better idea of both than words can describe.

As the stock for highway beautification, both variety and quantity, has steadily increased, the nursery area given over to this work is now about four acres. This stock is mostly hardy native species, purchased from commercial nurseries and transplanted at the State Nursery for convenience. Some stock is purchased in small sizes and then grown for a few years as a matter of economy, while other stock may just be held until needed for planting about the state.

Trees were given to the boys and girls doing special forestry work in 4-H clubs, Agricultural High Schools, Juvenile Granges and Boy Scouts. Each of the younger boys and girls received 500 trees while the older ones were allowed 1,000.

A field day for the 4-H clubs has been held at the State Forest Nursery for the past two years. This gives the boys and girls and also many adults an opportunity to see the nursery in operation and learn how the trees should be handled. Demonstrations are held in pruning, planting and thinning and the whole day given over to forestry education.

Seventeen towns and cities received 223,200 free trees for planting on town forests and other municipal areas. Trees were also given to towns for various organizations to use

as George Washington memorial plantations on roadsides and other public places.

The towns using trees and the amounts are as follows: Charlestown, 3,000; Concord, 53,500; Dover, 5,000; Dummer, 2,000; Dunbarton, 6,000; Hanover, 90,500; Jaffrey, 5,500; Laconia, 1,000; Manchester, 8,000; Newmarket, 6,000; Northwood, 2,500; Ossipee, 2,000; Rochester, 24,000; Somersworth, 1,000; Warner, 10,000; Warren, 2,000; Winchester, 1,200.

While the permanent construction to buildings, extension of water lines and new equipment can be said to put the nursery in better condition than ever before, a reduction in the output of stock because of the general conditions of the country was anticipated. In 1931 there did not seem to be any appreciable change as 1,154,000 trees were shipped out. This was 4,000 more than in 1930, but for the year 1932 the output was 995,651 trees or 87% of the previous year. This under the conditions seemed very satisfactory to those directly responsible for the nursery. Orders for approximately 100,000 trees were cancelled during the 1932 planting season. However statements by the parties at that time, together with inquiries and requests by prospective planters for examination of proposed planting areas, indicate no less interest in planting but the financial situation and the uncertainty of what is ahead has caused the work to be postponed.

The following tables show the output of the nursery by species and value for each year:

Value of Nursery Stock Produced

YEAR ENDING JUNE 30, 1931

Trees sold to private planters	$2,864.17
Trees given to 4-H and other juvenile clubs	1,813.98
Trees given to towns	459.85
Trees used on State Lands	1,308.44
	$6,446.44

YEAR ENDING JUNE 30, 1932

Trees sold to private planters	$1,546.98
Trees given to 4-H and other juvenile clubs	1,468.24
Trees given to towns	1,094.00
Trees used on State Lands	2,219.37
	$6,328.59

Nursery Output: Fall 1930—Spring 1931.

Age of Stock	White Pine	Red Pine	White Spruce	Norway Spruce	White Ash	Red Spruce	Douglas Fir	Poplar	Total
5 yr. tps.	97,341	.....	.....	.....	.....	.....	.....	.....	97,341
4 yr. tps.	271,274	27,682	26,517	9,486	.....	.....	.....	.....	334,959
3 yr. root pruned sdlgs.	520,136	31,250	59,904	30,309	.....	1,000	5,625	.....	648,224
2 yr. sdlgs.	38,000	.....	.....	.....	23,250	.....	3,600	.....	64,850
1 yr. sdlgs.	.....	.....	.....	.....	.....	.....	.....	3,200	3,200
Totals	926,751	58,932	86,421	39,795	23,250	1,000	9,225	3,200	1,148,574

Nursery Output: Fall 1931—Spring 1932.

Age of Stock	White Pine	Red Pine	White Spruce	Norway Spruce	White Ash	Red Spruce	Scotch Pine	Douglas Fir	Black Walnuts	Total
7 yr. tps.	100	.....	.....	.....	.....	.....	.....	.....	.....	100
6 yr. tps.	14,107	.....	.....	.....	.....	.....	.....	.....	.....	14,107
5 yr. tps.	136,270	2,417	100	.....	.....	.....	.....	.....	.....	138,787
4 yr. tps.	177,185	103,975	126,274	20,268	.....	2,006	.....	.....	.....	429,708
3 yr. root pruned sdlgs	288,049	39,500	46,300	.....	.....	.....	15,450	16,900	.....	406,199
2 yr. sdlgs.	.....	.....	.....	.....	6,700	.....	.....	.....	.....	6,700
1 yr. sdlgs.	.....	.....	.....	.....	.....	.....	.....	.....	50	50
Totals	615,711	145,892	172,674	20,268	6,700	2,006	15,450	16,900	50	995,651

Reforestation

While it is the duty of the state to assume leadership in reforesting idle and waste land, the work in New Hampshire has been little more than demonstration plantings due to the limited areas of state land acquired. Upwards of a million acres of New Hampshire's total land area of 5, 646,051 acres are in need of some planting. The towns and state must assume the responsibility in a measure, as many owners cannot or do not wish to carry such a long time investment. This situation has been demonstrated more emphatically than ever by tax sales in many towns during the past year. Just what effect these areas and tax sales may have on a future public land policy is not known. However any large increase would indicate the necessity of the towns or the state eventually taking over many pieces of tax delinquent property.

With such a large accumulation of unproductive areas together with second growth stands making up the forests, the opportunity for continuous income has been temporarily reduced or halted. The owners have not only lost sizable incomes, but the wage earners have lost an earning power not fully appreciated until the present time. A generation ago the condition of our forests absorbed much of the rural unemployment. When other lines of work lessened, woods operations were easily and quickly set in operation. It is estimated that the labor income at that time from the timber lot to the shipping point amounted to $5,000,000. Outside of this amount the wages paid in finishing, manufacturing and the allied industries would amount to as much more.

The only well spaced plantation which has had an opportunity to grow to maturity in New Hampshire produced a thousand feet of lumber per acre per year. This is proof that our forests can be re-established artificially, help pay taxes and furnish employment. Taxes on growing timber have been burdensome and a stumbling block to proper management. It has, moreover, been recently pointed out that the opportunity to change the method of taxing timber is much greater under present conditions than it has been heretofore. Such changes would make it possible to carry stands until they produced better grades and to practice better forest management.

The benefits of planting are many and far reaching.

It benefits the land owner because it increases the value of the property, whether the crop is harvested or left as part of an estate.

It benefits the town because it increases the value of taxable property.

It benefits the community because it protects the water supply, furthers civic pride, provides recreational areas and eventually an endowment to the town.

It benefits water and power companies and land owners in river valleys because it retains moisture, regulates stream flow and prevents erosion.

It benefits hunters and fishermen because it furnishes food and protection to birds and animals and protects the streams.

It benefits the farmer because it furnishes lumber at home for repair of buildings, fences and other equipment cheaper than lumber can be bought and because it increases property values.

It benefits the State and Nation because it builds up and maintains the natural resources of the country, furnishes a supply of wood to industries and steady work in the community.

There are two productive uses for the larger land areas in New Hampshire, agriculture and forests. Of these forests are less exacting as to soil, as has been shown on

hundreds of thousands of acres of our abandoned farm lands, and will produce an income where the roughness of the topography, location, etc., make agriculture impossible. Outside of the growth value there is another direct benefit of very great importance, which is to enable such areas to contribute their share of taxes. The soundest management and best economic use of this land is to grow some of the more valuable forest crops, and regardless of the ownership, the quickest, and most practical way of bringing it back into production is to plant forest trees.

State Land Planting

Forest plantings for the past biennial period were made on 16 state forests and covered 799 acres. These plantings were on all kinds of sites common to reforestation and ten different species of trees were used. Pine and spruce were mostly used and made up 60 and 23 per cent respectively of the trees planted and 83 per cent of all state planting. The work was divided into 21 operations and varied in size from one acre to 200 acres. The acre plantation was an experimental planting of Scotch pine made in co-operation with the U. S. Forest Service on the Casalis State Forest. Although Scotch pine is a foreign tree, widely distributed and sensitive to climatic changes, some strains are very desirable for planting in New Hampshire. These transplants came from a hardy strain of Scotch pine grown in New York for three generations. Seed has been collected only from the best trees with the idea of improving each succeeding generation. This selective plan is considered the only way of securing the very best supply of seed and will be continued with seed from this plantation to furnish better trees for planting on New Hampshire's light sandy areas.

Plantations of fir and spruce have been made on state land for several years, with the idea of developing a future source of Christmas trees. Norway spruce, white spruce and Douglas fir have been set for a sufficient length of

time to determine how they will grow under different conditions. Red spruce has been planted for only a few years while fir will be set with white spruce in 1933. Balsam fir was not used in the earlier plantings because of its supposedly slow growth. However results of plantings made during the last fifteen years show this is not correct.

Norway spruce have invariably shown that while they are the fastest growing spruce they are not good Christmas tree type. The rate of growth is so fast that the branches are too far apart and they do not have enough smaller branches to give a well foliaged appearance. The foliage is also light in color and the trees are invariably attacked by the white pine weevil if they are present.

Douglas fir is similar to the Norway spruce in type, although the color is good and the needles hold better after cutting. It is also susceptible to white pine weevil damage and some frost damage to the buds in the spring, not being in its natural grownig belt.

White spruce has proved to be a very satisfactory tree in nearly every way. The only white spruce trees which did not develop into good Christmas tree stock were the ones that grew too fast. Four year transplants set in an old field with fairly rich soil grew 7½ feet in seven years. These trees developed good sturdy trunks but not enough side branches for Christmas trees. Three year root-pruned seedlings set in a rock hillside pasture with rather poor soil and cold bleak exposure grew three feet in seven years. They were symmetrical with very dense branches and in three or four years more will make very desirable Christmas trees. The needles are very dark green with a bluish cast which makes them much more attractive than any of the other spruces. They are not attacked by the white pine weevil and their general makeup lends itself to the Christmas tree industry.

The following table gives the details of planting operations on state lands during the past two years:

Planting on State Land by Tracts, Number and Species.

Tract	Acres Covered	White Pine	Red Pine	Norway Spruce	White Spruce	White Ash	Douglas Fir	Scotch Pine	Poplar	Red Spruce	Total
Annett	34	14,000	2,000	.....	1,000	.....	.....	.....	.....	.....	17,000
Bear Brook	110	78,700	9,300	.....	.....	.....	.....	.....	.....	.....	88,000
Blue Job	16	5,000	.....	.....	5,000	200	.....	.....	.....	.....	10,200
Cardigan Mountain	20	50	50	.....	10,000	.....	.....	.....	.....	.....	10,100
Connecticut River	40	14,000	.....	.....	.....	.....	.....	.....	.....	.....	14,000
Conway Common Lands	15	.....	.....	.....	10,000	.....	.....	.....	.....	.....	10,000
Honey Brook	45	20,500	.....	.....	2,500	8,000	.....	.....	.....	.....	31,000
Hubbard Hill	25	13,000	.....	.....	.....	.....	2,000	.....	.....	.....	15,000
Kearsarge Mountain	25	.....	.....	.....	23,450	.....	.....	.....	.....	1,300	24,750
Mast Yard	25	.....	11,525	.....	.....	.....	.....	12,000	.....	.....	23,525
Nursery	10	4,000	.....	.....	.....	.....	.....	.....	.....	.....	4,000
Pawtuckaway	15	8,000	.....	.....	.....	.....	1,500	.....	.....	.....	9,500
Ponemah	3	.....	.....	.....	.....	.....	.....	3,000	.....	.....	3,000
Province Road	358	35,550	.....	24,825	53,225	20,500	11,250	.....	3,200	.....	148,550
Stockdale	58	138,270	3,450	100	100	200	100	100	.....	.....	142,320
Totals	799	331,070	26,325	24,925	105,275	28,900	14,850	15,100	3,200	1,300	550,945

State Land Operations

State land operations during the past two years have been almost entirely confined to unemployment work. The cord wood resulting from these operations was given to the towns for distribution to those needing assistance. A few cords from these operations not needed by the towns and a few small amounts cut by the cord were sold. This amounted to 247 cords sold from 10 state forests at an average of $2.73 per cord.

TIMBER CUTTING AND FOREST INDUSTRIES

A decided reduction not only in amount cut but in the numbers of operators was noted in reports received from lumbermen cutting timber during the past two years. This has been brought about in part by the operators who have consistently tried to reduce the cut to an amount that the market could consume and partly to demoralized market conditions which would not permit many manufacturers to continue the operation of their plants at anywhere near normal capacity.

As the report for 1929 showed about the average cut for the four previous years the reports for 1929, 1930 and 1931 are herewith tabulated.

Year	Cutting Between 100-250 M	Cutting Between 250-500 M	Cutting Between 500-1000 M	Cutting Over 1000 M	Cut of Hardwoods	Cut of Softwoods	Cut of Pine	Total Cut
1929	43	32	51	67	39,183 M	35,825 M	145,682 M	220,690 M
1930	37	29	38	50	32,128 M	31,499 M	98,966 M	162,593 M
1931	34	17	28	34	18,150 M	21,180 M	73,335 M	112,665 M

There have been numerous requests for the amount of spruce and hemlock being cut in the State; accordingly the report for 1932 will be made separating these species. This carries with it the thought that more dimension lumber for building purposes may be manufactured in our State if a more careful study was made as to the amount cut and amount that might be made available.

