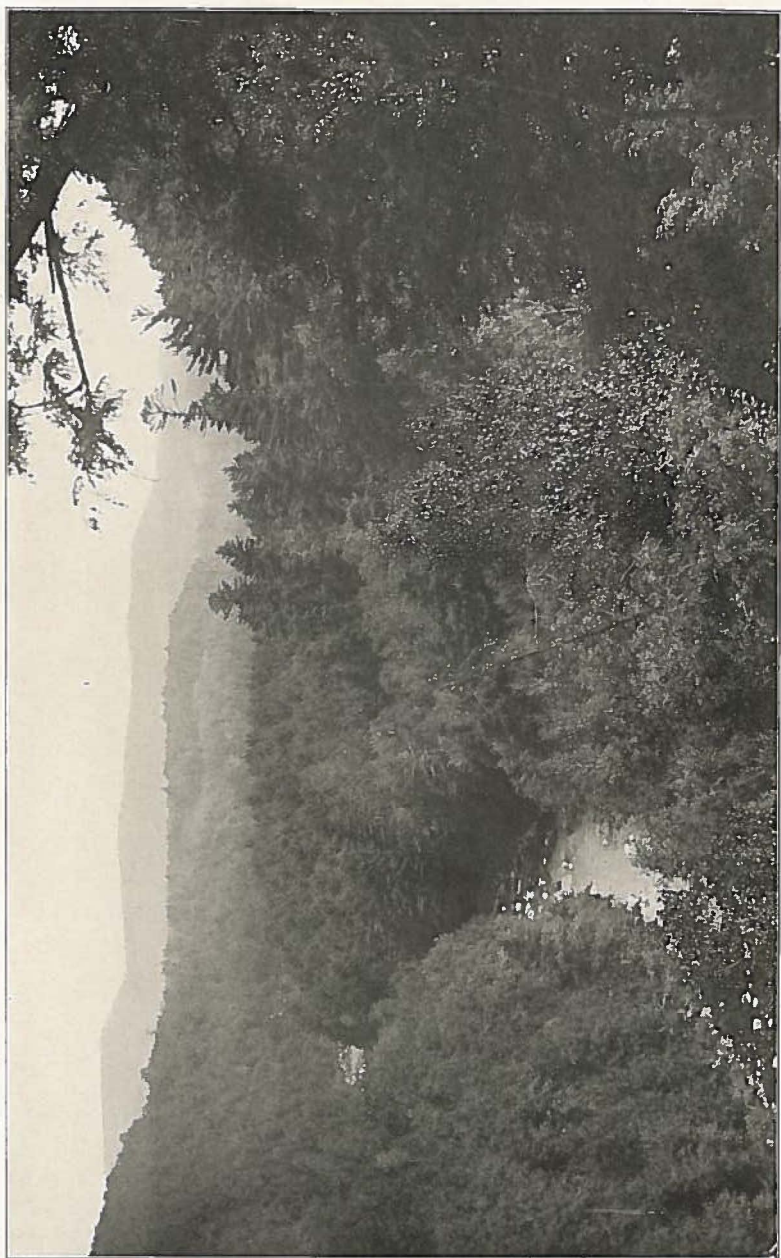


REPORT  
OF THE  
NEW HAMPSHIRE  
FORESTRY COMMISSION  
WILFRED H. LONG  
1913-14



A NATURAL SEEDING OF WHITE PINE—CHESHIRE COUNTY.  
Showing the possibilities of reproducing forests by leaving seed trees and preventing fire.

State of New Hampshire

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BIENNIAL REPORT

OF THE

Forestry Commission

FOR THE

Years 1913-1914

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Concord

November, 1914

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MANCHESTER, N. H.

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## REPORT.

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*To His Excellency the Governor and the Honorable Council:*

The biennial report of the Forestry Commission is herewith submitted in accordance with Section 2, Chapter 166, Laws of 1911. It covers the work of the department for the two years from September 1, 1912, to August 31, 1914, and the progress made since the present department was organized five years ago.

The General Court of 1913 increased the activities of the commission by providing for the extension of the forest fire service throughout the state, the care of roadsides, and the enactment of a railroad fire law. It also initiated the purchase of state demonstration forests, provided for combating the chestnut bark disease, and increased the educational and field work of the department. A bill providing for the reforestation of waste and cut-over lands failed of enactment.

It is the aim of this report to explain and summarize the work done by each branch of the service, the progress that has been made under the new laws; and to recommend measures that will supplement and improve the work of conserving our forest resources.

W. R. BROWN,  
JASON E. TOLLES,  
BENJAMIN F. GREER,  
*Forestry Commission.*  
E. C. HIRST,  
*State Forester.*

## SYNOPSIS.

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The work of the Forestry Commission divides naturally into four branches: 1. Protecting the forests against fire; 2. Reforesting waste and cut-over land; 3. Acquisition and management of state forest lands; and 4. Educational work among woodland owners. A summary of the progress made in each of these branches during the past two years is here set forth.

### Fire Protection.

The keynote of the fire protective system is *coöperation* among all forces interested in forest preservation, coördinating these forces, and directing them along effective channels. The forest patrol service is a typical illustration. Regular patrolmen are employed by the Federal Government under the Weeks Act; a large number of regular and emergency patrolmen are employed by the New Hampshire Timberland Owners' Association; the state employs men to patrol the woods during extreme drought near the larger cities; the danger points along railroad sections are patrolled during drought by members of the section crew; state highway patrolmen are appointed deputy forest fire wardens and instructed to extinguish fires; and rural mail carriers are instructed to report forest fires to the nearest wardens. This constitutes a patrol force that may be reduced to a small carrying expense during favorable weather, and may be expanded quickly during extreme danger. During the past two years this patrol force has put out 456 incipient fires and issued warnings to 15,000 persons tramping through the woodlands; and for the four years since patrol work was started the patrolmen have extinguished 922 fires and given 26,000 warnings.

The mountain lookout service has been extended by building four new stations: Mt. Kearsarge in Warner; Mt. Pawtuckaway in Nottingham; Blue Job Mountain in Strafford; and Mt. Belknap in Gilford. The equipment on other stations has been improved, and quicker communication is secured when fires are discovered. There have been 26 stations operated, three of them being used only temporarily during danger periods. Since the first lookout station was established in 1910, 1,339 fires have been discovered and reported to the forest fire wardens. Of these, 975 fires have been reported in the past two years.

The new railroad fire law is continually reducing the danger from fires caused by locomotives. Dangerous sections of the right of way are patrolled during drought, the rights of way are kept cleaner, and there has been in most cases effective coöperation between the railroad companies and woodland owners in clearing inflammable material beyond the right of way. Engines are inspected more thoroughly and the notification of fires by railroad employees has been systematized. On the Boston & Maine Railroad 45 engines have been equipped with Mudge-Slater spark arresters, and the fire protection work has been put under one office known as the Fire Claims Department. This centralizing of responsibility for all fire work has proved a most effective means of reducing damage.

Coöperation between the Forestry Commission and the Highway Department has resulted not only in the putting out of small fires by state road patrolmen, but in the clearing of brush and bushes. Along all state roads, the cut brush is disposed of by order of the Highway Department, and shade trees will be planted where desirable. This movement for improved roadsides is spreading to the towns; more brush is being cleaned up than formerly and a number of towns have applied to the state for trees to plant. The Forestry

Commission will be prepared next year to furnish limited quantities of trees to the towns free of charge for roadside planting.

The town fire fighting work has been greatly improved by completing the appointments of deputy wardens, systematizing the calling out of fire fighters and the methods of handling fires. Many towns are purchasing fire fighting tools and apparatus through the Forestry Commission. During the past four years the damage caused by the average forest fire in New Hampshire has been reduced from \$377 to \$169.

### **Reforestation.**

For the past four years since the establishment of the state nursery, 1,618,682 trees have been distributed by the commission to land owners in New Hampshire for planting on waste and cut-over land. Of these more than 1,000,000 have been sold within the past two years. Bulletin IV, describing the methods of forest planting, was published last year, and has stimulated interest in the subject. A tract of land at Gerrish has been bought by the state, and is being developed as a permanent site for the state nursery.

### **State Forests.**

Four tracts have come into state ownership during the past two years. The Crawford Notch, comprising 5,925 acres, has become state property, a system of fire patrol has been organized, a headquarters camp built, and plans are under way for improving scenic features along the roadway. A tract of 142 acres has been acquired at Gerrish, which will be used for the state nursery and for experimental work in planting and woodlot improvement. Two tracts have been received by gift: Mrs. Helen B. Merriman of Intervale has given 513 acres of woodland on Bartlett Mountain; and Mr. Samuel O. Huckins of Ossipee has given 100 acres for planting demonstration near Ossipee Center. The state forests now aggregate 7,518 acres.

The acquisitions made by the Federal Forest Service have increased to over 225,000 acres. Besides this the Society for the Protection of New Hampshire Forests owns four tracts, totalling 830 acres, and the Appalachian Mountain Club owns eleven tracts, comprising 704 acres. These tracts are open to the public. Towns and cities own 11,168 acres of land.

The total amount of public and quasi-public land in New Hampshire aggregates 245,320 acres.

#### **Educational Work.**

During the past two years the Forestry Commission has mailed to individuals over 7,000 letters giving special information on forestry outside of the fire protection work; published three bulletins and three circulars on special subjects, the distribution of these through the state aggregating 15,000 copies; carried on over 50 meetings and lectures; and published numerous special articles for the press. Besides this personal examinations of over 170 woodlots have been made and the owner given advice as to proper methods of improvement.

A special investigation of the chestnut bark disease revealed the fact that its spread was so rapid that owners in many localities should cut their merchantable chestnut at once. Bulletin VI, describing the disease and methods of combating it, and a detailed description of how and where to market chestnut products was published and mailed to woodlot owners in the chestnut region.