It is also interesting to note that white pine which is New Hampshire's largest crop of timber has consistently maintained its proportion of the cut whether it were the largest total cut reported of 248 million or the smallest of about

113 million. It is found to be about 67 per cent of the total cut for the past seven years that records have been available.

We find that the number of operators cutting has been materially reduced. At the peak of operations since these reports were available it was found that the bulk of cutting was being done by about 200 operators and that for 1931 there were about 80 cutting most of our timber.

It is generally conceded that the price of stumpage has dropped below pre-war levels. For several years immediately preceding the war the price was from five to six dollars per thousand. Stumpage values of white pine have dropped from the high value of ten to twelve dollars per M down to as low as two dollars per M. It is difficult for any one to sell stumpage at more than five dollars per M. The best grade of hardwood logs sells at prices similar to those for pine; low grades have no market. Spruce pulp wood brings from seven to nine dollars per cord, the higher price being for peeled wood. In many parts of the state, it is impossible to sell soft or hard wood at any prices. Buyers have an opportunity to satisfy their requirements without much difficulty at the lowest prices. It is true that operating costs declined more or less proportionately within the last year or two. It is now possible to have a pine lot operated at from six to eight dollars, stump to stick. In spite of these low figures, it is probable that forest values show no more of a drastic cut than other commodities have suffered.

The lumber cut for the United States has fallen from forty-one billion in 1925 to a little over sixteen billion in 1931. The same falling off in production by our New Hampshire mills is apparent.

The decline in markets for lumber and other forest products was apparent for some time before the depression. These facts have been reported on in the past two preceding biennial reports. With the loss of the box board industry and the influx of western and southern lumber at low prices, New Hampshire forest operators have suffered

severely for some years. It is necessary to face the fact that our forests consist largely of immature growth or else of low grade trees. Only a small percentage of quality lumber can at best be secured. In addition, lumber products are poorly manufactured and seasoned and are not subjected to standard rules of grading. Since most of the lumber went into box boards in the past there has been little reason to be governed by grading specifications established by associations for the building trade. Furthermore, our operations being in smaller units, widely scattered, there has been no means of filling orders for specific grades in any quantity. To offset all this, we are favored with a short haul to some of the principal markets of the country.

Western and southern lumber is brought into New England for practically all construction purposes in preference to native lumber. The imported products are well manufactured, carefully graded and seasoned and may be purchased at a price no higher than our own. The building regulations for the city of Boston for 1932 require that all lumber for load carrying purposes shall bear the official grade mark of the association under whose rules the lumber was manufactured and graded. Such a regulation automatically eliminates native lumber from this market and in the minds of architects and builders cannot be considered in their building plans. The same is doubtless true in other large centers. In order that native lumber may find a market it is obvious that only the larger trees should be cut, more accurate sawing at well established mills should be the practice and a system of grading and kiln drying introduced which will be approved by the building trade. As at present conducted our operators are forced to find an outlet for their products in the round such as poles, posts and short bolts and a miscellaneous variety of partly manufactured lumber and wood products, including excelsior, pulp and cord wood. The suggestion has been made that a centralized co-operative plant should be established as a

clearing house where stocks could be pooled, remanufactured and a larger assortment kept on hand at a known location. This would provide an opportunity for filling promptly orders requiring various sizes, types and grades of lumber. This would be of valuable assistance in promoting the sale of New Hampshire grown timber. The retail lumber dealers are unable now to obtain the necessary grades and varieties of lumber from our widely separated units to enable them to carry sufficient stocks of native lumber to compete fairly with shipments received from the West and South. Where lumber is re-manufactured they are able at present to partially supply the market from their mills if the lumber is properly seasoned. Our native lumber should supply most of the dimension stock for local use as well as lumber for certain construction purposes. The fact that it does not do so now is due furthermore to lack of advertising facilities to point out the numerous advantages of native lumber and create a demand for it in preference to imported products.

During 1930 there was considerable alarm that Russian wood particularly pulp wood was being brought into this country in large quantities. Records show that sixty-seven thousand cords of pulp wood entered the United States in 1930. There was much less in 1931 and very little alarm is now being felt that the dumping of foreign forest products is likely to be of any serious nature.

There is every reason to believe that the general lumber market will react favorably with the improvement of business. There is no reason to doubt that the growing of trees which will produce high quality lumber in the future is desirable. There will still be plenty of low grade lumber and wood, waste and cord wood to test the ingenuity of the operators to use, though wood may yet become the most universal of all materials of industry. It is estimated that one-third of a tree cut is wasted and unused. Our efforts should be directed to finding a market for low grade

material. Cellulose in the form of wood can be produced cheaper than cellulose from cotton or in any other form. The scientific study of wood utilization is likely to be tremendously important in the next twenty-five years. Industrial chemistry of wood offers a permanent field in the future as cold tar products has in the past. The control of wood properties by treatment and impregnation to prevent decay and to resist fire are great future possibilities. Low grades and waste are likely to find their way into wood pulp, chemically treated products and the usual variety of small products. We are but entering upon the age of cellulose. It is reasonable to look forward to the continued use of sawed lumber for select and high grade purposes as well as for general construction. Lumber and wood industries have no sound reason for disappearing from our local communities.

The New Hampshire Lumbermen's Association was built up around the box industry of New England and this industry has largely disappeared. Pine lots throughout the region have been stripped clean without regard to age, size or quality because in the past there was a ready market for all the low grade box boards. Better grades of lumber were either ignored by sawing all logs through and through for box alone or else served to increase the returns to intelligent and painstaking operators who put aside the better boards obtainable. It has now become apparent to the lumbermen that the whole industry of box board production needs to be revised. Only the larger and better trees can produce high grade lumber. No longer can young pine lots be clean cut at a profit. The methods of operating require selection in cutting, careful manufacture at well set-up mills by intelligent sawyers who know how to secure marketable grades, and proper seasoning. The falling off in portable mill operations and the increase in truck hauling of logs from numerous skidways along public roads to centralized mills are evidences of these changing require-

ments. Restoring the lumber industry and the forest values are by no means easy of solution. The forestry interests of the State have for many years consistently pointed out the fundamental needs. They have worked with the lumber interests and land owners in advocating forest tax reform. They have worked pretty much against clean cutting young pine lots and in favor of selection types of cutting, saving immature trees and improving them for high grade lumber production. Efforts of foresters have been with owners of stumpage to direct the growing and cutting toward quality production and with the operators to obtain better grades of lumber at their mills. Withal, there has been pointed out the need of selling the merits of native lumber to the builders and local users. These needs are now very self-evident.

The Lumbermen's Association should bring into its organization as many as possible of the various forest industries of the State, including all parties interested in the production and marketing of forest products. The hardwood lumber industry has not represented a sufficiently important part of the Association's activities. This industry is now receiving more attention from this Association. A special committee consisting of a group of hardwood manufacturers has recently been set up to make a study of conditions and suggest improvement in the manufacture and marketing of hardwoods. With a broad and united organization of all those interested in forest products, better facilities can be made for contacting markets in the outlying industrial centers of New England, advertising the advantages of native lumber and other products, and preventing abuses growing out of the efforts of commission men to force prices down to the bare cost of production. Many of our forest industry people are operators of small plants in country districts who know little about outside markets and can only wait for such small orders as may come their way. The needs, specifications and requirements of the manu-

facturing plants and the variety of other markets for wood and lumber in the East are unknown to these local operators in the country districts. Manufacturers and other users of wood products, on the other hand, are often purchasing their lumber and wood from the West, South and other sections outside of New England when they could be supplied just as well or better from communities locally.

The State and other public interests should ever be available to aid in promoting the general welfare of the State by encouraging activities which increase land values and furnish local labor. The State should in a measure be a clearing house for information of value both to the producer and the consuming market. This capacity for service should be based on concrete knowledge of the supplies of growing stock and timber and of the market to consume it, as well as the relation between costs of production and prices of the various products sold. The Forestry Department and the State University have endeavored through years past to bring about close co-operation with owners of stumpage and the forest industries. Scarcely a woodlot owner or industry in the state has not received or been offered assistance in one form or another directly on the ground in addition to literature distributed and through meetings and sawmill demonstrations. There is a field for the employment of a forest products specialist whose work would be solely to keep abreast of the markets and the forest industries seeking an outlet for their products. Such a measure to be successful would require the whole-hearted moral and financial support of the lumbermen and the other forest products interests of the State.

WHITE PINE BLISTER RUST CONTROL

WHITE Pine Blister Rust has definitely established itself throughout the pine regions of New Hampshire. In 1916, the only known center of infection in the state was located at Marlow. Since then the rust has spread so rapidly that today it can be found in practically every white pine lot in the state. Owing to its comparative slowness of development on the pine, many people are skeptical as to its seriousness. If the public at large were able to recognize the rust upon the pine in all the stages, they would be impressed both with its abundance and the threat it presents to the pine growth of this state. While the rust kills pines of all sizes, its damage to the young growth is much less appreciated than should be the case. In unprotected regions large areas of very young pines have been wiped out, and in others natural re-seeding prevented. Since these young pines quickly disappear after death, it is impossible to state in terms of acres the extent of this loss, but numerous observations have established this to be a fact.

In regions where the disease has been present for several years, many of the larger pines are either dead or in a dying condition. This statement is borne out by investigations conducted in many New Hampshire towns. Persons who have visited the blister rust demonstration at Littleton,—

which is one of many such examples—were able to witness the destructiveness of this disease on large pines.

The early stages of the rust on white pines are so inconspicuous that recently diseased trees appear healthy, and it is only by a careful inspection that the presence of young infections are discovered. Small pines, attacked by the rust, are apt to be stunted and bushy. Their needles are short and yellowish-green in color. Pines of medium, or large size, may seem normal for several years, except for scattering dead and dying branches. The needles on such infected branches, or twigs, may vary from a light green to quite a brilliant reddish brown, and have been termed *"flags"* as they stand out sharply against a background of healthy green foliage. The infections, or cankers as they are called, located on the branches near the trunk, gradually work their way onto the stem of the pine, and girdling it, kill the tree.

When severely infected, pines are characterized by dead and dying branches, broken-off tops and trunk cankers covered with pitch. These cankers girdle the trees, retarding their growth, and so weaken the trunk that the tops frequently break off at the point of girdling. An outstanding example of such a situation may be seen along the western slopes of Moose Mountain, in the town of Hanover, where on an area of more than 100 acres better than 80 per cent of the pines are dead or dying.

In unprotected pine plots, new infections may take place yearly, thus causing a continuous increase in the amount of the disease. Where pines have received the necessary protection through the removal of wild and cultivated ribes, studies show that the disease has been checked. More than 35 million ribes have been destroyed in this state over areas aggregating upwards of 2½ million acres.

In many sections of the state infections on white pine are becoming more evident and persons are led to believe that new outbreaks are occuring within control areas. It

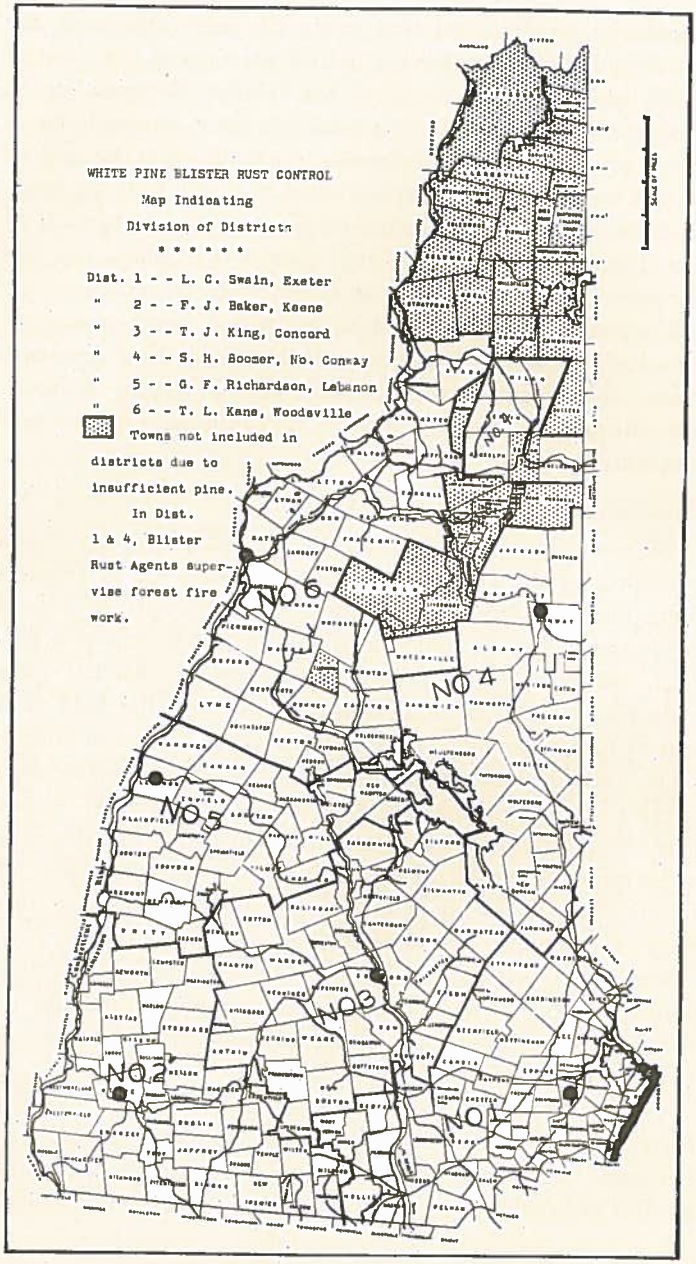
should be remembered that many of these infections are of considerable age having taken place prior to control work, and that on account of the relative slowness in the development of the rust on pine are now commencing to show up impressively. Emphasis should also be placed on the fact that after infection takes place on pine, as many as *three years* may elapse before any outward indication of the disease is evident. Thus, though the pines are apparently healthy, they may be infected by the rust.