Last year the commission sent out trees to a number of rural schools for planting along the roadside approaches to the schools. Arrangements are now being made to send trees and plans for planting protective windbreaks and decorative groups on the rural school grounds.

## SUMMARY OF RECOMMENDATIONS.

### I. IMPROVEMENT OF THE FOREST FIRE SERVICE.

It is recommended:

1. **Lookout Stations.** That the six stations owned by the New Hampshire Timberland Owners' Association be taken over by the state; that seven additional stations be built in central and southern New Hampshire, so that all woodland in the state may be watched; and that auxiliary stations be equipped with state assistance on the lower hills for use temporarily during hazy weather.

2. **Patrol.** That cöoperation be continued with the Federal Government and the New Hampshire Timberland Owners' Association in patrolling the wild lands; and state assistance to towns in southern New Hampshire in patrolling dangerous localities during extreme drought.

3. **Railroads and Highways.** That where lumbering operations are carried on along a railroad or highway, the lumbering slash be cleared away on a strip 50 feet from the railroad right of way, and 25 feet from the travelled part of a highway; and that towns and cities be required to dispose of all cut brush along roadsides within 30 days from the time the brush is cut.

4. **Fighting Forest Fires.** That the state's share of forest fire fighting expenses be reduced from one half to one fourth; that ultimately the towns and cities assume the entire expense of fire fighting, the state paying part of the costs when an unusual fire causes more expense than the town can meet; and that the state assist towns in securing proper tools and apparatus for fighting forest fires.

## II. REFORESTATION.

It is recommended:

1. That the present system of selling trees from the state nursery and securing them from commercial nurseries for distribution to land owners within the state be continued.

2. That the state forester be authorized, upon application from private owners, to examine tracts of land, execute planting plans and furnish not over 2,000 trees free of charge for planting on said applicants' land.

3. That whenever a land owner deeds a tract of land to the state free, the commission shall upon a favorable report being filed by the state forester authorize the state forester to plant, protect and otherwise care for said tract for a term of ten years; and that at the end of this period the owner be allowed to purchase said tract from the state at the actual cost of improvement with interest for the period.

4. That the state forester be authorized to furnish free of charge to towns and cities trees for planting on land belonging to said town or city.

5. That provision be made for the planting of all land on the present state forests and such land acquired in the future, and for planting waste land belonging to all state institutions where such planting is desirable.

## III. PUBLIC FORESTS.

It is recommended:

1. **Central Experimental Tract.** That the land owned in connection with the state forest nursery be developed as a central experimental tract for carrying on experiments in planting and woodlot management.

2. **Demonstration Tracts.** That the commission continue the policy of receiving forest land by gift and the purchase of tracts that can be secured on reasonable

terms; and that provision be made for the care and development of these tracts to demonstrate the principles of forestry for the educational benefit of woodland owners.

3. **Municipal Forests.** That provision be made by which the commission may give advice on or manage town forests free of charge.

#### IV. EDUCATIONAL AND SPECIAL PROJECTS.

It is recommended:

1. **Woodlots.** That the commission continue and increase its work of examining farm woodlots and recommending plans of management, and the publication of educational bulletins.

2. **Shade Trees.** That the state forest nursery be developed for the growing of shade trees to be distributed for planting along roadsides by the Highway Department and by towns, and for planting on rural school grounds; and that the present shade tree law be amended, giving the towns and state authority to plant, cut, or care for all roadside trees that contribute to highway maintenance.



FIRE AFTER LUMBERING, WHICH BURNED THE MINERAL SOIL.



INFERIOR GROWTH OF BUSHES WHICH FOLLOWS FIRE. THE VALUABLE TREES HAVE BEEN KILLED.

## THE FOREST FIRE SERVICE.

### RESULTS OF COOPERATIVE FIRE PROTECTION.

#### Growth of the System.

Five years ago when the present Forestry Department was organized, little or no attention had been paid to the *prevention* of fires. There was a law making selectmen ex-officio fire wardens, and some localities being awakened by heavy losses of property had developed active fire fighting crews. But their efficiency varied from year to year according to the interest which the selectmen took in forest protection. In many towns no effort was made to put out a fire until it became serious enough to menace buildings. Little effort was made to stop fires when they were small, or to prevent their starting.

The task of forest protection has been along three lines. First, organizing in every town and locality a responsible forest fire fighting force under a fire warden or deputy selected for his interest in the work and his ability to handle a crew effectively in putting out a fire. Second, arranging for the warden or deputy in each locality to receive immediate notice when a fire occurred, so that it might be extinguished with small damage and expense. Third, getting at the causes of fires and preventing them from starting.

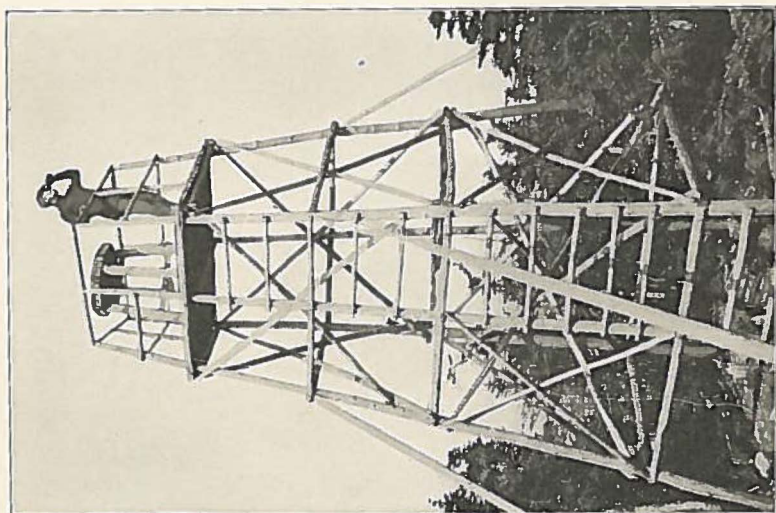
When the Forestry Department was organized in 1909, the time was ripe for beginning the development of a state fire protective system. The serious damage from fires and the insecurity of forest property had been painfully realized, and there was a state wide public interest in protection. It remained for the Forestry

Commission to organize this interest and use it effectively. Through the interest of public spirited citizens in different localities, and boards of selectmen, the system of town forest fire wardens was organized. By the help of timberland owners, lookout stations were built to notify wardens in case of fire. Through aid from the Federal Government and timberland owners, the forest patrol was started, and a long step taken toward preventing fires by careless persons in the woods. The railroad companies coöperated by taking better care of engines and cleaning and patrolling along their rights of way. The system is succeeding and growing rapidly. All forces interested in forest preservation are being welded into a working unit whose chief purpose is to *prevent* fires.

#### **Reduction of Fire Damage.**

The value of the forest protection system is apparent to any woodland owner or any one familiar with fire damage, but from the standpoint of a public benefit it is difficult to state the exact value in dollars and cents. This is because it is impossible to tell the amount of damage that a forest fire would have caused if it had not been discovered and extinguished. Also the amount of dry weather, when fires are frequent, varies in each year; so that the total fire damage for succeeding years is not a fair index. However, the damage caused by the average fire in succeeding years would compare the efficiency of the system fairly in wet and dry years.

Since the fire protective system was organized on its present basis in 1911, the damage caused by the average fire has been reduced from \$377 to \$169. This represents a saving in property of over \$250,000. The patrol force has extinguished 922 small fires, which represents \$200,000 saved; and they have cautioned over 25,000 persons, thereby preventing many fires. It seems safe, therefore, to assume that the fire protective system has



LOOKOUT TOWER AND WATCHMAN,  
MT. OSCEOLA, WATERVILLE.



FIRE DISCOVERED FROM MT. KEARSARGE (SOUTH).

Fires can be located accurately within a radius of 10 to 15 miles. The greatest distance at which any fire has been located from New Hampshire Stations is 60 miles.

saved \$500,000 worth of property since its organization four years ago.

### MOUNTAIN LOOKOUT STATIONS.

#### Operation of Stations.

The first mountain lookout station built by the Forestry Commission was on Mt. Kearsarge (North), completed in the fall of 1909. The following year this and five privately owned stations were operated by the commission. During the next two years, thirteen stations were built in the northern part of the state by the New Hampshire Timberland Owners' Association. Seven of these have been taken over by the state, but the other six have not yet been acquired. Last year the commission began to extend the lookout system in central and southern New Hampshire, and has equipped the following stations: Mt. Monadnock; Mt. Kearsarge (South); Mt. Uncanoonuc; Blue Job Mountain; Mt. Belknap; and Mt. Pawtuckaway. There are at present twenty-six stations operated, three of which are used only temporarily during extreme drought. The results of the lookout service from the time it was started are shown in the following table:

#### Fires Discovered by Lookout Stations.

1910-1914.

YEAR.	Stations Operated.	Fires Reported.
1910	6	44
1911	15	142
1912	24	178
1913	26	465
1914	26	510
Total		1,339

### Extension and Improvements.

The extension and improvement of the lookout service is proceeding in a systematic manner. From the annual federal fund of \$8,000, allotted to New Hampshire for fire protection under the Weeks Act, six lookout watchmen were employed in 1913, and 15 in 1914. Transferring these watchmen from the state to the federal account has allowed more of the state funds to be used for constructing new stations and improving those already built.

Most of the stations were first equipped with grounded single circuit telephone lines. These have not generally been found as satisfactory as double wire metallic circuits. Nearly all lines have now been built over into metallic circuits, and the service has been greatly improved thereby. Through the efforts of the Forestry Commission, the New England Telephone Company has granted free exchange service for all lookout station connections, and is coöperating in bringing the service up to a high standard of efficiency. Panoramic maps have been completed for all stations, enabling watchmen to locate fires much more accurately. Towers have been built at most stations to obtain unobstructed views. This year the first steel lookout tower built by the state was erected on Mt. Pawtuckaway. This costs little more than a wooden tower, affords a better shelter for the watchman, and is practically permanent. Others will be built next year. These improvements are reflected in the greater number of fires discovered.

The value of the lookout service in reducing fire damage has been clearly demonstrated in all localities where stations have been established. It should be extended until every section of the state where there is any considerable woodland is under observation during dry weather. There are now twenty-three stations which should be operated throughout the fire season. Six of these were built by the New Hampshire Timberland

Owners' Association, and have never been taken over by the state. It is the purpose of the Forestry Commission to acquire these six stations, to construct four more in the central part, and three more in the southern part of the state. This will complete a system of primary stations that will cover all of our forest land during the ordinary fire season.

Besides this there should be a number of secondary or auxiliary stations operated temporarily during times of extreme drought. These stations should be located between the permanent ones, and will supplement the primary stations during dry, smoky weather when the radius of vision is reduced. Three such stations have been built, but inasmuch as their value is local it seems reasonable that the towns or woodland owners of a locality should contribute to their continued maintenance, and to the construction of others. It will, therefore, be the policy of the commission to aid localities in building and maintaining auxiliary fire stations, but not to build them without local assistance, as it is believed that where there is a real need of more protection than the primary stations afford, this need will reflect itself in substantial assistance.

## LIST OF LOOKOUT STATIONS AND WATCHMEN, 1914.

MOUNTAIN.	WATCHMAN.	P. O. ADDRESS.	TELEPHONE.
NORTH DISTRICT.			
Deer*	Herbert Higgins.	Pittsburg, N. H.	Pittsburg Ex. (via second Lake).
Magalloway	Joshua Farnsworth	Pittsburg, N. H.	Pittsburg Ex.
Sugar Loaf	John Ryan	c/o Odell Mfg. Co., Groveton, N. H.	Groveton Ex.
Signal	F. G. Jipson	Errol, N. H.	
Black	Milton Harriman	Milan, N. H.	Milan Ex.
Black*	Frank Leavitt	Lancaster, N. H.	Lancaster Ex.
Cabot	John Sanborn	Gorham, N. H.	Gorham Ex.
Pine	F. D. Bronson	Glen House, Gorham, N. H.	47-12 Gorham Ex.
Carter Dome			
EAST DISTRICT.			
Rosebrook	T. E. Moran	Fabyan, N. H.	31 Livermore Mills Ex.
Carrigan	Dwight Murray	Livermore, N. H.	12-31 No. Conway Ex.
Kearsarge	W. H. Seevey	Kearsarge, N. H.	6-11 Temworth Ex.
Chocorua*	S. E. Metcalf	c/o Nat. Berry, Tamworth	Sandwich Centre Ex.
Israel*	Victor M. Davis	R. F. D., Centre Sandwich, N. H.	Union Ex.
Tenafleet	Fred P. Jones	R. F. D., Union, N. H.	
WEST DISTRICT.			
Agassiz	W. S. Phillips	Bethlehem, N. H.	16-2 Bethlehem Ex.
Black	Edward V. Eastman	c/o E. W. Bemis, R. F. D. 2, Pike,	103-26 Pike Ex.
Stinson*	Fred R. Ford	Rumney, N. H.	7-2 Rumney Ex.
Osceola	C. O. Brewster	Waterville, N. H.	22-6 Campton Ex.
SOUTH DISTRICT.			
Croydon	George S. O'Rourke	c/o E. J. Hurley, Croydon Flat,	138-13 Newport Ex.
Kearsarge (So.)	L. E. Newman	Potter Place, N. H.	Salisbury Ex.
Monadnock	Ernest J. Harling	East Jaffrey, N. H.	East Jaffrey Ex.
Crany Hill	Harry Tucker	Henniker, N. H.	Henniker Tel. Co.
Uncanoonuc	George E. Flanders	Goffstown, N. H.	4-3 Goffstown Ex.
Federal Hill	Ira Chase	Milford, N. H.	Milford Ex.
Blue Job	Albert B. Felker	R. F. D. 1, Box 55, Rochester, N. H.	Rochester Ex.
Paytuckaway			Deerfield Ex.
Belknap			

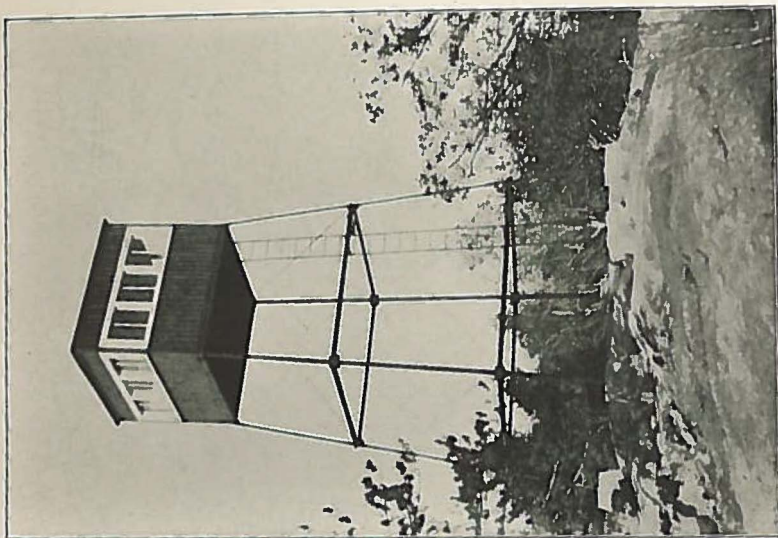
\*Stations still owned by New Hampshire Timberland Owners' Association.

†Stations used only temporarily during extreme drought.



ROUGH WOODEN LOOKOUT TOWER,  
DEER MOUNTAIN, PITTSBURG.

The first lookout stations were roughly built; the equipment is being gradually built over and improved.



NEW STEEL LOOKOUT TOWER,  
MT. PAWTUCKAWAY, NOTTINGHAM.

## PATROL SERVICE.

**Value of Forest Patrol.**

The chief value of forest patrol is educational. One patrolman can, in ordinary wooded country, travel from 15 to 20 miles a day along roads and trails. This generally means that he has patrolled all the avenues of approach to a woodland tract varying from 10,000 to 20,000 acres, depending on the number of roads, trails and camp sites where persons are likely to be. In doing this he cautions all the persons he meets about being careful with fire in woods, particularly about completely putting out camp fires before leaving them, and about the danger from careless smoking. He may occasionally find incipient fires which he immediately puts out.

There is no way to accurately estimate the value of the patrol service. If a patrolman puts out one fire he has more than made his wages for a month, and if he cautions a dozen people in a day no one can tell how many fires have thereby been prevented. The patrol service was organized in New Hampshire in 1911, when the Federal Government began to extend aid in such work to the states. That same year the New Hampshire Timberland Owners' Association began hiring patrolmen, and the state has employed them temporarily in times of great danger. Recently, the state road patrolmen and the rural mail carriers have acted in a measure as fire patrolmen. During these four years, the patrol service has extinguished 922 incipient fires and given 26,000 warnings about fire danger to persons found in the woods. It is quite noticeable that public opinion has changed considerably during that time. Many people are careful because their attention has been called to the danger from fire while they are in the woods. There is no doubt that a great amount of fire damage from carelessness has been prevented.

If we simply consider the number of fires actually extinguished by the patrolmen it represents an enormous saving. The average fire for the last four years has burned over 35 acres and caused over \$215 damage. The patrolmen have extinguished 922 fires. This alone represents a saving of forest property of \$200,000 value, and a reduction in burned area of over 30,000 acres.

#### Protective Results of Patrol Service.

YEAR.	Fires Put Out.	Warnings Given.
1911	261	7,000
1912	205	4,600
1913	293	7,600
1914	163	6,788
Total	922	25,988

#### Federal Assistance.

Systematic forest protection received a great impetus when Congress in 1911 passed the Weeks Act. The main purpose of the act was the acquisition of national forests in the East, but it contained a provision for helping states to protect from fire the forests on the watersheds of navigable streams. New Hampshire was the first state to benefit by this act, receiving \$7,000 in 1911, and \$8,000 each year since. The federal funds are allotted and administered by the United States Forest Service, the State Forester and the Secretary of the New Hampshire Timberland Owners' Association being appointed Forest Service Collaborators to carry out the federal work in New Hampshire.

Inasmuch as the government aid does not apply to states not appropriating money for forest protection, it has been of great value in stimulating state activities.

Since 1911, 18 states have entered into coöperation with the Federal Government under the provisions of the act. Besides stimulating initial activities the federal aid is felt in the exchange of ideas afforded, the Forest Service acting as a clearing house for methods used in different sections and keeping all the states informed on late developments. It also helps the state forest fire work to keep to a standard of efficiency, and exercises a steadying influence on state forestry departments, tending to prevent changes in policy.

#### **Coöperation with the New Hampshire Timberland Owners' Association.**

The New Hampshire Timberland Owners' Association, organized in 1910, has continued its valuable protective and educational work in northern New Hampshire. The association represents an ownership of over 1,000,000 acres whose owners voluntarily assess themselves, one cent per acre annually, making a fund of over \$10,000. This fund is placed in the hands of F. H. Billard, Berlin, Secretary, and used largely in maintaining a patrol force on the association lands. Ten or twelve men are usually employed throughout the fire season, located so as to cover territory not patrolled by any of the federal men. This force is expanded by the addition of temporary men during dry weather. In times of extreme danger 60 or more men are employed.

The association began operations in the spring of 1911, and since then its patrolmen have extinguished 477 small fires in the woods and cautioned 12,000 persons. In patrolling the land of its members, the association necessarily protects contiguous land from fire, and thereby renders a great service to the state. It also does a great deal of educational work on fire prevention throughout the mountain region. Recently, it has distributed thousands of paper drinking cups for the use of tourists and tramping parties, each cup printed with a caution about the use of fire. Six lookout stations,

covering territory not overlooked by state stations, were built by the association. These will be taken over by the state.