Control of the white pine blister rust is being conducted by all of the white pine states which include New England, New York, Pennsylvania, New Jersey, Michigan, Wisconsin, Minnesota, Idaho, California, Montana, Oregon and Washington.

Personnel and Reduction in Costs.

Beginning with the late spring of 1922, through funds provided by the Bureau of Plant Industry, U. S. Department of Agriculture, ten agents were employed and placed in charge of control and educational measures, one to a district. In 1926, due to favorable progress the districts were reduced to eight through consolidation, and the field personnel to correspond. In addition to their duties in Blister Rust Control, the district agents have given considerable service in general forestry matters. Inspection of woodlots for a variety of purposes, advice in forest planting and supervision of same, care and handling of woodlands, all number among the more notable projects which these men have supervised. Now and then, problems relating to forest fire prevention have received their attention. Participation in these many forest problems, outside of their regular duties, was made possible through the cooperation of the Federal government.

Possessing a detailed knowledge of the towns in their districts, and with their additional information and experience in general forestry work, it seemed the most natural and efficient policy to eventually place one of these


WHITE PINE BLISTER RUST CONTROL
Map Indicating
Division of Districts
Dist. 1 - - L. C. Swain, Exeter
" 2 - - F. J. Baker, Keene
" 3 - - T. J. King, Concord
" 4 - - S. H. Boomer, No. Conway
" 5 - - G. F. Richardson, Lebanon
" 6 - - T. L. Kane, Woodsville
Towns not included in districts due to insufficient pine.
In Dist. 1 & 4, Blister Rust Agents supervise forest fire work.
NO 6
NO 4
NO 5
NO 3
NO 2
NO 1

agents in charge of forest fire prevention. On April 1st, 1931, S. H. Boomer, Blister Rust Agent in Carroll County, took over the duties of District Fire Chief, succeeding Frank P. Allard, who had been unable on account of illness for some time to carry on this work. Since the death of Mr. Allard, on April 13th of that year, Mr. Boomer has been actively in charge of fire protection.

Inasmuch as the so-called *"South District"* had proved far too great a fire region to be properly supervised by one individual, L. C. Swain, Blister Rust Agent for Rockingham and a portion of Hillsboro counties, took over the forest fire work in Rockingham County on July 1st, 1932, thus reducing the territory of District Chief, Charles F. Young.

On July 31, 1932, the Blister Rust District, which included Belknap and Strafford Counties, was abandoned and the 24 towns and cities therein apportioned among the agents of the four adjacent districts. The map on page 100 indicates the present division of Blister Rust Control activities. There are now six district agents as against a force of ten originally employed and two of these are in charge of forest fire work.

Through these three important changes mentioned above, economies were effected for the state in fire prevention, and for the Federal government in Blister Rust Control. These changes have all been made possible through agreements with the Bureau of Plant Industry.

Co-operative Control in 1931.

White pine blister rust expenditures are among the smallest items recommended to towns by a state department. At their annual meeting 95 towns and cities appropriated $25,950, or an average of slightly over $273 per town. Of the number appropriating, six made funds available for completing initial control while an equal number continued the work of rechecking or inspecting areas worked several years ago.

Initial control measures by 79 towns and cities were instrumental in covering 96,821 acres, upon which 1,883,593 wild ribes were located and destroyed. Twenty individuals, concerns and institutions also co-operated with the Forestry Department. Of this number, eleven were non-residents; three resident owners; while the remaining six included the South Tamworth Industries, Grafton Power Company, Harvard Engineering School, Bald Peak Country Club, Y. M. C. A. Boys' Camp, and the United States Forest Service. These individuals and organizations paid $2,122.13 for control work on their own lands. A total of 3,349 acres were examined and 137,491 ribes destroyed. Expenditures for initial control measures by towns, individuals and the state amounted to $31,167.07, or an average of 31.1 cents per acre.

Compulsory Control: 1931.

In 1929 the State Legislature passed an act amending the blister rust law, providing for compulsory eradication of ribes in such towns where little or no control measures had been conducted, and where the rust was known to be generally distributed. This act authorized the State Forester, with the approval of the Governor and Council, to carry on control work in non-co-operating towns, and limited the annual expenditure that might be required to $400 per town.

During the season of 1931 eradication of ribes was conducted in 40 such towns, the expenditure required of any one town being limited to the amount previously recommended to the town prior to its annual meeting, which was from $100 to $400. In this work, state aid was given on the same basis as that extended to co-operating towns, namely 25 per cent. Control measures resulted in covering 57,834 acres upon which 874,578 ribes were located and destroyed.

A summary of all town and individual *"initial"* control amounted to 158,004 acres, and the destruction of 2,895,622 currant and gooseberry bushes. The expenditures involved

totaled $15,596.31 and on the basis of area protected, averaged 26.9 cents per acre.

Co-operative Initial Control: 1932.

Due to the country-wide depression, appropriations by New Hampshire towns in 1932 dropped to the lowest level since the inauguration of blister rust control, there being but 44, with a total of $9,175 appropriated. In view of the economic situation, the Forestry Department decided, prior to town meeting, not to invoke the provisions of the compulsory act of 1929. Of the forty-four appropriating towns, there were nine whose control measures were confined to re-eradication. A record of this will be found under the next heading entitled, *"Re-eradication"* for both years of the biennial period.

Initial control with towns, individuals and upon state forests aggregated 25,732 acres and the removal of 832,064 wild and cultivated ribes. Co-operative initial control measures on these areas necessitated the expenditure of $8,969.94, or an average of 34.8 cents per acre. Additional control measures conducted by state funds only will be found under the caption, "Scouting and mapping."

Re-eradication (1931 and 1932)

Experience has shown that even after the most efficient control measures, a reoccurrence of currant and gooseberry bushes is likely to be brought about by many agencies. Among the more common, discovered through investigation, are various disturbances of the forest soil which are brought about by logging operations, windfalls, forest fires, highway construction, erosion, and by animals.

With the seeds of ribes, long dormant in the ground, a disturbance of the forest soil by any of the foregoing agencies often results in a return of these bushes. Some may occur in locations where their presence constitutes no danger to white pine growth, while others may spring up on sites within sufficient infecting range. It is owing to these

facts that after a period of years, a re-examination should be made of previously worked control areas in order to discover such regrowth, and where needed, to destroy the ribes.

Commencing in 1925, several towns undertook a reinspection of their pine areas, and up to 1930 inclusive, 13 had completed this reworking and 31 additional towns were likewise engaged.

Since so much initial acreage remained unprotected, the Forestry Department has not made any special effort to encourage this phase of control, but recently one additional town commenced, of its own volition, re-eradication, thus increasing the number to 32. From 1925 to 1930 inclusive, this reinspection had been carried on over 333,373 acres.

For the period covered by this report, 21,380 acres were re-checked in 1931, and 16,827 acres during 1932, or a total of 38,207 acres. Expenditures in 1931 totaled $3,649.78 and for 1932 amounted to $2,942.97. The average cost per acre for this re-examination was 17.2 cents per acre.

Initial Control in Unfinished Towns.

Since so many factors influence the progress of control measures, it is impossible to estimate with accuracy the number of years that will be required to complete initial control in the 111 remaining towns. The amount and frequency of annual appropriations by a town; the abundance and distribution of wild ribes; and the lack of knowledge as to the exact number of acres requiring protection, or those that may be eliminated, all constitute the principal factors. If it were possible to first map and scout all unworked areas, a very close figure might be arrived at covering the cost in each town. Such information would be invaluable, for it would permit a definite program being worked out with each of the remaining towns. As a means of giving further aid to towns, such mapping might properly be financed entirely by the state, if sufficient funds were made available.

So far, inspection by the blister rust agents in these unfinished towns, supplemented by the special scouting and mapping project (described on page 107), has resulted in eliminating 1,093,047 acres from eradication, at least for the present. The following tabulation shows the *estimated* acreage needing protection in these unfinished towns.

ESTIMATED AREA REQUIRING PROTECTION IN 111 UNFINISHED TOWNS.

Land Area	Protected Acreage To Date	Non-pine Acreage Eliminated	Remaining Control Acreage
2,723,547	1,159,170	1,093,047	471,330

Since control measures in these towns has averaged to cost 31¼ cents per acre, it seems logical to use this unit cost as a basis for computing what should be considered as the *lowest estimated requirement to complete initial control work.* As the state gives aid to towns in the amount of 25 per cent of their appropriations, it is possible in this estimate to arrive at the probable cost to both co-operating parties.

It has been estimated that to complete control measures on the remaining 471,330 acres, expenditures in the amount of $117,832.50 by towns and $29,458.12 by the state, will be required. Estimated town expenditures may be less due to co-operation by individual owners.

Summary of Control Work to Date.

With the conclusion of the 1932 eradication season, control measures had been carried on in co-operation with 214 towns and cities and more than 600 individuals, concerns and associations. Over areas aggregating 2,670,912 acres, currant and gooseberry bushes in the number of 35,457,310 had been destroyed. Since it is necessary to clear a protective strip of 900 to 1000 feet around pine stands, the dif-

ference between the total acreage eradicated and the estimated pine area of the state is largely made up by the combined acreage of these protective strips. Furthermore, in the early days of control work some areas were undoubtedly stripped by crews, which today, under the more recent method of advance scouting and mapping, would be considerably reduced, if not eliminated. Records show that 103 towns and cities have completed *initial* control measures; that 32 have undertaken *re-eradication;* that 14 have completed such a re-examination, and that 111 have still to finish the initial work.

For the 15 year period, the average yearly expenditures by federal, state, towns and individuals has been $68,002.32, or on the basis of area worked, an average of 38 cents per acre. This cost may be considered in the light of an annual carrying charge of 2.54 cents per acre. In presenting a summary of the cost of control measures from 1917 to date, it should be emphasized that the average yearly expenditure shown, as well as the per acre cost, is not a true figure of *actual* eradication cost, since it includes expenditures for many different activities, while related to the eradication of ribes, are not a proper charge against it. Town and individual funds which go to make up the yearly expenditures are used entirely for eradication work in the field. Aside from state funds expended in state aid to towns and private owners, and on public forests, the balance of state funds and all federal funds are spent in administrative work in the district and central offices; for educational work (which includes meetings, indoors and out, conferences with town officials); laying out demonstration areas, etc. It also includes service work with pine owners, such as the inspection of their woodlands, and much other forestry work of a general nature. Investigations for the purpose of securing cheaper and more permanent control, and studies into the spread of the rust and the damage it is effecting, are among the items of research conducted. In

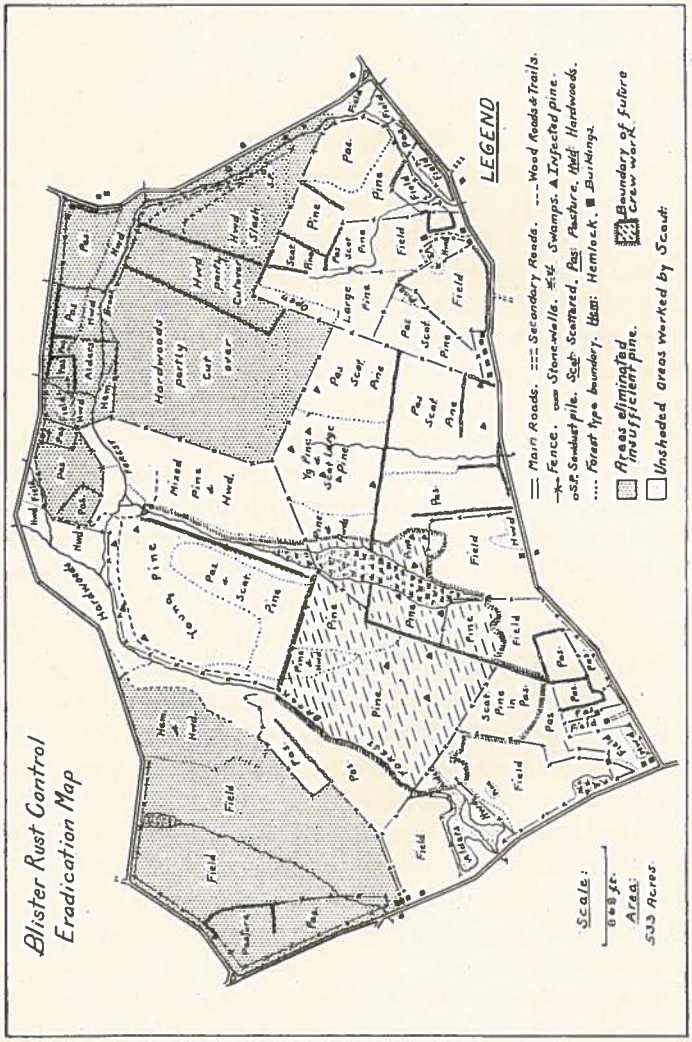
two districts, a certain proportion of the time of two federal blister rust agents is spent in forest fire protection activities. The average annual cost for *actual* eradication has been about 21 cents per acre throughout the whole state.

Scouting and Mapping.

For some years, there has been employed in certain districts, a system of scouting and mapping which might be termed *preliminary eradication*. Briefly, this system had for its objective (1) the elimination of crew work wherever possible, with a resultant lowering of costs; (2) excluding from control work such areas where pine is absent, or insufficient to warrant the cost of control, and (3) the production of a map which would serve as a future guide when re-eradication may become necessary. In addition, from such a map, information could be obtained as to the prevalence of infected pines, the size of heavy infection centers, or the general distribution of the rust over large tracts. It was also found that, with practically no additional cost, a forest type-map could be secured which would indicate the distribution of white pine by several size-classes and its mixture with other growth.

In view of the smaller volume of town and individual co-operation, the need of extending control areas in certain towns, and also as an aid to unemployment, a special eradication project was put into effect on July 1st, 1932. Thirty towns were selected where unprotected areas were so extensive as to require more than three years to complete the initial control measures. Allotments, varying from $60 to $300 each were made for this work out of state funds. Men having previous experience in eradication work were selected and given careful supervision as this project progressed.

In order that this system of mapping and eradication may be more clearly understood, a reproduction of an area thus worked is given on page 108. The topographic sheets issued by the U. S. Geological Survey, were used as a base


Blister Rust Control
Eradication Map
LEGEND
Main Roads. Secondary Roads. Wood Roads & Trails.
Fence. Stonewalls. Swamps. Infected pine.
Sawdust pile. Scat. Scattered. Pas. Pasture. Hwd. Hardwoods.
Forest type boundary. Hem. Hemlock. Buildings.
Areas eliminated. Boundary of future
Insufficient pine. Crew work.
Unshaded areas worked by Scout.
Scale:
Area:
533 Acres.

map and enlarged six times, thus giving a practical working scale of 868 feet to the inch. With the aid of a small box compass to determine bearings, and by pacing as a means of measurement, maps of surprising accuracy were obtained. Only definite boundaries such as streams, swamps, stonewalls and fences, power transmission lines or other features of a fairly permanent nature were mapped. Areas which did not contain sufficient pine to justify the cost of removing the wild ribes were eliminated; others were worked where the limited number of these bushes permitted their eradication by the scout-mapper, and those containing heavy concentrations of ribes, which required removal in order to protect adjacent pine, were marked and reserved for crew work.

As an illustration of just how this system operated in the block reproduced herewith, the following figures are given:

Total area of block	533 acres
Insufficient pine	209 acres
Eradicated by scout	240 acres
Future crew work	84 acres
Total	533 acres

It will be noted that with the eliminated area of 209 acres, together with 240 acres eradicated by the scout, a total of 449 out of 533 acres were excluded from the need of intensive crew stripping. On the basis of past control work in this town, which has averaged thirty cents per acre, had the 449 acres been eradicated by a crew, the cost would have amounted to $134.70. The cost of the scout, which included mapping this area, was but $40.50 thus saving $94.20 through this system.

The following tabulation gives the combined results of this project as conducted in thirty towns during the summer of 1932.

MAPPING AND SCOUTING PROJECT.

Acres Eradicated by Scout	Number Bushes Destroyed	Acres Eliminated Insufficient Pine	Acres of Future Crew Work	Mapped But Not Scouted	Total Acres Mapped or Scouted
54,828	41,878	14,240	16,699	17,947	103,714

It will be noted that on the 54,828 acres examined and eradicated by the scouts, but 41,878 currant and gooseberry bushes were destroyed. Since this number averages less than one to the acre, it is quite obvious that to have worked these areas by a crew would have been most uneconomical, especially so, when the cost might be expected to be from 25 to 50 cents or upwards per acre. The average cost per acre for eradicating and mapping the 54,828 acres was but 6.7 cents. Expenditures in this special project, alloted among 30 towns, and wholly from state funds, totaled $6,154.21. On the basis of the areas mapped, this project averaged a per acre cost of but 5.9 cents.

Aside from their value in any present or future control work, maps of this character are sufficiently accurate to form a basis for town property maps, since stone walls, fences, as well as streams—(often boundaries of private property)—are clearly shown. As a matter of fact it is worthwhile noting that a blister rust map of this type so interested certain town authorities, that a property map of their town was ultimately made.

Future of Control Work.

The objective of blister rust control is to complete as soon as possible all initial work, and to continue the re-examination of those areas first covered five or more years ago. It is hoped that the remaining uncompleted acreage, namely, 471,330 acres, may by advance scouting and mapping be reduced materially. At the same time, through such mapping of control areas, forest type maps of towns could be obtained.

In the re-examination of areas worked more than five years ago (the need for which is shown under the caption "Re-eradication") such work can be carried on at a very reasonable cost, ordinarily, for about 25 per cent of the cost of initial control. It is probable that considerable of the lands once cleared of ribes years ago, may not require further eradication. As stated elsewhere in this report, 14 towns have carried forward to completion such a re-examination, while 31 others have this work well underway.

The ultimate goal is to bring about adequate protection to all white pine areas, especially of immature growth, and thus permit the continued commercial growing of this species. Eventually, there should be no need of a special organization devoting its energies solely to this task. The Forestry Department greatly desires a division of the state into forest districts with an agent in each in charge of all activities pertaining to forestry. These district foresters should be competent to supervise blister rust control, fire prevention and other problems jointly. Already, two blister rust agents have charge of forest fire prevention in their districts, and this policy may well be extended. The states which are best organized today in forestry have adopted this system of forest districts, and such a plan appears to function economically and efficiently.

White Pine in New Hampshire.

Our knowledge of the acreage, volume and value of white pine in this state is still far from complete. From time to time various efforts have been made to arrive at some figure, but since no systematic survey has been carried on (which could be accomplished only at a considerable expense) we have to be content with less accurate results.

In 1924, the Forestry Department brought out the findings of a general study into the forest resources of New Hampshire. For white pine, the information secured indicated a probable total of 1,183,369 acres of merchantable, young growth and cordwood, with an estimated value of

$30,326,404. Through extensive scouting, in connection with blister rust control, much information has been added to our knowledge in certain localities as to the extent of white pine. The Federal agents engaged in blister rust control have since carried on investigations of pine areas throughout the state. From their personal knowledge of the forest growth, supplemented by the advice and opinion of local authorities, the following areas, volume and values were obtained.

The area of merchantable pine (80-100 per cent of the trees being white pine and over 6" in diameter) appeared to be 263,526 acres. A mixed type of 574,805 acres was recognized, in which 21-79 per cent of the trees were merchantable pine. Only white pine over 6 inches in diameter was included in this class. White pine reproduction (80-100 per cent pine and under 6 inches) totaled 548,225 acres. Forest types, restocking to white pine and classed by light, medium and heavy restocking, totaled 157,477 acres. The total of all of the foregoing types is 1,544,033 acres.

Basing the acres of merchantable growth at an average of 10 M feet per acre, and the two classes in the mixed type at 5 M and 8 M respectively, a total volume of 6,344,383 M board feet is obtained. This indicates an average volume per acre of 7,567 feet.

By establishing a valuation of $5.00 per M for all merchantable and mixed growth; $15.00 per acre for reproduction, and a value of 50 cents per cord (average of 10 cords to the acre) for the restocking or cordwood area, a total white pine value of $40,732,675 was arrived at.

If a stumpage value of $5.00 per M be considered by some as too high a valuation at the present time, attention is invited to the fact that this figure is less than the cost of stumpage as represented by taxes and carrying charges over a period of years. Most of the stumpage selling for prices less than $5.00 per M is in localities where operating

and transportation costs are greatly above the average, or where the timber is forced upon the market on account of the owners' inability to continue to pay taxes. While some differences of opinion may arise as to the acreage of white pine lands, the above estimates may be accepted as a fair and reasonable statement until more accurate figures are obtained.

The importance of white pine in the lumber industry of this state is apparent from the fact that during 1931 (the latest year for which reports are available) the cut of this species was 65 per cent of the total lumber cut, all other softwood species as well as hardwoods being included. Nearly half of the products manufactured by New Hampshire wood-working plants are made from white pine.

At the present time no one can say with any degree of assurance just what will be the future commercial value of white pine. Nevertheless, there exists another value, seldom considered and little appreciated, but which is likely to prove as great as its commercial worth.

New Hampshire each year is becoming better and more widely known as a recreational state and one possessing rare scenic attractions both summer and winter. Statistics, compiled by the State Development Commission, in co-operation with town authorities, indicates that $100,000,000 are invested in recreational property in New Hampshire. Hundreds of thousands of out-of-state persons annually visit our state on account of its forests, mountains and lakes, and an increasing number are purchasing property in which to reside for greater or lesser periods of the year. The forests add tremendously to the scenic features of the state. Without timbered slopes and valleys, much of the attraction would be lost. Forests provide cover for game, and are an important factor in maintaining water supplies and regulation of stream flow. Of the many species which go to make up the forest growth of our state, a very large percentage, probably as high as 65 per cent, is composed of

WHITE PINES, OR OTHER FOREST GROWTH, ADD MUCH TO THE ATTRACTIVENESS OF NEW HAMPSHIRE HIGHWAYS AND VILLAGES.

white pine. Inquiries made during the past year among, not only the summer population, but state residents as well, indicate the strong and prevalent feeling which exists that white pine from an ornamental and scenic standpoint alone, is immeasurably a part of our recreational activities. It is indispensable because no other tree of like beauty and appeal is adapted to or can naturally replace white pine on most of the soils of central and southern New Hampshire.

REGISTRATION OF ARBORISTS

BY ACT of the 1929 Legislature, all persons or concerns who advertise, solicit or contract to improve the condition of fruit, shade, forest or ornamental trees or protect the same from damage by insects or disease are required to secure a certificate from the Arborist Registration Board consisting of the State Forester, Commissioner of Agriculture and the Entomologist of the Agricultural Experiment Station. By the same act, it is not necessary to secure a certificate for work upon one's own trees or those of his employer or for work within the town of his legal residence. A registration fee of $2.00 per year is required.

The extreme variation in qualifications of applicants has been a difficult problem in registering and certifying these arborists. Some of the best qualified are representatives of established tree expert companies. Many applicants have had no technical training but of these some have had practical experience which makes them fully competent to engage in technical lines of spraying and pruning of orchard trees in addition to the general care of shade trees. There are others who have never acquired any technical knowledge of pruning or spraying or of tree surgery in general and are qualified at best to do only minor shade tree work. A few applicants are unable to read or write and it is obviously impossible for the Arborist Board to deal adequately with such cases. Large numbers of people out of work have caused an increase in doubtful applicants who in prosperous times would find other occupations. The Arborist Board has been in a quandary to deal fairly with all classes and yet protect the public against employing men entirely incompetent to handle tree work of a technical nature.

For the year 1932, the Board divided all applicants into

four rather distinct divisions: (1) Those interested in and competent to perform all classes of tree work including spraying and orchard pruning; (2) Those having all the preceding qualifications except orchard pruning; (3) Those having all these qualifications except spraying; and (4) Those who are not interested in or competent and properly equipped to undertake either spraying or orchard pruning but who are entitled to seek employment in trimming and general shade and ornamental tree work.

Of the total of 63 individuals and companies registered during 1932 there were 29 qualified in all classes, 15 where orchard pruning was excluded, 8 where spraying was excluded and 11 where both orchard pruning and spraying were excluded. This last group of 11 represented in a general way those who were least qualified and prepared to function as well trained arborists. Each certificate issued indicated the class or group in which the applicant was licensed. Inspections of work in the field were made wherever complaints had been received. A number of cases were investigated and certificates revoked in two instances.

The Arborist Board intends to require more specific proof of qualifications and to re-examine all applicants for 1933 in Concord and require a passing grade on written tests in each of five classes of work which the applicant may desire to carry on. These classes of work will consist of (1) pruning of shade and ornamental trees; (2) spraying of shade and ornamental trees; (3) pruning of orchards; (4) spraying of orchards; (5) tree surgery or cavity work. The certificates of next year will show which class or classes of work the arborist may perform. Examinations will be advertised in advance and held at stated times before and after the beginning of the calendar year.

The purpose of the Arborist Board in the future is to be able to guarantee that individuals and companies holding certificates from the State have been duly examined and found competent to undertake the character of arborist

work indicated in the certificate. Written tests are important but inspections of work done are necessary also and will be made as far as possible. The Board will insist on a reasonable improvement in knowledge from year to year of those arborists whose grades are low but not sufficiently low to warrant at first the denial of certificates. Information on sprays, insect pests, results of experimentation, new methods of treatment, etc., will be compiled and furnished to arborists or applicants for certificates of the different classes showing the fields within which they should be prepared and well posted.

Most of the arborists registered to date have co-operated with the Board to build up a body of responsible and efficient men who will be a credit to the State and a guarantee to tree or orchard owners who may engage their services that these men are reliable and that their work will be correctly done. More time will be required for results to be fully accomplished. Those arborists who will not co-operate and who attempt to evade the legal requirements for registration will be duly prosecuted.

JOHN H. FOSTER,
State Forester.

ANDREW L. FELKER,
Commissioner of Agriculture.