### **State Emergency Patrol.**

A fund appropriated specifically for fire prevention has enabled the Forestry Commission to patrol certain very dangerous localities during dry weather. All of this work has been done in the southern part of the state through the town fire wardens. In most cases the patrolmen worked only on Sunday and holidays covering woodlands near manufacturing cities where fires have been frequent. This has greatly reduced the fires in these localities. Now that the lookout service is being extended over southern New Hampshire, it would hardly seem necessary for the state to assume all the expense of local forest patrol. The policy of the commission in the future will be the same with respect to temporary patrol that it is with temporary lookout stations, namely: That wherever a town or the woodland owners of a community feel that the fire danger is great enough to warrant their spending money for patrol, the commission will supervise such patrol work and pay half the expense. This will secure twice as much patrol work for the same state expenditure, and insure the work being done only where there is a real need for it.

### **State Road Patrolmen.**

The State Highway Department is coöperating effectively with the Forestry Commission in preventing fires along the state roads. There are 61 patrolmen employed regularly on road repair work. These men have all been appointed deputy forest fire wardens and instructed to put out fires that start along the highway. Many fires have been started by careless persons throwing matches, cigars or cigarettes from automobiles or teams. The road patrolmen have extinguished 35 such fires this year and thereby reduced the damage along their sec-

tions, as well as saving fire fighting expenses for the town and the state.

#### **Rural Mail Carriers Report Forest Fires.**

In 1912 an agreement was made between the United States Department of Agriculture and the Post Office Department, requiring any rural mail carrier who discovers a forest fire to report it to the nearest forest fire warden or deputy warden on his route; or to have a telephone message sent to the nearest warden. Star route contractors and carriers are also requested, but not required, to render the same service.

When this agreement went into effect, the Forestry Commission called the attention of all postmasters in New Hampshire to it, and furnished the rural carriers with lists of the wardens and deputies. Instructions have been sent to each fire warden and deputy to get in touch with the local rural carrier and seek his coöperation in giving quick notification when a fire is discovered. This coöperation is proving valuable. There are 243 rural carriers in New Hampshire, and they cover many miles of country roads through woodland districts. They are performing part of the duties of fire patrolmen, and a number of reports have come from fire wardens of prompt and valuable notification received.

### **REDUCTION OF FIRE DAMAGE BY RAILROADS.**

#### **The New Railroad Fire Law.**

The General Court of 1913 enacted a law which has had a good effect in reducing the forest fire damage caused by railroads. It requires railroad companies to use spark arresters and ash pans, subject to the approval of the Public Service Commission, to patrol dangerous parts of the right of way during drought, to enforce among their employees regulations for the giving of fire signals, and to pay for the damages and

expenses of fires caused by locomotives or employees. It authorizes the State Forester to appoint section foremen as deputy forest fire wardens to have charge of railroad fires. It further permits a railroad company to enter upon private woodland adjoining the right of way and clear the inflammable ground litter for a strip 25 feet wide; and requires timber operators to remove slash 25 feet from a railroad right of way.

This law takes the ground that since the passing of locomotives endangers the safety of forest property along the right of way, it is the duty of the railroad to take every reasonable means to prevent forest fires, and failing in this to pay the expense and damages caused by such fires. It further recognizes that when timber is cut the slash created thereby is a fire menace to adjoining timber holdings, and it is the duty of the lumberman to relieve this menace. The administration of this law has resulted in active coöperation between the Forestry Commission, railroad companies and owners of abutting woodland. On the Boston & Maine Railroad a special office known as the Fire Claims Department has been organized to do this work. All patrol work, notification of fires and defective engines, clearing of brush and settlement of fire claims is looked after by this department. This centralizing of the fire protection activities of the railroad is responsible for the marked improvement in the service and corresponding reduction in damage.

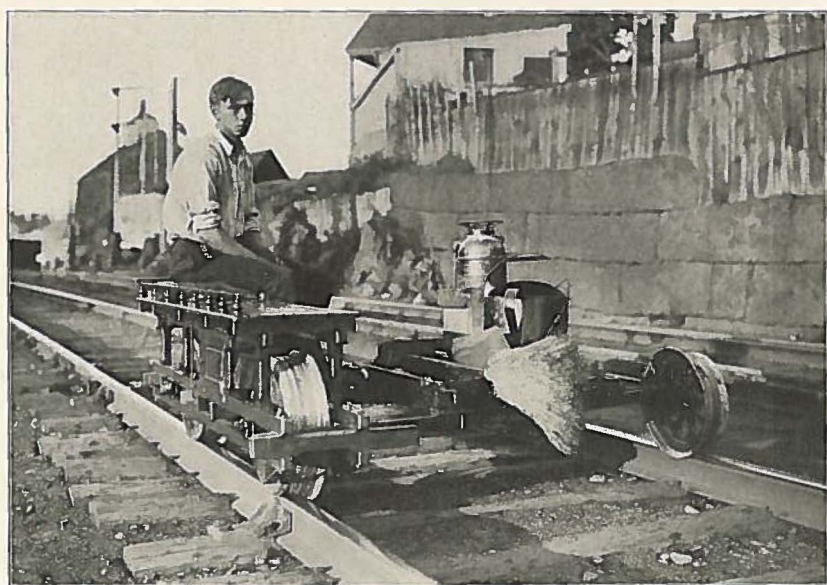
#### **Equipment and Inspection of Locomotives.**

On railroads operating in New Hampshire, the spark arresters and ash pans are inspected weekly and, if found defective, are repaired. In addition to this, if an engine is believed to have set a fire, it is the duty of the Mechanical Department to give it a special examination at the end of the run. Furthermore, employees along the rights of way are instructed to notify station agents



**A RAILROAD FIRE LINE.**

Made by the Concord Electric Co. to protect their woodlands.



**SPEEDER CAR WITH FIRE FIGHTING EQUIPMENT.**  
Used for railroad patrol by the Boston & Maine R. R.

when an engine sets a fire, and the agent then wires ahead, so that the engine may be examined. The Boston & Maine Railroad has equipped 45 engines with a device known as the Mudge-Slater spark arrester, which has been found very effective in reducing fires on other roads. Most of the engines on the Conway Branch and the Nashua and Keene Branch are so equipped; and the number of fires reported on these two branches for the three months after equipment, as compared with the previous year, shows a reduction from 134 to 21.

#### **Patrolling Right of Way.**

All railroad section foremen in New Hampshire have been appointed deputy forest fire wardens and are instructed by their companies to keep a sharp lookout for fires and extinguish them when discovered. If necessary, they have the power to call outside assistance in so doing. They are further instructed to patrol dangerous sections in dry weather after the passing of trains. On the Maine Central Railroad one man is detailed from each section crew to patrol the track during dry weather. He is provided with a velocipede and carries a shovel, hoe, and pail. The Boston & Maine Railroad has begun the use of gasoline speeder cars for fire patrol and has installed them in eight localities in New Hampshire. Each speeder is provided with a fire extinguisher, an eight-quart filled water sprinkler, a shovel, and a broom.

#### **Clearing Brush.**

Immediately after the enactment of this law, the Forestry Commission promulgated it throughout the state, and endeavored to get the railroad companies and woodland owners working in harmony for the protection of the forests. It was found that the law met with popular favor, and little difficulty was encountered in enforcing it. The railroads cleared the dry grass and inflammable rubbish along their tracks much better than before. In

only a few instances have lumbermen hesitated about clearing back slash on the 25-foot strip required by law, and none have refused to do so after they understood the spirit of the law. In a number of cases the railroad company and lumberman have worked together to clear up the slash. In all, 111 strips of slash, varying in width from 25 to 150 feet, have been cleared along railroad rights of way in New Hampshire. Of these, 13 strips have been cleared by land owners, 8 by the railroad company in coöperation with the owner, and 90 by the railroads alone.

The experience of the past two years has shown that clearing such slash strips is not an expensive undertaking. The 25-foot strip is not wide enough to be really effective, as this with the right of way makes the clearing from 60 to 75 feet from the track. This is not far enough to prevent live locomotive sparks from starting fires. It is recommended that the width of the cleared slash strip be increased from 25 to 50 feet. This would remove the uncleared land 100 feet or more from the track.

#### Reduction of Fire Damage.

The prevention work is reflected in the smaller damage during the last three years, as shown by the following table of data gathered partly from reports of forest fire wardens and partly from figures of fire claims paid by the railroad companies:

YEAR.	Damage by Railroad Fires.
1911	\$115,000
1912	18,000
1913	36,000
1914	40,000



SLASH LEFT ALONG HIGHWAYS IS A MENACE TO SURROUNDING WOODLANDS.



SLASH PILE LEFT A FEW FEET FROM HIGHWAY, READY FOR THE MATCH.

## CLEARING BRUSH ALONG ROADS.

A law passed by the General Court of 1913 requires all brush and bushes along highways to be cut and disposed of during August and September, and at other times of the year when advisable. The brush is to be burned with the permission of the forest fire warden. It is the duty of the Highway Department to carry out this law on state roads and trunk lines, the boards of selectmen along town roads, and county commissioners in unincorporated places.

This law recognizes that the towns and the state coöperate in fighting forest fires and in road building; that forest fires are expensive to put out and many of them start along highways; and that a little coöperation in the *prevention* of fires will save expense and give the towns more money to spend for road building and other public improvements.

**Instructions for Cutting Roadside Brush.**

The following is a summary of instructions issued by the Forestry Commission to boards of selectmen, road agents and highway patrolmen:

1. Preserve and protect all valuable shade trees.
2. Cut all sprouts, brush, bushes, young trees, or weeds, that in any way obstruct travel, cause a fire risk, or are objectionable from the standpoint of roadside beauty.
3. When cutting bushes, leave a thrifty sprout or young seedling in each clump. These will soon grow into trees and help shade out the undergrowth, making less brush to cut in the future.
4. Young evergreens should be left unless they shade the road so heavily as to hold the frost late in the spring. Their value in holding moisture in the ground surface reduces the fire risk. Trim these young evergreens three feet from the ground and clean the in-

flammable litter under them to reduce the danger from surface fires.