W. C. O'KANE,
Entomologist, Agricultural Experiment Station.

} ARBORIST REGISTRATION BOARD

TREES AND ROADSIDE GROWTH

THERE is much confusion and misunderstanding in the public mind about the status of trees and other growth within the limits of our public highways. The actual width of the highway limits, varying from two to four rods, often is as uncertain as the proceedings under which they were originally laid out. Many laws have been passed to protect and improve the trees and growth within highway limits. Court decisions have rendered sections inoperative, resulting in amendments which have not clarified the situation. There are questions of jurisdiction and of liability for damages which only the courts can determine. Division of control and authority among various local officials and between public authorities and the abutting property owners results in lack of attention and frequent neglect by all public agencies which should assume responsibility. There is wide spread abuse on the part of many who use the public highways as well as by those who work on them. The majority of abutting property owners take little interest in the beautification of roadsides beyond the immediate proximity of their residences. There is far less interest in the trees along country roads than those within village limits. To many, the importance of projecting the roadside improvements of our better kept towns out into the rural districts has not yet made any appeal. Inability or failure of local communities to assume jurisdiction of country roadsides with the idea of beautifying them brings about the haphazard conditions which exist.

Much progress was made more than thirty years ago to protect roadside trees by tagging them as public property. Except for a court decision that such trees were private property, it is probable that interest in improvement of the roadsides would have gone forward through the years with

an entirely different public attitude. One or two or a few carefully selected trees saved in front of every timber lot which has been operated beside the highways during the last thirty years would in itself have strikingly changed and improved the appearance of hundreds of miles of roadsides without appreciable loss to any one person or concern. Stumpage owners would have saved time and money spent to meet the legal requirements of slash disposal along highways. With the present policy of the Highway Department to acquire tree rights on all new highway locations and the tendency of the State to assume responsibility for the cost of reconstruction and maintenance of all trunk line and state aid highways, it is entirely reasonable to expect that public interest in and jurisdiction over the roadsides and the growth thereon will steadily increase.

There is a desire on the part of our few earnest tree wardens and many other citizens of towns to understand the roadside tree laws, the duties incumbent upon tree wardens and other public officials, and the field of opportunity which exists in the different communities to protect and improve the trees along their roadsides. The responsibility in the past has been essentially a local one and whatever success has been attained must be measured by the interest which each local community has taken in the welfare of its trees, aided by whatever help the State could give through its Highway and Forestry Departments. Funds are essential and towns and the State should expect to appropriate for the purpose but this does not mean that large amounts must be expended. Local interest is exceedingly necessary and if this exists, much can be accomplished with a small amount of public funds.

There should be a good tree warden for the town, not necessarily one skilled in arborist work, but a man or woman with an interest in the welfare of the trees, devoted to and willing to serve the community at personal sacrifice if necessary, essentially fair minded and unprejudiced, and

withal determined to accomplish results. These are strong qualifications but persons capable of meeting them can usually be found though it may require some persuasion to enlist their services. Local welfare organizations, clubs and other groups should sponsor and assist in securing the right type of person as tree warden. Women have proven their interest and capacity for this service either as tree wardens or in helping to secure good wardens. Under the present law, appointments of tree wardens in towns are made by the State forester where sufficient interest prevails and recommendations of suitable persons are made either by the selectmen or others in the community. It is most desirable that recommendations should first be approved by the selectmen.

Public Interest in Roadside Trees

Previous to 1860, there appears to have been little or no legislation enacted or community interest shown in the welfare of roadside trees although many fine old trees planted or protected and still standing are evidence of individual effort before that date. In 1861, the first general statute was passed for the preservation and protection of shade trees which provided that towns and cities should have control of all shade trees situated within the limits of public streets or highways, with power to make laws from time to time for the protection and preservation of the same. Owners of real estate desiring to remove any shade trees situated between the carriage path or sidewalk or within the limits of any public street, were required to obtain leave of the selectmen of the town or mayor and aldermen of the city and conform to laws which the town or city may have provided relative to shade trees.

In 1868, towns were authorized to raise money not to exceed forty cents per ratable poll for the planting of shade trees and in 1875 an abatement of taxes was authorized to any person who would set out and protect shade trees by any street or highway adjoining his land. In 1889, towns

could receive and hold in trust funds donated for shade tree purposes.

The next important step was taken in 1895 when towns and cities were authorized to designate not more than one tree one inch or more in diameter in every 66 feet within the limits of highways for shade and ornament. Such trees were to be marked by metallic washers stamped with the seal of the State and held by nails or spikes four to six feet above the ground, said washers to be furnished by the Forestry Commission which was created two years previously.

A radical change was made in the roadside tree law in 1901. Mayors of cities and selectmen of towns were required to appoint one or more tree wardens, who should be discreet persons. The seal on designating tree tags was changed to the letters "N. H." The earlier provision limiting the number of trees or the distance between designated trees was unfortunately repealed, as subsequent events proved. It was provided that if any tree designated proved to be private property and the owners refused to release or convey their interest to the municipality, the tree warden should acquire the trees by purchase or condemnation. It happened that in the following year, a tree warden who proved not to have been discreet, designated a considerable number of trees along an ancient highway, presumably a pine timber lot extending to the edge of the road. The owners disregarded the tags, cut the trees and were brought into court for violation of the act. The case was carried to the Supreme Court and a decision rendered in March 1904 which effectively established the fact that the trees belonged to the abutting owners.

The opinion of the Court was far reaching because of the public interest in roadside trees which then existed but immediately declined and the importance of the subject at the present time. Trees cannot be deemed to have been taken by the public at the laying out of a highway if they

do not interfere with or obstruct the public use of the road and which are natural profits of unused land not needed for highway purposes. As the Court decided that these trees were not acquired by the public when the highway was laid out, they could not be taken after a subsequent time without offer of compensation. It was indicated that the legislature never intended to so construe the public rights in trees by the laying out of highways. This ruling would doubtless never have been made if only shade trees as provided in the 1895 act and repealed in 1901 had been involved. Being valuable timber trees, "natural profits of unused land," had a dominating influence in the case. Whether such trees were useful for lumber or for shade did not, however, in the judgment of the Court, determine the question of ownership. The abutting property owner was entitled to the beneficial use of the trees, subject to reasonable regulations as the public use of the highway might require. The land owners' right to trees beside the road was thus fixed and settled until or unless the trees are legally acquired by the public. Authorities may trim or remove trees which interfere with the use of the highway but they have no right to use the wood so cut even in the repair of the highway.

No further legislation concerning roadside trees was enacted until 1909 when the clause about taking trees for public use was enlarged and attempts made to clarify it. In 1925, the first four sections of the roadside tree laws were rewritten, placing the authority for the appointment of tree wardens with the state forester. No changes have since been made and the following explanations of the various sections in their relation to the public welfare are based upon the laws as they now stand. This brief history of roadside tree legislation is noteworthy in the fact that it indicates a widespread public interest, increasing with the years following 1861 until the adverse decision of the Court, after which there was little interest or activity. Considerable attention to the roadsides has been evident during the

last few years. Problems relating to bill-boards, trimming on account of wires, highway improvement in general, and an awakening desire to eliminate whatever is offensive or objectionable along the principal roadsides, now clearly emphasizes a new and more intimate relationship in the public mind between the borders of the highway and the highway itself.

Town Tree Wardens

The act of 1925 (Chap. 93, Sec. 22 of the Public Laws) now in effect, provides that the selectmen or other citizens of any town may nominate for appointment by the state forester one or more persons known to be interested in planting, pruning and preservation of shade and ornamental trees and shrubs in public ways, parks and grounds. After investigation, the state forester may choose and appoint from the persons recommended one competent person to be the tree warden for said town who shall serve for one year or until a successor is appointed. The state forester may remove any tree warden from office. The tree warden shall perform the duties hereinafter specified and shall be allowed such compensation for services and expenses as the selectmen may deem reasonable.

The purpose of the above section is to provide a competent tree warden under certain State supervision in each town where there is sufficient interest. Cities are not specifically mentioned in the section and generally speaking municipal trees receive more or less care and supervision by some department of each city. Having been appointed in a town the tree warden must look to the selectmen for compensation and expenses. Such sums of money as the town may appropriate, or as are available, may be used to carry out the tree warden's work. (Chap. 93, Sec. 26).

In a general way a town tree warden represents the public in its relation to the trees along the roadsides and in other public places. It is his duty to work with the selectmen,

and relieve them of such responsibilities as relate to the trees. He should seek to create public interest in the welfare of the trees. It is necessary for him to be familiar with tree conditions, desirable that he make a census of the parks and roadsides and a plan showing the condition of the trees, where trees should be planted in the interest of beautification, and what trees need to be repaired or removed in order to improve the appearance. An enlarged map of the town showing the traveled roads, with the names of abutting property owners, condition of the roadsides, need of improvement work, cost, etc., helps to picture the local situation to the townspeople. At town meetings and before groups and local organizations, the tree warden should be in a position to present tree facts resulting from his investigations which will enlist their cooperation and secure funds for needed work. In this connection, organizations of Scouts and 4-H Clubs are helpful sources of active co-operation. Individuals should be enlisted, particularly owners of property along roadsides, to assist with funds, gifts of trees and personal services and by their consent to the setting out of trees and shrubs, pruning and selection cutting. Tree wardens should be active in securing gifts of roadside trees and strips of land to the towns.

Since town road agents and state highway patrolmen, as well as the selectmen, are custodians of the highways and are responsible for the condition of travel over them, the tree warden should seek their aid and give his assistance to the end that brush cutting and trimming be done with due regard to roadside beautification.

Pruning, spraying, cavity work or removal of shade trees within village limits or elsewhere along the highways should not be done without the knowledge and approval of the tree warden. He should definitely supervise and direct all repairs, spraying or other tree work paid for by the town.

Where cutting and trimming are done by or for public

service companies in connection with lines of wire, the tree warden should not only represent the public but also the property owners whose trees are involved. No agent of a wire company should undertake such work in a town where there is a tree warden without consulting him and securing his help and approval. Property owners having confidence in the tree warden may rely on him to see that this trimming of roadside trees is properly done with due regard to the trees. Perhaps no service the tree warden may render his townspeople is more important than this.

It is a duty of the tree warden to conduct hearings and attend conferences involving the removal of trees, carrying out of provisions of the law as to condemnation of private trees, trimming or removal of trees by wire companies, and cases in connection with street widening and where appeals have been made to the selectmen. To see that offenders are prosecuted, where sufficient evidence of violation of the roadside tree laws can be secured, is a part of the tree warden's duties. There are many ways for an active tree warden in most of our towns to safeguard existing shade trees, plant new ones and repair those in need of attention. His efforts to prevent cutting and mutilating trees and shrubs, and dumping of rubbish, difficult as these are, will win merited approval of the public generally.

The following is a list of the legally appointed town tree wardens and the towns for which they have been appointed for the year 1932:

John G. Marston, P. O., Suncook ..... Allenstown
George F. Brown ..... Boscawen
D. W. Porter ..... Brookline
Mrs. Sadie Cheney ..... Campton
Everett R. Rutter ..... Derry
Lawrence W. Rathbun ..... Dublin
Jesse R. Hepler ..... Durham
L. P. Ladd ..... Epping
Alvin E. Foss ..... Exeter

John S. Hall ..... Farmington
Harry D. Munsey ..... Hampton
John M. Lamb ..... Hinsdale
Harold Hardy ..... Hollis
Robert D. Brown ..... Hopkinton
Charles E. Chamberlain, P. O., Jaffrey Center ..... Jaffrey
Arthur Tucker ..... Kingston
James L. Dow ..... Lancaster
Eloi A. Adams, P. O., R. 6, Dover ..... Madbury
Charles Robinson ..... Marlboro
Mrs. Ruth L. Plummer ..... Milton
Ira S. Littlefield ..... New London
Raymond O. Hobbs ..... North Hampton
Harry W. Smith, P. O. Groveton ..... Northumberland
Mrs. A. L. McIndoe, P. O., Center Ossipee ..... Ossipee
Frank T. Garland ..... Pittsfield
Fred S. Rowe ..... Plymouth
Geo. W. Nutter ..... Rollinsford
William N. Davis ..... Seabrook
Leslie Smith, P. O., R. 2, Campton ..... Thornton
Mrs. Lillian L. Gordon ..... Warren
George Warwick, Jr., P. O., Keene ..... Westmoreland
Alvin Hatch ..... Wolfeboro
Ira E. Hanson, P. O., North Woodstock ..... Woodstock

Public Control of Roadside Trees

Towns may make regulations from time to time for the planting, protection and preservation of the shade and ornamental trees situated upon any lands within the limits of the town appropriated to public uses. (Chap. 42, Sec. 39). This shall not be construed to deprive the owner of real estate of the right to plant, rear and protect any trees between the carriage path and the sidewalk in any public street or highway on which his estate is situated, if it does not interfere with the public travel. (Chap. 42, Sec. 40).

Towns shall have control of all shade or ornamental trees situated within the limits of their highways which have been or may be acquired by gift or purchase, or planted by or with the advice of the tree warden, or by condemnation by the tree warden. (Chap. 93, Sec. 23). Whenever any party, at a proper time of year, shall present to a town well grown nursery trees, the tree wardens may set out such trees in the highway, cemeteries, commons, school house yards and other public places, as indicated by the donor, and protect the same at the expense of the towns. (Chap. 93, Sec. 29).