5. When the brush is cut it should be collected in small piles at a safe distance from any young growth and burned as soon as weather conditions permit the burning to be done with safety.

### **Coöperation with the Highway Department.**

The State Highway Department has an excellent opportunity to get good results from this law along trunk lines and state roads, and is setting an example to the towns in the care of roadsides. Under a coöperative agreement with the Forestry Commission all state road patrolmen are appointed deputy forest fire wardens, and in addition to putting out fires that start along the highway, are instructed to cut and burn brush and inflammable slash. This year the strips of brush cleared along state roads and trunk lines totaled about 125 miles. This has greatly reduced the fire risk. Many towns have begun to clean and improve the roadsides in an efficient manner, but a number of them are slow to carry out the law. Some cut the bushes and then do not dispose of them, leaving a fire hazard worse than if no cutting had been done.

### **Improvements Recommended.**

On account of the great danger to forest property from fires that start along the highways it is of great importance that all brush, slash and inflammable litter should be cleared. The present law has made a good beginning. It is recommended further that boards of selectmen be required to dispose of all cut brush along roadsides within a specified time; and that wherever lumbering operations are carried on along a highway, the operator be required to remove the slash on a strip 50 feet from the travelled part of the road.

## TOWN FOREST FIRE ORGANIZATION.

### **Forest Fire Wardens and Deputies.**

The appointment of forest fire wardens and deputies throughout the state is now about complete. There are 245 town wardens and 546 regular deputies. These men have been selected always by first consulting the board of selectmen and the woodland owners in each community who are interested in fire protection. It has been the aim to secure men interested in the work who can be reached easily by telephone and who can get out a crew of men quickly when a fire starts. Besides the regular appointees, all railroad section foremen, state road patrolmen, lookout watchmen, and regular forest patrolmen are appointed deputy wardens for special purposes. The total number of wardens and deputies in the state is 1,079.

It is the work of the town fire wardens and deputies that all other fire prevention activities aim to serve. It would be useless to maintain the lookout stations to give notification when fires are discovered if the wardens were not active in putting out fires when they are notified. Hence, the warden system is the pivot on which the efficiency of the whole forest fire service depends. It is also true that in most cases the wardens do a great deal of work for the public good for the small amount of pay they receive. The state should, therefore, do everything within reason to help the warden perform his work better and easier.

Early every spring before the fire season begins, the commission holds a series of fire warden conferences in different parts of the state. Each warden discusses how the law operates in his town, and ideas are exchanged so that the best results obtained anywhere can be explained for the benefit of all. The Forestry Commissioners and State Forester explain the work of the department and answer questions on which the wardens

desire information. These meetings have proved of great benefit and the attendance has been good.

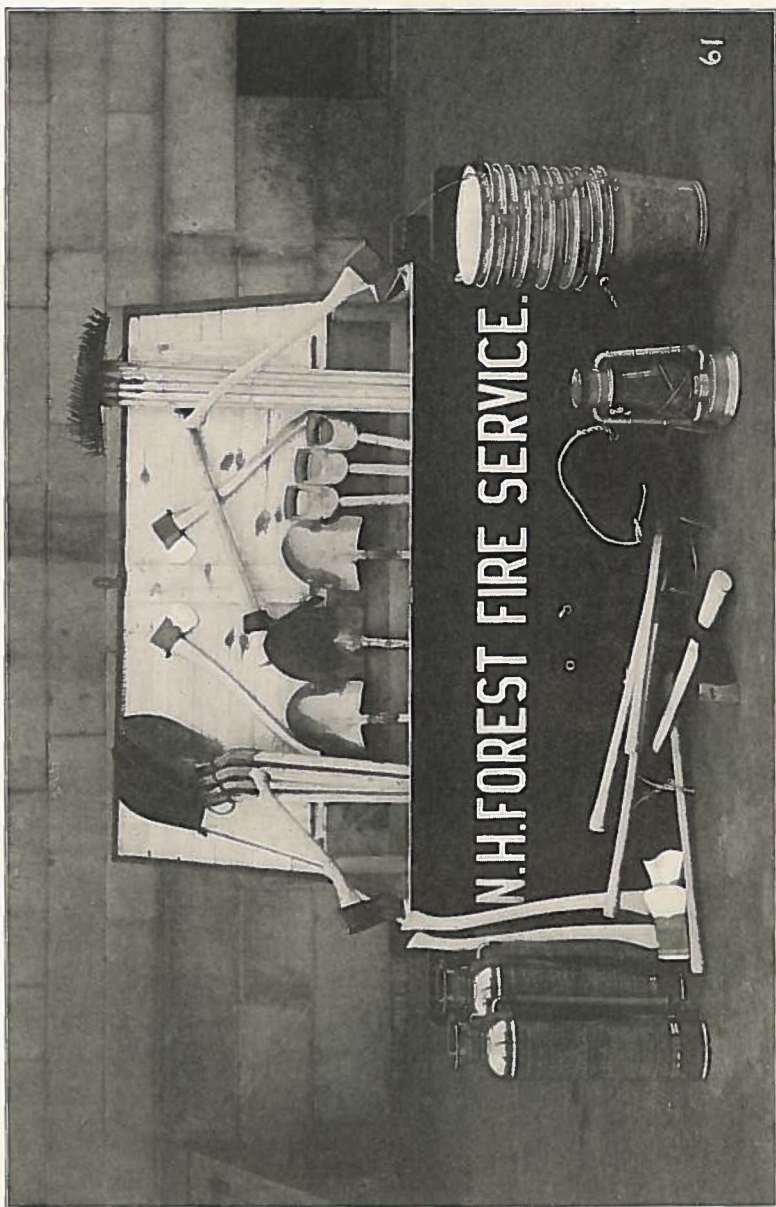
The improvement of the fire warden service is reflected in the attitude of the public. Wardens have done a good deal of educational work among their townspeople, and the result is better observance of the fire laws. Violations are now exceptional, and in most communities owners are careful to ask permission before burning brush.

#### **Assistance by District Chiefs.**

The district chiefs have charge of the fire warden service, patrolmen, mountain lookout stations, and all other matters pertaining to fire prevention in their respective districts. It is their duty to visit the town, help the wardens to get good deputies, and to get the help of the townspeople in building up and maintaining a good forest fire organization. They advise the wardens about fire fighting methods and the best tools and apparatus to secure; arrange with persons living on high ground to give notification in case a fire is discovered, and when necessary, to take personal charge of large fires that burn in two or more towns. The supervision of the district chiefs is largely responsible for the increased efficiency in fire protection. Without them the present organization could not be kept welded together and working harmoniously.

#### **Town Fire Fighting Equipment.**

Many towns have incurred needless expense at forest fires because when men were summoned by the warden there were no suitable tools or apparatus for them to work with. The commission has constantly urged upon selectmen the purchase of fire tools, but until recently very few towns have had proper equipment. The ordinary garden tools sold by local dealers are hardly strong enough for use at forest fires, and satisfactory tools cannot be obtained in small quantities except at high prices. After an examination of the kinds of tools best



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SPECIAL COMBINATION FIRE FIGHTING TOOLS AND BOX MAY BE PURCHASED FOR \$50.  
(See page 35.)

adapted for fires, the commission arranged, through the State Purchasing Agent, with manufacturers for the delivery of a large quantity of fire fighting tools and apparatus at low prices. These can be purchased by the towns through the Forestry Commission at the following rates:

**Special Price List of Forest Fire Tools and Apparatus  
Which May Be Purchased by Towns Through  
the Forestry Commission.**

Handled axes .....	\$9.00 per dozen		
D. Hd. or Long Handle Ro. and sq. point shovels .....	6.00	"	"
Forged steel rakes, 14 tooth, electric welded .....	2.93	"	"
Ely socket hoes, best grade .....	4.36	"	"
Galvanized pails, 12 quart medium....	1.65	"	"
Galvanized pails, 12 quart heavy "Lisk"	2.75	"	"
Grub hoes .....	3.50	"	"
Pick handles, No. 1.....	1.75	"	"
Pick handles, No. 2.....	1.50	"	"
Chemical extinguishers, 3 gal. "Alert"	6.50	"	
Chemical extinguishers, 3 gal. "Badger"	6.50	"	
Douglas pump .....	3.50	"	
Douglas double pump .....	8.50	"	

A combination especially designed for a rural community is shown in the accompanying picture. It contains a half dozen each of long handle and short handle shovels, rakes, hoes, axes, grub hoes, galvanized iron pails, and collapsible canvas pails; also 2 hand chemical extinguishers (3 gallon), one double Douglas pump and one lantern. The combination may be purchased for about \$50, including the portable weatherproof box.