Any young shade or ornamental tree planted within the limits of a public highway by the tree warden or by any other person with the approval of the selectmen or the mayor, or any young seedling tree or sprout left within the limits of the highway and designated by the tree warden to be preserved for its future value as a shade tree, shall become the property of the municipality; provided that the abutting land owner having been notified of the intention of the town to take and preserve such young tree shall make no written objection to the tree warden within thirty days of the date of such notification. (Chap. 93, Sec. 30).

Shade and fruit trees that have been set out or marked by the abutting land owners or by the tree warden, and young trees standing at a proper distance from the highway and from each other, shall be preserved, as well as banks or hedges of bushes that serve as a protection to the highway, or that add to the beauty of the roadside. (Chap. 93, Sec. 31).

Mayors of cities, selectmen of towns and county commissioners for unorganized places shall annually during August or September, and at other times when advisable cause to be cut and disposed of from within the limits of the highway all trees and bushes that cause damage to the highway or to the traveling public, or that are objectionable from the material or artistic standpoint. (Chap. 93, Sec. 31).

The selectmen of a town or the highway department of a city may contract with any owner of land abutting a public highway to cut, trim and improve the roadside growth along said owner's property, and for all such work properly done and approved by the tree warden, may allow and cause to be paid to such owner such sums as in their judgment, with the advice of the tree warden, justly represent the value to the town of the improved condition of the roadsides. (Chap. 93, Sec. 32).

On all state roads and trunk-line highways the plan of carrying out the provisions regarding trees and roadside growth shall be under the supervision of the State Highway Department. This department shall make such rules and regulations for the purpose as shall, in its judgment, seem for the best interests of the state. (Chap. 93, Sec. 36).

Acquiring Tree Rights

One of the purposes of the roadside tree laws is to control and bring into public ownership such trees as are reasonably necessary for shade and ornamentation. The following methods of acquiring trees are possible under the law:

1. By gift of the abutting owners.
2. By purchase at a fair price if funds, either public or private, are available.
3. By setting out trees or protecting natural seedlings and sprouts by or with the advice of the tree warden.
4. By condemnation.

1. Gifts by abutting owners are by no means uncommon or impossible to obtain. Ordinarily they should be made to the town or city, especially if title to the trees and not the land is given. The state has during recent years accepted a number of roadside strips of land with valuable standing trees. The towns own many others, either strips along the roadsides or larger areas of the nature of town

forests. The strips are of the growth alone or of the land and growth.

Title to particular trees may be given to the town or city by recording a notice of such gift from the donor with the town or city clerk, indicating the number, variety and location of such trees. Consent of the land owner to the tagging of specific trees and a record of the consent filed with the town clerk by the tree warden is probably sufficient. In all important gifts it is desirable to receive and record a suitable form of deed.

Some years ago the Society for Protection of New Hampshire Forests through its Highway Reservation Committee prepared a printed form of shade tree deed for the use of land owners desiring to donate their roadside trees and growth, enumerating the purposes of such gifts and providing (a) that such trees shall be preserved and cared for by the public officials having responsibility under the laws, together with the right to plant trees; (b) that no such trees shall be severed except by the public officials having responsibility after consultation with grantor, and when severed, the wood or lumber to become the property of the grantor or his successors entitled to the land; (c) that the title conveyed shall revert to the grantor, his heirs and assigns, if and when said highway shall be discontinued and (d) that said conveyance shall in no way affect the title of grantor to the premises except as provided. Many deeds to roadside trees within the limits of the highways have been received and recorded as a result.

It is of particular importance that roadside areas representing unusual and distinctive types of growth and value to the highways should wherever possible be brought under public ownership and preserved. To purchase them in any number is out of the question. Public spirited owners who have cherished such property and can be persuaded to perpetuate it by gift to the town should feel well repaid in the knowledge that the trees will be preserved for the future

to enjoy. Gifts of roadside areas may very appropriately be known as war memorials or given the name of the donors and suitable tablets or markers erected.

Some of the noteworthy donations of roadside land and growth are given below. The Society for Protection of New Hampshire Forests reports 125 such reservations, aggregating 35 miles along the highways.

Tamworth Reservation, a gift of large pines to the town by the late John S. Runnells and Charles P. Bowditch, extending one-half mile on both sides of the highway just north of Chocorua Lake; also a very recent gift to the state northward of the preceding and in memory of the same donors.

The Dinsmoor Woods and the Faulkner and Colony tracts, old growth pine strips along the beautiful Five Mile Drive in the city of Keene.

A part of the Cathedral Woods at Intervale given to the town of Conway.

The Charlotte Stevens lot on the road to Elm Hill in Nottingham, a gift to the state of over 4000 feet along the highway.

A series of five different strips of fine timber along the River Road for the greater part of five miles, either given to or purchased for the town of New Boston and suitabl marked as the Langdell, Swanson, Coleman, Fellows and Greer Memorial Groves.

The Lord pines, a gift to the state by Frank S. Lord extending half a mile along the highway, partly on the East side trunk line, in Ossipee.

A gift to the town of Ossipee of 2½ miles of roadside along the new trunk line construction by Mr. and Mrs. William M. Lord.

General Stark Memorial Forest, a gift to the town of Dunbarton on the Weare road, by members of the Winslow family.

A few of the standing timber reservations, not including

land, are along the College Road from Center Harbor to Holderness; on the Winter Road leading from the main road from Madison to the Madison Station; part of the Gale River Road from Franconia to Bethlehem; by the Libby Museum on the main road Wolfeboro to Tuftonboro; along the Prescott Road and the road from Hill to Gaza in Sanbornton; and the Swamp Road from Effingham Falls to the Four Corners in Effingham.

2. Purchases of particular roadside strips are possible when funds either public or private are available. Towns may at any legal meeting grant and vote such sums of money as they shall judge necessary to acquire, set out and maintain shade and ornamental trees in highways, cemeteries, commons and other public places. (Chap. 42, Sec. 4, XVI). Towns may at any legal meeting grant and vote such sums of money as they shall judge necessary to purchase, manage and improve lands for the purpose of growing wood and timber. Any lands so purchased shall be managed under the direction of the state forester. After deducting necessary expenses, the net proceeds from the sale of wood and timber from such lands shall be paid into the town treasury. (Chap. 42, Secs. 15, 16, 17.)

Clubs, organizations and individuals may and frequently have raised or furnished funds to acquire shade trees or forest land to be held by the towns according to the above sections. The Society for Protection of New Hampshire Forests has on many occasions sponsored the purchase from private contributions of specific areas to be owned by the towns and managed under the direction of the state forester. In some cases joint private and town funds have been used to acquire land in this way, a notable example being the Dewey Woods of 100 acres covered with fine old timber on the road north of Sunapee Village, two-fifths of which was paid for by the town of Sunapee and the balance from contributions raised by the society.

Wadleigh Park of 40 acres on the road around Kezar

Lake in Sutton was purchased for the town through private contributions to the Village Improvement Society of North Sutton. The Primeval Pines on the road near North Sutton, five acres, was a joint purchase by the town of Sutton and the society. The William C. Levy Reservation, eight acres, on the state highway in Alton, was purchased through town appropriation and other funds raised by a local citizen's committee. The Pot-Holes and Bear Den Reservation of 100 acres four miles north of Keene on the Dartmouth College Highway was purchased by citizens of Cheshire County and members of the society and deeded to the state.

3. There is no doubt but the public is acquiring tree rights in roadside trees as a result of planting or whenever any seedlings or sprouts are designated and preserved for the protection and improvement of the highway. There should be more planting along country roads where trees are not injurious to nearby crops or otherwise objectionable to the land owner. This is particularly true along monotonous stretches of straight and unshaded road or to shield from view old gravel pits, dumps and other objectionable features in the landscape.

Trees may be purchased from local nurseries or transplanted from wild stock. Elms of suitable size are easily found along most stream bottoms where they are of no value. Coniferous trees of small size are furnished to the towns for roadside planting without charge by the Forestry Department. Other trees and shrubs are grown at the State Nursery for the Highway Department and are used for decorative planting at road intersections, sides of cuts, in abandoned pits and along sections of new construction. Much credit is due Mr. F. A. Gardner and the State Highway Department for accomplishments along these lines and the widespread interest created during the past year or more. This splendid work should be continued as an important part of State Highway Maintenance.

Very attractive and instructive forestry roadside demon-

strations have been made and signs erected in many parts of the state by 4-H groups of boys working under the State Extension Service.

The saving of desirable young trees from natural growth, either seedlings or sprouts, where they are most needed along town roads, is largely a matter of education and persuasion of the local road agents, who each year devote a considerable time to cutting and removing all small growth. Small trees and clumps of bushes irregularly spaced here and there well back from the ditches where they do not interfere with travel and winter road plowing or with the view should be permitted to grow. Trimming of live limbs is in many cases not desirable. This simple expediency at little or no expense has widespread possibilities in country roadside beautification. As selected trees develop more leaf surface and increasingly shade the ground each year the necessity of mowing down other undergrowth decreases with a consequent reduction of cost of roadside maintenance. Evergreens, singly or in clumps, should be encouraged particularly on north and east sides where they will not shade the road unduly. They offer a pleasing variation growing with deciduous trees. Evergreens are also desirable as wind breaks and as permanent substitutes for snow fences which must be set up and removed each year. The range of native species from which choice shade trees may be selected and saved is usually quite large. Elm, sugar maple, white ash, red oak, hickory, any of the birches except gray birch and any conifers except pitch pine are always desirable. As much variety as possible and the use of certain desirable species not natives in the state should be encouraged.

Straight lines of trees should be avoided. It is much more natural and pleasing if some of the trees are considerably nearer the road than others. This should be kept in mind when cutting trees and undergrowth back from the traveled part and selecting trees to be left as well as in

planting trees. It is needless to say there are places where attractive views may be had and on the inside of dangerous curves where no trees or shrubs should be allowed to intervene. There should be occasional vistas cut clean between the roads and nearby lakes and rivers and where views of mountain peaks and ranges are otherwise concealed. It should be expected that the tree warden more than any other person in town appreciates the artistic in arrangement and is equally zealous in bringing this idea to bear upon town officials and individuals who have authority to cut along our public highways.

4. Acquiring tree rights by condemnation may in practice be regarded chiefly as an emergency action to prevent the removal of roadside trees of unusual and peculiar value to the roadside. Such action must be taken quickly if the trees are about to be cut. There have been many cases where trees were cut down while steps were being taken to save them. Delay is often necessary because no funds are available immediately to pay. If the owner is friendly and willing to give the public a chance to purchase at a fair price, condemnation would be unnecessary. A few years ago a group of citizens of Merrimack succeeded in purchasing some attractive growth near the state road on Baboosic Brook and within a short distance of the town hall after part of the lot was cut. The town took over the area as a park and reimbursed the group of purchasers at the next annual town meeting.

An active tree warden can render at times very prompt and appreciated service to his community through his power of condemnation. This means appraising the fair value of the trees to be saved and serving notice upon the owner of such taking, stating the number of each variety, location and value as fixed by the tree warden or a committee selected for the purpose; also filing a copy of such notice attested by the tree warden with the town clerk. If the owner is satisfied with the value, the tree warden shall

pay him. If the owner is dissatisfied, he may, within thirty days but not afterwards, apply to the selectmen to assess the damages. Proceedings then are the same including the right of appeal as are provided in assessment of damages in laying out of highways by the selectmen; such damages, if any, may be awarded as shall be legally and justly due the land owner. (Chap. 93, Sec. 24).

Damages to provide for maintenance and planting may be assessed to abutting owners on any existing highway, (Chap. 93, Sec. 35) by petition therefor and proceedings as in the original laying out of the highway, so that when paid there shall be a public easement to protect, preserve and renew the growth. The same may apply to any new highway laid out. It is unfortunate that in the early laying out of highways the proceedings did not clearly include the trees growing within the highway limits.

Marking Trees

The roadside tree law states (Chap. 93, Sec. 25) that trees acquired by the town shall be marked for identification in such manner as the State Forestry Commission shall approve and the tree warden shall keep a record of such trees, such record to show the approximate location, name of abutting land owner, variety and approximate diameter, and date of acquisition.

It seems extremely doubtful if our tree wardens should again undertake to designate and mark trees along the highways in order to indicate public ownership. To nail metallic disks to trees along our traveled ways is not in keeping with present day ideas of roadside attractiveness. Many of the disks would be removed or mutilated with the necessity of renewing them frequently. The cost in time of the tree wardens and the expense of the disks would be large. Disputes would arise even though tree wardens exercised every precaution. Tagging the trees in accordance with law would result in many claims for compensation. Roads are everywhere in process of widening and

realignment and roadsides are surely, if not rapidly, coming into public control. If no other way were open to reach the final objective of public ownership of the trees along the roads than to mark them as acquired from individual land owners and keep them marked, the many obstacles in the way and the tedious and expensive process involved would seem to make the task not worth while. The State Forestry Commission has taken no steps to revive the practice since its discontinuance following the adverse decision of the Court.

Roadside trees of high timber value either have or will largely disappear except as preserved by the public and will be replaced by scattered native and planted trees of ornamental appearance but low market value. It is most important that care and attention in selection, trimming and protection be given by tree wardens and all highway agents of the towns and state. A constantly increasing emphasis should be placed on trees for their beautification of the roadsides. It would seem that in time custom and general understanding will establish ornamental and beneficial trees looked after by the public along the roads as belonging to the public. Education can do much to bring this about. More frequent planting and care in saving desirable young trees during the annual brush cutting work will hasten the understanding of public ownership. A test case in the courts at some future time when roadside trees have been given the public care and attention they deserve may finally establish public ownership of the trees in fact.