A number of towns and cities have made very remarkable progress in their fire fighting apparatus. Five cities now have auto chemical engines which are used at for-

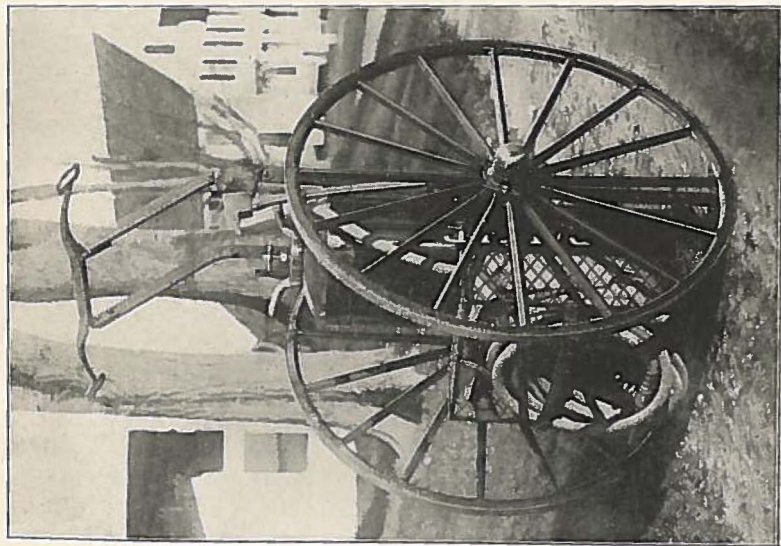
est fires as well as building fires: Manchester, Concord, Franklin, Nashua and Portsmouth. The town of Wilton secured a very serviceable auto truck by purchasing a second-hand automobile engine and running gear and mounting a truck bed on it. This will carry a crew of 10 men with tools and extinguishers. It was secured at a total cost to the town of \$500, and has been found very serviceable in saving property. The town of Northwood last year entered the front rank in fire equipment by purchasing four chemical extinguishers, each with 40-gallon tank mounted on a two-wheel truck with hose and drag rope, at a total cost of \$830. These are located at different sections of the town and can be easily taken through wood roads for use at forest fires.

#### **Cost of Fighting Forest Fires.**

There is a wide difference in the way in which the towns have taken up the forest fire work. In many towns the progress has been excellent. The warden receives prompt notification of fires from nearby look-out stations; having arranged in advance with a number of able fire fighters, he quickly has a crew on the ground; and having been equipped with the proper tools by his board of selectmen, he quickly gets the fire under control with small expense and damage. Quite a number of towns, however, are still slow to develop efficiency in fire fighting, and spend a large amount of money needlessly on account of slow notification, inadequate transportation, or poorly equipped crews. On the whole, the improvement throughout the state has been so great as to reduce the cost of extinguishing the average fire during the past four years by one fourth.

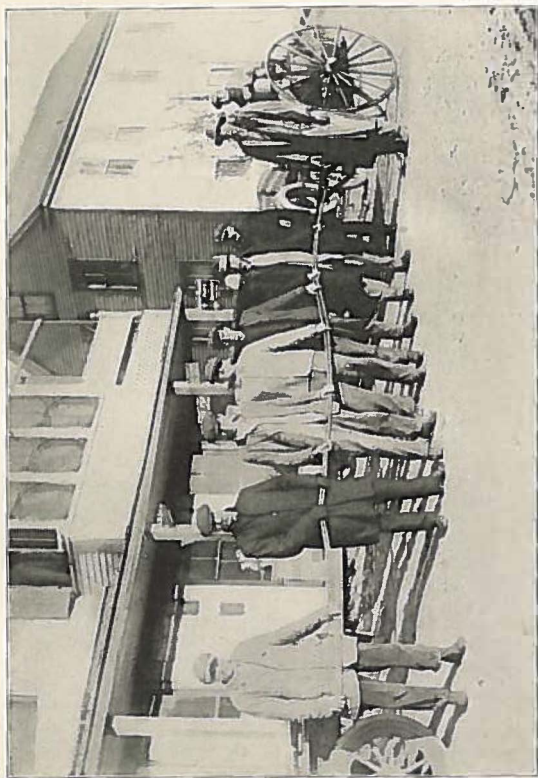
#### **Payment of Fire Fighting Bills.**

The expenses of putting out forest fires are by law to be shared equally between the towns and the state. Towns and cities pay the bills directly and the state then reimburses for one half the amount, provided the



FOUR OF THESE WERE PURCHASED BY THE  
TOWN FOR \$300.

They are very serviceable at forest fires.



NORTHWOOD FIRE CREW AND CHEMICAL TRUCK.

appropriation is sufficient. If it is insufficient, then the fund appropriated is divided among the towns in the proportion of each town's expense. In unincorporated places, the state is authorized to pay the bills directly and then add half the amount to the taxes assessed against all property in the township the following year. In practice it has been found that the only feasible way to handle such bills in unincorporated places is for the land owner to pay the bill immediately after the fire, and send an itemized account of the expenses to the Forestry Commission. The state then treats the bill in the same manner as a bill from a town or city, the entire amount being refunded by the state if the appropriation is sufficient, and the proportional share being paid if the appropriation is insufficient. For the fiscal year ending August 31, 1913, the total amount due the towns and cities was \$13,625.75. The \$4,500 appropriation was divided proportionally, leaving a balance of \$9,126.66 still due from the state. For the fiscal year ending August 31, 1914, the total amount due from the state was \$7,684.35. This being only a small amount over the \$7,500 appropriation, the balance, \$184.35, was paid from the contingent fund of the Governor and Council.

It is the judgment of the Forestry Commission that the towns should assume more of the expense of fighting forest fires. The expenses are easier to adjust locally than through the state, and this will allow the state to do more work in the prevention of fires, which in turn will reduce the expenses for the towns. State aid in forest fire fighting should not, however, be removed altogether. It must not be forgotten that prior to the development of the fire warden service and the paying of half the expense by the state, very few towns had any system of fighting forest fires. State aid is necessary for some time yet, in order to bring up the standard of fire fighting efficiency in all towns to the level now attained by the best towns. Some form of

state aid should always be continued to help pay for the occasional unusually large fire, the expenses of which could not be met by some of our rural towns. It is, therefore, recommended that beginning September 1, 1915, the state's share of forest fire fighting expenses be reduced from one-half to one-fourth; that more state money be spent throughout the local communities in preventing fires; and that ultimately the towns and cities assume the entire expense of fire fighting, the state paying part of the expense only when by an unusual fire a town incurs more expense than it can meet.

### FOREST FIRE STATISTICS.

#### Record of Fires Handled by Town Wardens and Deputies (Exclusive of Railroad Fires).

YEAR.	No. of fires reported.	Acres burned.	Estimated damage.	Cost of fighting.
1910	272	9,038	\$40,000	\$6,092.06
1911	462	30,958	175,000	24,676.50
1912	344	8,474	62,000	12,013.29
1913	609	14,507	100,000	23,665.32
1914	315	8,119	53,000	13,070.07

#### Estimated Total Damage by Forest Fires.

YEAR.	Railroad fires.	Fires from other causes.	Estimated total damage.
1910	\$14,000	\$40,000	\$54,000
1911	115,000	175,000	290,000
1912	18,000	62,000	80,000
1913	36,000	100,000	136,000
1914	40,000	53,000	93,000

## REFORESTATION.

### THE STATE FOREST NURSERY.

The Forestry Commission maintains a nursery at Gerrish, where trees are grown for distribution within the state. The principal purpose of this nursery is to stimulate an interest in reforestation among land owners. Planting experiments are also carried on, and recently the commission has begun to grow shade trees to distribute to the towns for planting along roadsides.

The tree seeds are sown in carefully prepared beds in early spring and germinate in from two to three weeks. The young trees are kept under artificial shade during the first summer and require great care. Evergreen trees are allowed to grow in the seed bed until they are two years old when they are from two to five inches high. They are then removed from the seed bed and set out in nursery rows where they are allowed to grow a year or more. This transplanting develops a stronger root system and the trees are more likely to survive under adverse conditions. Hardwood trees are large enough for planting when they are one or two years old.

White pine is used more than any other tree for reforesting lands in this region. Norway pine and Scotch pine are well adapted for light, dry soils; Norway spruce, balsam fir and white ash are advisable on moist soil. European larch, Canadian white spruce, basswood and poplars are also grown for special purposes at the state nursery, and an interesting experiment is being carried on in the raising of willow rods for basket making.

### SALE OF TREES.

The trees raised at the state nursery have been sold at from \$3 to \$5 per thousand, depending on the size

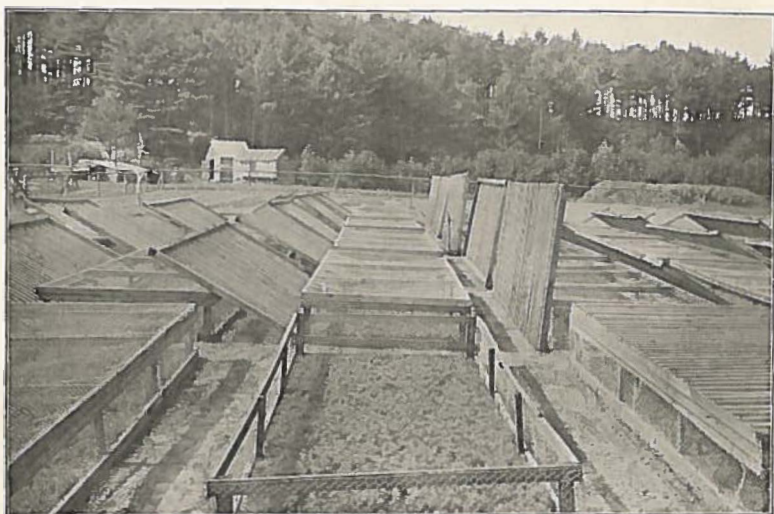
and age. Prior to the spring and fall planting seasons, an order blank is mailed to persons interested in planting. When these blanks are filled out and mailed to the commission, the trees are shipped as ordered. Collections are made and deposited with the State Treasurer to be used for maintenance of the nursery.

Forest planting began in New Hampshire in 1868, but for several decades very few plantations were made. Prior to 1911, when the state nursery was established, it was estimated that there were about 1,200 acres of planted forest in the state. During the past four years the educational work of the Forestry Commission and commercial nursery firms has increased the public interest in reforestation, and about 2,070 acres more have been planted. The total area of forest plantations at present, therefore, is about 3,270 acres.

The number of trees ordered through the Forestry Commission has increased steadily since 1911. The number distributed by years is as follows:

1911 .....	237,025
1912 .....	240,430
1913 .....	424,102
1914 .....	717,125
<hr/>	
Total .....	1,618,682

Of the total number sold only a little over one-third were raised at the state nursery. The other two-thirds represent the demand for trees which the state could not meet, and which were secured from commercial nurseries. While the amount of reforestation is not by any means comparable to the lumber cut, yet the steady increase in the work reflects a growing confidence among land owners in the commercial practicability of forest planting.