Cutting or Removal of Trees Along Highways

As long as trees are admittedly owned by the abuttor he alone has a right to remove them, unless the tree warden takes steps to condemn and acquire them for the town. However, all trees and bushes that cause damage to the highway or the traveling public or that are objectionable from the material or scenic standpoint may be removed by proper public authority. (Chap. 93, Sec. 31).

Whoever desires the cutting or removal in whole or in part of any public shade or ornamental tree (Chap. 93, Sec. 27) may apply to the tree warden who may grant or deny permission if the trees are outside the residential part of the town or give a public hearing after posting notices in two or more public places in town and also upon the trees which it is desired to cut. No tree within the residential limit shall be cut by the tree warden, except to trim it, without such hearing. His decision in all cases shall be final.

It is unlawful to cut, injure or deface any public shade tree or post any notice, advertisement or other device, or to paint or mark such tree, except to protect it with permission of the tree warden; or to carelessly suffer any horse or other beast to injure or destroy such tree within the limits of any public way or place. (Chap. 93, Sec. 28).

Persons violating the roadside tree provisions shall be fined not less than five nor more than one hundred dollars. (Chap. 93, Sec. 37). Wilful, wanton or malicious acts whereby trees placed or growing for ornament or use in any yard, street or other place, or whereby the property of another shall be injured to an amount not exceeding fifteen dollars, carry a penalty of not more than twenty dollars, or imprisonment not more than six months, or both. If the injuries exceed fifteen dollars, the fine may be not more than one hundred dollars, or imprisonment not more than one year, or both. (Chap. 380, Sec. 14).

Under the above provisions there is ample protection for trees planted or growing along roadsides, whether in public or private ownership, if evidence can be secured. Thefts of Christmas trees and the cutting of small evergreens for decorative purposes from along the highways are common practices which are not receiving sufficient condemnation by the general public. It is inexcusable to peel white birches but the removal of young Christmas firs and spruces, as well as laurel and other greenery which give pleasure to

many people and variety along the roadsides and are not abundant over much of the state, is a flagrant disregard of the property of the owner and the rights of the public which should be prosecuted to the limit of the law.

Cutting to Maintain Lines of Wire

Inexcusable damage to roadside trees has been done throughout the length and breadth of the state wherever lines of wires border our highways. Property owners have been ignorant of their rights, lacking interest in their trees, or intentionally lenient because they appreciated the benefits which the wires brought to their homes and did not wish to impede the construction or interfere with the maintenance of the lines. Public service companies or their agents have taken advantage of land owners in countless instances and slashed their trees with total disregard of ornamental values and the beauty of the roadsides, often not even consulting the owners beforehand. At other times they have told owners that the cutting and destruction of the trees were necessary and forthwith proceeded to execute the work. It has been and is now a common practice to secure from selectmen blanket authority to carry on their line clearing within a town and then go ahead, disregarding individual property owners unless they vigorously protested.

A change for the better has come about more recently. This has been due to a more intelligent interest on the part of property owners and the desire of public service companies to please their subscribers and avoid costly litigation. It is coming more and more to be the practice for companies to employ experienced arborists to supervise the work and contact property owners and town authorities. The land owners knowing that the trimming is in experienced and more friendly hands is usually quite willing to trust the work to be done. The services of a town tree warden to exercise general supervision over line cutting can be exceedingly helpful to the property owners and also to the company.

Chapter 97, Section 5 of the Public Laws says "No person or corporation shall have a right to cut, mutilate or injure any shade or ornamental tree, for the purpose of erecting or maintaining their line, without consent of the owner of the land on which it grows; or if his consent cannot be obtained, unless the selectmen, upon petition, after notice to and hearing the parties, decide that the cutting or mutilation is necessary, and assess the damages that will be occasioned to the owner thereby; nor until the damages are paid or tendered." The tree warden or his authorized agent shall represent the interest of the public at any hearing whenever a public service corporation shall desire to cut or remove any shade or ornamental tree in accordance with the above provision, or may have caused damage to such trees. (Chap. 93, Sec. 25).

It is obvious that property owners are fully protected under the law and that they need an active tree warden in town who knows the law and will safeguard their interests as well as those of the community in general. The company whose line of wires runs along a highway must see that limbs do not interfere but it has no license to cut without permission or offer of compensation and there is a right way to get results, even if this requires the changing of a pole or the covering of the wires. At least the trimming can be balanced to leave the trees shapely. The company must decide which of the right ways the results can more cheaply be attained.

Disposal of Brush Along Highways

Prompt disposal of cut brush is most desirable both on account of appearance and as a help in fire prevention. The laws are explicit in regard to lumber slash and brush cut by towns or other agencies. Whoever as stumpage owner, operator, land owner or agent cuts or causes to be cut any timber, wood or brush shall dispose of the slash caused by such cutting in such a manner that said slash shall not remain within 25 feet of the nearest edge of the traveled part

of any public highway. The penalty is a fine not more than $25 for each one hundred linear feet or fraction thereof from which the slash is not properly removed or disposed of within thirty days of the time of such cutting. Any owner or operator who cuts wood or timber during the winter, after November, shall have until May first in Grafton, Carroll and Coos Counties, and until April first in other counties, to remove this slash in accordance with these provisions. (Chap. 191, Secs. 47 and 51). The Forestry Department, charged with the enforcement, looks to the owner of the stumpage as the one primarily responsible for the disposal of lumber slash and he is not relieved of responsibility by virtue of having contracted with another to do the cutting.

Whenever any trees or brush cut along the highway are disposed of by burning, the cut trees or brush shall be removed a safe distance from any adjoining woodland or from any tree or hedge designated or desirable for preservation, and such burning shall be done with the permission of the forest fire warden. If any cut brush has been left within the limits of any public highway for a longer period than thirty days the state forester may complete the removal of such brush and assess the costs thereof against the party authorizing or causing such nuisance. If the costs are not paid within a reasonable time they may be recovered in an action brought by the attorney-general upon complaint of the state forester. (Chap. 93, Secs. 33 and 34).

Along our state highways and principal traveled roads, cut brush as a rule is promptly and properly disposed of, usually by trucking the brush to open gravel pits or other safe places. Town road agents are the most frequent offenders on back country roads, where there is a tendency to pile the larger brush against fences or walls, leave the smaller brush scattered over the roadsides, or else burn it where injury often results to valuable shade trees. The

usual excuse for failure to remove the brush or burn it properly and legally is lack of funds, those responsible having spent all they had available in cutting and saved nothing for brush disposal. Abutting property owners sometimes have cut brush within the 25 foot limit and if the amount is small, they may evade requirements. It is rarely necessary to remind public service companies of their obligations in this regard. While the tree warden is not directly charged with matters of brush disposal, his interest in roadside beautification justifies every effort on his part to see that slash and brush areas within the 25 foot limit are cleaned up, failing in which he should report serious violations to the Forestry Department.

RURAL LAND PROBLEMS

MANY rural land problems need detailed study and careful analysis. These problems are intimately concerned with land values, land utilization, tax delinquency, forest and other industries, accessibility to markets of farm and forest products, trends and outlook as to future uses of land and other economic and social conditions. Stream pollution, the protection of water supplies, storage of water in small streams and the preservation of wild life enter into the problem of land use. Something of a detailed classification of land and the future uses to which it can best be put as determined by soil conditions, forest cover and other conditions are necessary as a fundamental basis. The burden of carrying unproductive farm and forest land at high valuations is a serious problem to land owners at the present time. Economies are urgent but these alone will not solve the land problems.

Land abandonment has been going on for a hundred years or more. This does not mean a decadent agriculture for much land has been cleared which never should have been and good land is being farmed more efficiently today than ever before. The back to the land movement is actually taking place for one purpose or another associated with agriculture or some other industry, recreation, or the desire of industrial workers of towns and cities to live better and more cheaply in nearby country districts.

There has never been in the past any amount of tax delinquent lands in New Hampshire as in regions of some other states where attempts were made to farm cut-over lands which had no agricultural value or where owners of cut-over land could see no future in holding their lands for timber production purposes. In New Hampshire, owners have been willing for the most part to carry cut-over and

young growth timber lands even at high valuations as long as they had the funds to pay the taxes and stumpage values were high. We must recognize that the lumber business in New Hampshire during the last thirty years or more has largely centered around a crop of pine timber which has grown up and matured on land once farmed and that these lands though potentially promising must await the growth of a new crop of timber. Many thousands of acres of forest lands do not promise returns in marketable timber products for many years to come. Under the conditions existing at the present time, it is probable that more sub-marginal farm land and cut-over forest land will become tax delinquent each year.

We hear much today about sub-marginal land, removing from agricultural use those not adapted to farm products and saving costs in rural schools and roads. Much is being written about public ownership of forests, parks, sanctuaries, public hunting grounds and for other recreational purposes. Problems along these lines are being discussed in other states and progress has been made in studying and developing policies of scientific value as guides to the future. Rural planning has even wider possibilities of usefulness than city planning which is rapidly coming to be accepted as necessary. Resources in land, labor and capital should be utilized in the future more nearly according to intelligent planning which is the result of study, education and legislation supported and entered into by those in every community who have the welfare of the state at heart.

The study of land may be very broad or confined to more limited aspects such as agriculture, recreation and forestry. The Iowa Conservation Plan is to make available to the public the best uses of the state's soils, woodlands, streams, lakes, marshes and scenic and historical features. New York's survey and program of reforestation has resulted in a constitutional amendment to acquire and reforest in the name of the state a million acres of sub-marginal farm

lands during the next twenty years. A Vermont Commission on country life under 16 different committees has been working for the past three years for the betterment of rural conditions in that state. Massachusetts has a commission on the needs and uses of open spaces. Illinois, Pennsylvania, West Virginia and other states are working on plans of far reaching importance.

New Hampshire has made some progress in rural land planning and there is much latent talent and a great deal of unco-ordinated information in the several departments of the state, college institutions and other organizations and committees. A state survey committee some ten years ago headed by Doctor Hetzel, then President of the State University, carried on extensive investigations and the reports of several divisions were compiled. Nothing further apparently resulted although the late William S. Rossiter of Concord who worked zealously in this connection collected much valuable information relating to New Hampshire's rural life. The New Hampshire Civic Association has maintained its organization for many years and has at times sponsored studies and movements well worth while to the state along these and other lines. Studies of specific rural problems or of certain towns have been made by the Extension Service of the University, the State Agricultural Department, Forestry Commission, departments of Dartmouth College and by industrial corporations within recent years.

In May and June of the present year, Governor Winant called two conferences of heads of state departments and institutions and other citizens of the state to consider rural problems. A steering committee was selected together with committees on health, public welfare and unemployment, industries, zoning and land utilization and forests and waters with subsequent reports and meetings to be expected in the future. The State Development Commission has sponsored conferences on industry and certain phases of recreational

development. The State Grange program for 1932 called for discussion to be given at various Pomona Granges as to whether New Hampshire should adopt a more definite land policy by extending public ownership and control of unproductive or sub-marginal lands. During the present year Governor Winant has engaged the Brookings Institute of Washington, D. C., to study and report on state problems which have a distinct relationship to the rural land problems of the state. The New Hampshire Foundation under the direction of John W. Pearson and the State Development Commission are seeking out informative facts about the state.

A detailed study of the problems of the state as a whole is a large undertaking which involves the services of efficient investigators in all the lines involved. It can be accomplished without unreasonable expense if agents and field workers in the various state services, the University and other private institutions and local officials and individuals would co-operate under proper leadership and in accordance with a detailed program. The work should be so distributed that many could participate and the burden of detail would not fall heavily upon a few busy persons. The Forestry Commission and other forestry agencies in the state should contribute to this program such information as relates to the forests.

Aerial photographs of the entire state are essential in order to show forest and ground cover, help determine forest types and volumes more accurately than any estimates already made or which can be made otherwise. Land studies can be more accurately carried out now that the topographic maps of the state are substantially completed. Town property maps showing the divisions of ownership and types of land have been started by the Tax Commission and by a few towns. Photographs of ground cover as well as the pine scouting maps prepared in connection with blister rust control work have elements of usefulness in connection with these property maps and rural land problems generally.

REPORT OF RECREATIONAL DEVELOPMENT INVESTIGATION—1932

By RALPH F. SEAVY

ON MAY 13, the writer was commissioned by the Governor and Council to inspect possible locations for state bath houses. It was their desire to secure ten major locations and about the same number of minor ones, to be well distributed about the state and to be as near as possible to the larger centers of population and the main traveled roads, not only to care for our local and summer residents but the traveling public as well.

There were several contributing factors responsible for the conditions that caused the Governor and Council to take this action. Tourists and summer residents have tremendously increased the number of bathers. Stream pollution has caused the Board of Health to prohibit bathing in many rivers; water supplies excluded the public from many lakes and ponds that were the nearest places for bathing to some cities and large towns; much of our lake frontage has been bought for cottage lots and summer homes, bathers are excluded and what once were free bathing places for very many people are now denied them. With demand increasing and supply diminishing an acute situation is sure to develop. Property owners are incensed that the public should trespass on their posted lands. Bathers demanding entrance to good beaches on public waters, but being driven out by the property owners, go to some other place where the public is still admitted. This causes congestion at these locations and as often happens the place is a beach beside the state road, parked cars block traffic and eventually police supervision is necessary.

As conditions grew worse complaints came to the Governor and Council. They believed supervised bath houses at beaches that would accommodate large numbers of people was the solution and so this investigation was begun. The Forestry Department gave whole-hearted co-operation and their intimate knowledge of the topography of the state saved much time and travel. We traveled over the state north, south, east and west and inspected scores of possible bath house locations.

North of the White Mountains good bathing locations that will accommodate large numbers are not plentiful. the south and west portions are many good beaches but they are either part of large summer estates or have been commercially developed by private interests. The state has claim to land at some of the ocean beaches. On the east side and in the central portion of the state many desirable places are available.

The Forestry Department had already built a caretaker's cottage and bath house on the Wellington tract at Newfound Lake in Bristol. This valuable land, with an exceptional beach, was given to the state about two years ago. The public response to the opening of this beauty spot was an indication of what might be expected at other locations.

Bath houses were built this year at three other locations. One on state owned land at Jenness Beach, Rye; one on land leased of Frank S. Lord at White Lake, Tamworth and one on land leased from E. Libby & Sons Company on the Peabody River, Gorham.

The same type of bath houses were erected at each of these locations. They are two separate units, one for men and one for women, about seventeen feet in length and eight and one-half feet in width. Each building is divided into ten compartments approximately 3 by 4 feet, the partitions running up to the height of the plates; the doors opening on the outside of the building are hung so as to leave a space of about eight inches between the bottom of the

door and the floor and a similar space at the top of the door; the floor is of 2x4 joists spaced ¼ inch apart permitting water to drain through readily and as the buildings are set on posts to clear the ground about one foot, the air circulates through the floor as well as the spaces above and below the doors and over the top of the partitions.

All New Hampshire lumber was used in their construction, with cedar shingles on the walls and roofs. The roofs are stained green, the walls gray and the trim painted old ivory. The cost of these buildings was somewhat increased because of the use of much unemployed labor that was not as skilled as would ordinarily be considered desirable.

The design of the bath houses was given us by the National Red Cross. They have made an exhaustive study of designs for low cost bath houses that will accommodate large numbers of people and their conclusion is that this very inexpensive type of building has many advantages aside from its low cost. Built in two units, men and women are separated. Because the doors cannot be fastened on the outside the patrons remove their belongings as soon as they have changed, thus keeping their property in their own possession at all times, and making the compartment available for another as soon as they have either changed to their bathing suit or from bathing suit to street clothes. Each building will accommodate an average minimum of seventy-five people per hour to make the change from street clothes to bathing suit and back to street clothes again. The Red Cross figures are, time to undress and put on bathing suit 1½ minutes, to dress 6 minutes. I was very skeptical of this statement when it was made by their representative but the program, even to costs, worked out very close to the figures they gave us. Two units will care for at least 1500 bathers per day.

Jenness Beach

The state acquired by warrantee deed, from James H.

Perkins, a strip of ocean frontage 1191 feet long some twenty-five years ago. This was purchased in connection with the layout of the Ocean Boulevard.

As the Jenness Beach is quite free from stones and seaweed this seemed the logical location for a salt water development, consequently it was here that the first two units were erected. As soon as work was started a writ was served seeking to enjoin the state from constructing the buildings and a date some four days later, set for hearing, the contention being that the land does not belong to the state. Before the time for the hearing arrived the two units were completed. The injunction was denied by Judge Scammon but as the case was still pending these bath houses have not been opened to the public. The cost of the two units, including painting, was $483.36.

White Lake

A tract of about 3 acres of land on White Lake, Tamworth was leased from Frank S. Lord of Center Ossipee for a period of ten years with the privilege of renewal for ten years more for $1.00 per year and a two-room caretaker's cabin, tool shed, two bath houses units and two toilets were built thereon.

A well about 30 feet deep was driven under one corner of the cabin so that the pump was installed at the sink. A telephone line was laid from near the Mount Whittier Railway Station to the cabin, a distance of about 1¼ miles. Mr. Tripp of the Forestry Department did the work on the telephone line with the men who care for the forest fire lookout telephone lines and because of his experience in putting lines through the woods this line was built in one day at a total cost of $65.50 and we could call central that night.

White Lake beach is of very firm white sand. There is a nice grove of pine trees on the leased land, the shores all around the lake are well wooded. Mr. Lord owns all the land around the lake and between the lake and the East

Side Highway. There are no buildings except those we constructed. Because of its nearness to one of our north and south trunk lines and absence of cottages, this is a very desirable location. It is one of the safest places for children and unskilled swimmers that we found. The state now controls but about 240 feet of shore frontage. In my opinion the state should purchase 1,625 feet of shore frontage southeast of its leased land. This can be bought at a reasonable price and is none too much beach to own at any major location. Some of this land will soon be sold for cottage lots. When it passes from Mr. Lord's possession to several others it will be more difficult and expensive for the state to acquire it. Opened after August 1 in excess of 4,000 people came here in about five weeks; as many as 400 on some Sundays. If we can anticipate the same rate of increase here next year as obtained at Wellington Beach this year over last year, we may expect from 1200 to 1500 people some days in 1933, and many more than that within a few years.

The present total investment at White Lake Park is $1,655.16.

A resident caretaker was stationed here from the opening until September 15.

Peabody River, Gorham

Two bath house units and two toilets built on a small piece of land leased for $1.00 per year from E. Libby & Sons Company at a total cost of $713.12 provided bathing facilities for about 16,000 people in six weeks' time. This development being but two miles from Gorham and about 10 miles from Berlin was a very popular resort. Here we were able to test the capacity of our little bath house units and they vindicated all the good things said about them by the Red Cross. At no time did patrons wait but a very few minutes and those were rare occasions. At times the pool could not accommodate all who wished to use it. This is a swift flowing mountain stream and there is no

danger of pollution. It is unfortunate that the pool did not have at least double its present capacity.

There is no cottage here for a resident supervisor. However, a supervisor was here each day until late in the evening.

Possible Future Developments

For obvious reasons it is not wise to list here the locations the state might desire for future development. There are, however, two places that can properly be mentioned here and that I believe are worthy of very serious consideration. Both are in the north country. To one the state has a partial claim; the other it owns outright.

As already said, Peabody River pool is not adequate to the demands put upon it. A noble return will be realized on the small amount of money here expended but more facilities near Berlin are extremely desirable. In looking for a location that would relieve this situation we were unable to find any place large enough to interest us until we came to Christine Lake in the town of Stark.

This lake is 15 miles distant from Berlin, 10 miles from Groveton and less than 20 miles from Lancaster. It is quite a large body of water, being about 1½ miles long. It has a very fine sand beach about 600 feet long at its east end.

May 18, 1913 the Percy Summer club by C. A. Cole, Agent, gave the state of New Hampshire by quitclaim deed, now recorded in Coos County records Vol. 164, Page 273, a right of way two rods wide from the Village of Percy in Stark to high water mark at a point one rod south of the boat house, about 1/3 of a mile in length, being the road then used by the Percy Summer club. The deed also includes a strip of shore frontage south of the roadway 266 feet long and varying from 16 feet to 20 feet in width. Although this land belongs to the state a provision in the deed specifies that no building shall ever be built thereon. Consequently while the public has a right of way to this lake and a strip of land from which they cannot be ex-

cluded, there can be no toilet facilities provided and the only seclusion for changing clothes is that provided by nature.

This deed was given to carry out the provisions of Section 5 of an Act entitled "An Act to Provide for the Laying Out and Construction of a Highway to Christine Lake, or North Pond, in the town of Stark" passed by the Legislature of the state of New Hampshire in the year 1913. This Act of the Legislature was the culmination of a controversy of many years duration between the Percy Summer club, a corporation, and the local residents over fishing rights. The Percy Summer club at that time owned all the land around the lake and still does, except that conveyed by the above deed. Persons who wished to fish there claimed that the lake being in excess of 10 acres in extent, the legal limit for private waters, was public water and that they had a right of entrance. This the Percy Summer club denied. Arrests followed with trials and suits at law until eventually the matter was brought before the Legislature and a highway laid out and a strip of land acquired considered adequate at that time for the mooring and launching of boats. Bath houses apparently were not considered.

In the ensuing 20 years very few repairs were made on the road and although automobiles can pass over it when the surface is dry, conditions were so bad that the State Highway Department posted a notice in 1931 forbidding trucks to pass over it. The Percy Summer club has several cottages at the north west end of the lake 1½ miles away from the beach, the only other building on the lake is the boat house at almost the center of the beach. The land laying back from the beach is not desirable for cottage lots because of its slight elevation above the lake level and the fact that the state already owns approximately one-half the frontage. It is covered with a mixed second growth of hard and soft wood.

If the state could acquire from the Percy Summer club

a strip of land including the remainder of the beach and running back from the beach an average depth of less than four hundred feet, as per a survey made by the Forestry Department, the state would have land and beach that could be developed to care for the bathing requirements of the city and towns above mentioned as well as other small communities.

On the state owned land at Echo Lake in Franconia Notch there is a very fine beach, beside the state road, within one mile of the parking space provided for those who come to view New Hampshire's peerless attraction, the Old Man of the Mountain. Of the hundreds of thousands of people who annually park their cars here to gaze upon this wondrous freak of nature, it is probable that some would enjoy a swim in the clear water of Echo Lake. As a matter of fact many people now swim in the lake, without any facilities for changing their clothing. Here the state established the first state owned bath house of which I have any knowledge. It was not destined to remain long in semi-seclusion among the trees on the northerly side of the highway leading to Twin Mountain. The building was soon removed to the lawn near the tea house on the west side of Echo Lake, where it has since remained. Was it for aesthetic reasons that this building was moved from its shield of shrubbery and trees to its present exposed location on the lawn? Whatever the reason for its removal it is no longer available for use by bathers desiring to change their clothes at the beach. It is unjustifiable expense to search for locations for bath houses and not develop this excellent location already owned.

The state should build two bath house units on the south side of the Twin Mountain road, near the outlet. The two toilets in that vicinity should be made adequate for such demands as may be put upon them, and the swampy land between the road and the outlet brook filled for parking space. A gravel bank almost directly across the road on

state land under the control of the Forestry Department from which the Highway Department has already hauled thousands of yards of gravel would furnish the fill at a minimum expense of handling and without appreciably affecting the appearance of the gravel pit. A small expenditure of money, not in excess of $1,500, would provide bathing facilities for thousands annually for many years to come. The patrol that the Forestry Department now maintains in Franconia Notch could supervise the bath houses without seriously interfering with their other duties.

I believe the 1933 Legislature should provide sufficient funds to purchase the land at White Lake and Christine Lake as well as to build the necessary buildings and grading at Christine Lake and Echo Lake. So far as the Forestry Department records reveal the little strip of land at Christine Lake is all the land that the state owns in Coos County. It would not seem to be amiss for the state to expend a few hundred dollars for the desired land for this bath house development. I firmly believe that the small amount expended in 1932 on these modest developments will bring a lavish return. As we add to our long list of attractions more people will visit us and from these visitors the state receives a direct return in road tolls and its citizens prosper because of additional business.

STATE APPROPRIATION ITEMS

JULY 1, 1930—JUN9 30, 1931

	Appropriation	Expenditure
Salary of Forester	$3,500.00	$3,500.00
Salary of Field Assistants	2,500.00	2,500.00
Clerical Expenses	5,675.00	5,600.00
Traveling Expenses	1,000.00	1,000.00
Incidentals	1,500.00	1,487.98
Printing Blanks	1,200.00	1,200.00
District Chiefs	7,500.00	7,500.00
Lookout Stations	10,000.00	10,000.00
Conferences	1,000.00	1,000.00
Prevention of Fires	3,000.00	3,000.00
Nursery	10,500.00	9,950.00
Forest Fire Bills to Towns	5,000.00	.....
Transferred from Executive Department	2,932.76	7,803.89
Reforestation	3,500.00	.....
Transferred from Nursery	550.00	4,050.00
White Pine Blister Rust	17,500.00	17,499.66
Forest Fire Equipment	1,000.00	999.70
Printing Report	500.00	500.00
Unemployment Relief—Transferred from Executive Department	2,602.00	2,601.90
Total	$80,959.76	$80,193.13

JULY 1, 1931—JUNE 30, 1932

	Appropriation	Expenditure
Salary of Forester	$3,500.00	$3,500.00
Field Assistants	2,500.00	2,500.00
Clerical Expenses	5,825.00	5,600.00
Traveling Expenses	1,000.00	964.34
Incidentals	1,500.00	1,452.13
Printing Blanks	1,200.00	1,076.81
Nursery	10,500.00	9,830.41
Reforestation	3,500.00	3,500.00
District Chiefs	7,500.00	7,087.05
Lookout Stations	10,000.00	9,999.85
White Pine Blister Rust	17,500.00	15,496.65
Maintenance of Public Land	2,000.00	1,997.41
Unemployment Relief:		
Transferred from Executive Department	8,448.00	.....
Transferred from Conferences appropriation	974.10	9,421.78
*Conferences	1,000.00	25.90
Prevention of Fires	3,000.00	2,999.47
Forest Fire Bills to Towns	5,000.00	5,000.00
Forest Fire Equipment	1,000.00	999.48
Recreational Survey:		
Transferred from Executive Department	611.99	611.99
Total	$86,559.09	$82,063.27

* $974.10 transferred to Unemployment Relief.