WHITE PINE SEED-BED, STATE FOREST NURSERIES, GERRISH, N. H.

When the seeds germinate, a thick mat of young pines covers the bed. They grow here two years before transplanting. The lath shade covers protect them from intense light the first year; the wire is to protect them against birds and rodents.



WHITE PINE TRANSPLANT ROWS.

When the seedlings are 2 years old, they are removed from the seed bed and grown for a year in nursery rows. This transplanting develops a stockier tree with a stronger and more profuse root system.

## WHY IS THE STATE INTERESTED IN REFORESTATION?

### **Proper Use of Land.**

Reforestation is a part of the great fundamental problem of the proper use of soil. Progress both in agriculture and forestry depends on a knowledge of what is true agricultural soil and what is true forest soil. Of the nearly 6,000,000 acres of land in New Hampshire, careful surveys by the United States Department of Agriculture have shown that about 4,000,000 acres, or over 60 per cent of the land surface of the state is better adapted to tree growth than the raising of farm crops—true forest soil. While we are building up the producing capacity of our agricultural soil, it is also of vital importance for us to begin to produce in a systematic way the crop for which most of our land is best suited.

### **Keeping Up the Timber Supply.**

The industries which depend on forests for their raw material are of great economic importance to the state. The pulp mills, originally located here on account of our water power and accessible spruce and fir forests, have grown to such enormous proportions that a large part of the wood used is brought from Canada. There are over 450 sawmills operated in the state; and in addition some 420 manufacturing plants which make wood into a finished product. With all these industries in operation, wood is being cut many times as fast as nature is growing it. Our second growth stand of conifers is being cut away very rapidly, and a much heavier cut of hardwoods is beginning. The industries which depend on forest growth must either import a large part of their timber or discontinue unless more wood is grown.

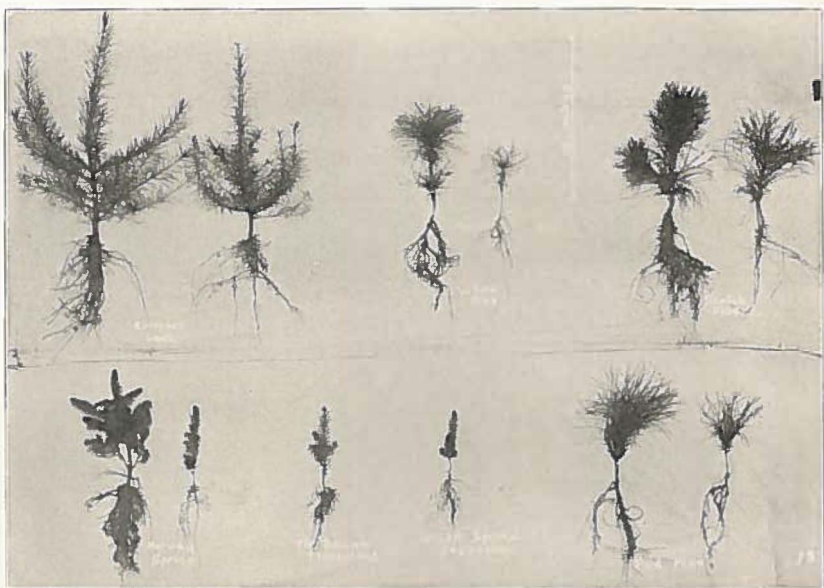
However, if proper forestry methods are inaugurated. New Hampshire will be able to produce enough

timber to supply her industries permanently, outside of the spruce and fir used in the paper and pulp mills. When our 4,000,000 acres of true forest soil shall be kept in valuable timber growth by planting, adequate fire protection and proper forest management, enough timber will be produced to supply all our sawmills and wood working plants. In other words, New Hampshire can continue indefinitely her three fold industry of growing timber, cutting it into lumber, and manufacturing the lumber into finished commodities.

#### **Extent of Unproductive Land.**

There are thousands of acres of worn out pastures and fields throughout New Hampshire that do not produce enough grass to be valuable as grazing land, or that cannot be farmed on account of the rocky surface. In some sections of the state there are vast stretches of sand barrens that once supported splendid white and Norway pine forests, but since cutting are only barren wastes of scrub oak and pitch pine. A considerable part of the cut-over land on our better forest soils does not seed up quickly to valuable trees; and when fire follows lumbering, the young trees of valuable species are still further reduced. Even in most farm woodlots and larger timber tracts, there are open patches where timber growth has not reproduced. All such unproductive land, if planted to trees, will increase in value rapidly.

Of the 4,000,000 acres of forest land in New Hampshire, only little over half, or about 2,250,000 acres, carries merchantable timber. Every year over 50,000 acres is cut over. Part of this cut-over land reseeds naturally and will again produce a valuable forest if protected against fire. There are also parts of it that do not restock naturally, or support only a scattered worthless growth. Such land will not produce a valuable timber crop again for several generations unless it



CONIFEROUS STOCK RAISED AT STATE FOREST NURSERIES, GERRISH, N. H.  
*Top Row*—European larch, transplant and seedling; white pine, transplant and seedling; Scotch pine, transplant and seedling. *Second Row*—Norway spruce, transplant and seedling; fir balsam, transplant; white spruce, seedling; red pine transplant and seedling. Notice the stockier form and more vigorous root system of the transplants.



A PLANTING CREW.

Reforestation is done to best advantage by using crews of two men, one to dig the holes, using a mattock; the other to carry and plant the trees.  
 Six foot spacing is generally used.

is reforested. There is also a considerable portion of land cut over in the past which has failed to reproduce any valuable growth and should be planted. Considering the amount of non-productive natural forest land in the state, it is very conservative to say that considerably over 25,000 acres of land should be reforested every year. This would require about 30,000,000 trees to be planted annually.

### COMMERCIAL VALUE OF FOREST PLANTING.

The fact that land is not reforested on a large scale by private owners is not due to doubt as to the success of the undertaking, for enough planting has been done to show that a forest plantation can be easily established. It is due to the financial considerations; primarily to the length of time required to produce a timber crop, the consequently long deferred returns, and the risk of fire and insects, which the investment must carry during this time.

It is true that when money is invested in buying and clearing land for planting, and when trees, labor and supervision are high, forest planting is not attractive to private capital. But even under such circumstances, it may show a profit if the trees reach maturity without injury. There are, however, a number of cases in which planting offers good returns and is particularly advisable. Farmers and small woodland owners can often get their ledgy, unproductive land reforested at small expense because the labor of planting is not always a cash charge. To summer residents forest planting offers an attractive form of investment because it improves the scenic effect around their summer homes, steadily increases the value of the property and requires little supervision after the plantation is established. Public service corporations own tracts of land which they are

obliged to hold for long periods. Such land can be used profitably for the growing of timber crops. Cities and towns in New Hampshire own 11,168 acres of land, a large part of which is not producing valuable timber. Reforesting such land would add to future municipal revenues.

Land owners who contemplate forest planting are reminded that it is not a "get-rich-quick" scheme. It is a safe, profitable way of making small or large investments which will increase steadily in value over a long period of time. Depending on the kind of trees used, the quality of the soil and the skill and judgment used in carrying out the enterprise, a forest plantation may pay from four per cent to eight per cent compound interest.

### ESTIMATED COST AND RETURN FROM A WHITE PINE PLANTATION.

#### Estimated Initial Cost per Acre.

Trees, spaced 6 x 6 feet; 1,200 per acre at \$5 per M. \$6.00  
 Transportation, freight or express and hauling. . . . 1.00  
 Planting, 2 men at \$2 per day . . . . . 4.00

\$11.00

#### Cost of the Plantation per Acre at Fifty Years.

(All expenses compounded at 5 per cent. to the end of the 50-year rotation.)

Quality of soil.	Planting cost with accrued interest to end of rotation.	Interest on land value accrued to end of rotation.	Taxes on land and timber accrued to end of rotation.	Protection 10 cents per acre per year, accrued to end of rotation.	Total expenses.
Best quality pine soil; value \$6 per acre.	\$126.14	\$62.80	\$72.16	\$20.93	\$282.03
Poor quality pine soil; value \$3 per acre.	\$126.14	\$31.40	\$43.67	\$20.93	\$222.14

## Yield and Profit per Acre at Fifty Years.

Quality of soil.	Yield of timber, board feet.	Value of timber.	Total cost of producing tim- ber crop.	Net profit.
Best quality	47,450	\$474.50	\$282.03	\$192.47
Poor quality	27,650	\$276.50	\$222.14	\$54.36

In making the above calculations it is assumed that in 50 years white pine stumpage will be worth \$10 per M board feet. This is a conservative estimate. Taxes are calculated at one per cent on the full value, allowing for a re-valuation every five years.

According to these calculations a white pine plantation, depending on the quality of the soil, will make a profitable 50-year investment, paying from a little less than \$1 to nearly \$4 per acre per year, in addition to five per cent compound interest on all money invested.

## STATE AID IN REFORESTING WASTE AND CUT-OVER LAND.

For a number of years there has been a strong demand among land owners for substantial state aid in reforesting waste and cut-over land. While the sale of trees from the state nursery is steadily increasing, the total number are sufficient to plant only an insignificant portion of the thousands of acres which should be reforested. The law allowing a partial tax exemption on planted land has produced no tangible results. There is a question as to its constitutionality, and even if

valid it is not sufficient to encourage a large amount of planting. A total tax exemption until maturity of the timber might be considered constitutional and would certainly be more of an inducement.

At the last session of the General Court a bill failed of enactment which provided aid for land owners in reforestation and authorized the Forestry Commission to take over, plant, and hold tracts of land, and later return them to the owners upon the payment by the owner of the state expenditures. This bill met with general favor and failed to pass purely through accidental causes. The substance of this bill should be enacted into law. Any plan for state aid in reforestation should also provide for assisting towns and cities in planting their land and also for the continued acquisition and planting of waste lands directly by the state.

The Forestry Commission submits the following recommendations:

That the present system of selling trees from the state nursery and securing them from commercial nurseries for distribution to land owners within the state be continued.

That the state forester be authorized upon application from private owners to examine tracts of land, execute planting plans, and furnish not over 2,000 trees free of charge for planting on said applicant's land.

That whenever a land owner deeds a tract of land to the state free, the commission shall, upon a favorable report being filed by the state forester, authorize the state forester to plant, protect, and otherwise care for said tract for a term of ten years; and that at the end of this period the owner be allowed to purchase said tract from the state at the actual cost of improvements with interest for the period.

That the state forester be authorized to furnish free of charge to towns and cities trees for planting on land belonging to said town or city.

That provision be made for the planting of all land on the present state forests and such land acquired in the future, and for planting waste land belonging to all state institutions where such planting is desirable.

## PUBLIC FORESTS.

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The most important feature of the forestry movement in the Eastern States is the increasing amount of land passing into public ownership. New York, Pennsylvania, Vermont, New Hampshire, Massachusetts, Connecticut, New Jersey, and Maryland now own state forests, aggregating 2,680,400 acres. Recently Massachusetts has begun the acquisition of forest land on a large scale, appropriating \$90,000 for the purpose. National forests acquired under the Weeks Act in the state of New Hampshire, and the southern Appalachian states now total over 2,000,000 acres. Acquisition both by the Federal Government and by the states is progressing rapidly.

In New Hampshire, the total area of national forests for which purchase has been arranged in the White Mountains is 225,000 acres. The state forests now total 7,518 acres, 6,680 acres of which has been acquired within the past two years. Towns and cities own 11,168 acres. Besides this the Society for the Protection of New Hampshire Forests owns four tracts, comprising 830 acres; and the Appalachian Mountain Club owns eleven tracts, comprising 704 acres. These are open to the public. There is also a considerable amount of forest land owned in connection with state institutions and county farms. The total area of public and quasi-public land in New Hampshire is over 245,320 acres.

## THE WHITE MOUNTAIN NATIONAL FOREST.

The following has been written at the request of the Forestry Commission by Mr. J. St. J. Benedict, Forest

Supervisor, Gorham, N. H., to summarize the policy of management of the White Mountain National Forest.

Over 225,000 acres have been purchased by the Government, and are included in the National Forest in the White Mountains. Title has not passed to the government on the last two or three tracts purchased, but the surveys to determine the exact acreage are nearing completion, after which these purchases will be consummated. The tracts acquired and included in the Forest include all, or the greater portion of, the following areas and towns: Bean's Purchase, Low & Burbank Grant, Thompson & Meserve, Sargent's and Hadley's Purchases, Martin's Location, Green's Grant, Pinkham Grant, and lands in Jackson; also lands in the towns of Carroll, Bethlehem, Franconia, Albany, Bartlett, Woodstock, Thornton, Benton, beside smaller adjoining tracts in Waterville, Warren, Randolph, Gorham, and Shelburne.

The Headquarters Office for the Forest is located in Gorham. The policy of the Forest Service is to develop all of the resources of this Forest so far as is possible. An organized system of fire protection has been established; Ranger Stations built on different portions of the Forest and connected by telephone lines with headquarters; caches of fire tools located at many points, and roads and trails opened up and improved.

Studies of forest conditions are being carried on to determine the proper regulations to govern the cutting and removal of timber and brush disposal. The timber sale work will be started under Forest Service regulations, removing mature timber, but at the same time by proper management and by conservative cutting, increasing the quantity and value of the more desirable trees, and maintaining a permanent forest cover. By proper management of the Forest, not only will the timber supply be conserved, but also the stream flow will be regulated and maintained, and since the National Forests are the great recreation grounds of the Nation, they are also an important factor for the best development of the region.

## STATE FORESTS.

During the two years covered by this report, four tracts have come under state ownership: The Crawford Notch, 5,925 acres; the Merriman Forest Reservation, 513 acres; the Huckins Forest Demonstration Tract, 100 acres, and the state nursery and experiment tract, 142 acres. A tract of 40 acres known as the White Horse and Cathedral Ledges, owned by the state since 1901, was transferred to the management of the Forestry

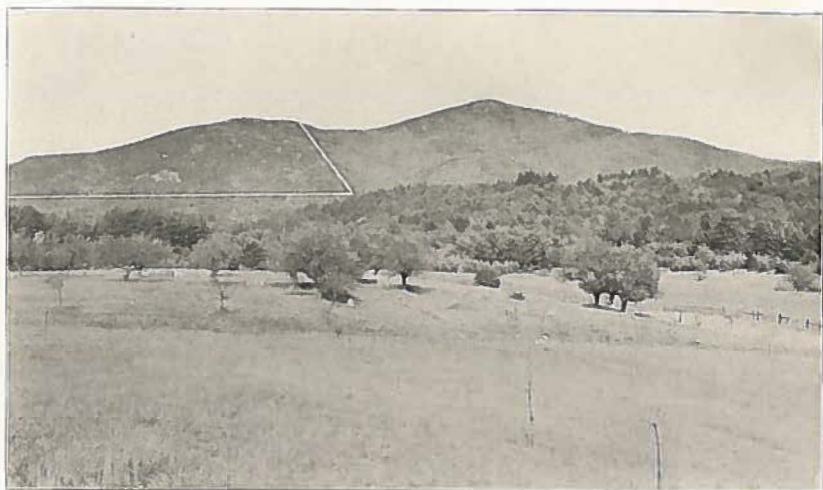
Commission. It is the purpose of the commission to continue the present policy of acquiring state forests by gift, and by purchase where it can be done at a reasonable price. The educational value of these tracts serving as model woodlots to demonstrate the principle of forestry will be of great value to the woodlot owners. Also, within a few years they will yield a substantial revenue from the sale of forest products. The location and area of all tracts now owned is shown in the following table:

### Areas of State Forests.

NAME OF TRACT.	Location.	Acres.
State Nursery and Experiment Forest	Gerrish	142
Crawford Notch	White Mountains	5,925
Monadnock Reservation	Jaffrey	493
Haven Reservation	Jaffrey	95
Walter Harriman Reservation	Warner	210
Cathedral and White Horse Ledges	Conway	40
Merriman Reservation	Bartlett	513
Huckins Demonstration Tract	Ossipee	100
Total area		7,518

### Forest Nursery and Experiment Tract.

Last year a tract of 142 acres at Gerrish was bought adjoining the present nursery site. It is located on the central state boulevard less than a quarter of a mile north of the Gerrish railroad station. The tract contains 45 acres which carries considerable merchantable timber of both pine and hardwood, in addition to a heavy young growth of pine; 47 acres of dense young mixed growth; and 50 acres of open land, most of which is in smooth, tillable fields. There is a brick house and outbuildings with splendid water supply. It is



MERRIMAN FOREST RESERVATION, BARTLETT MOUNTAIN, AND  
MT. KEARSARGE LOOKOUT STATION.



HEADQUARTERS CAMP, ALLEN SPRING, CRAWFORD NOTCH STATE FOREST.

the purpose of the commission to transfer the state nursery from its present situation on leased land to the state's land. On part of the open land experimental planting of forest trees will be carried on; in the woodlot demonstrations of conservative cutting of mature timber, protecting young growth and improvement thinnings, while the fields will bring in a revenue to help maintain the nursery. This year nearly \$300 was received for crops raised on the fields. The first work being done is to repair the buildings and clear fire lines in the woodland along the roads.

### **The Crawford Notch.**

The law providing for the purchase by the state of the Crawford Notch was enacted in 1911, but owing to legal delays it did not become the property of the state until June 28, 1913. The tract consists of 5,925 acres, and its management is by law vested in the Forestry Commission. Timber may be cut by the commission for the purpose of improving the forest growth, but any considerable amount of timber not needed for forest conservation or to preserve the scenic beauty of the Notch may be cut only with the approval of the Governor and Council.

Since the property has been managed by the Forestry Commission, active steps have been taken to develop it along the lines intended by its acquisition. The first work was to protect it from fire. For this purpose, a central headquarters camp, near the Allen Spring, was built and equipped with fire fighting tools and apparatus; a patrolman was employed to warn persons during the dry weather about fire danger; trails were cleared of inflammable material; and fire notices were posted. The Highway Department maintains a splendid road through the Notch, and the fire patrolmen and state road patrolman working together, have cleaned and burned brush along the highway to prevent fires.

The commission will further develop the tract by opening up vistas along the highway, so that tourists may here and there get glimpses of the natural beauty of the Notch; but this will not be done without the advice of a competent landscape expert. From time to time, small patches of mature timber may be removed and revenue secured. There are several places where old timber is standing over thrifty young growth and where the cuttings would seldom be seen. Additional revenue may be obtained from the leasing of camp and cottage sites.

#### **The Merriman Reservation.**

In February, 1913, Mrs. Helen B. Merriman of Intervale gave to the state a forest reservation on the south slope of Bartlett Mountain. The tract contains approximately 500 acres, and is nearly all covered with a growth of spruce, hardwoods, and pine. It will be used for experimental work in improvement thinnings and conservative cuttings. It is located within a short distance from the Mt. Kearsarge lookout station, so that fire protection and improvement work may be done by the lookout watchman with small additional expense to the state.

#### **The Huckins Forest Demonstration Tract.**

Mr. Samuel O. Huckins of Ossipee has deeded to the state 100 acres of land near Ossipee Center. It is land that once carried a heavy stand of white and Norway pine, but since cutting, has failed to reseed to anything but pitch pine. The tract will be planted with different species of pine, some in pure stands and some in mixtures, and used to demonstrate proper methods of reforestation.



A PORTION OF THE NEWINGTON TOWN FOREST.

## MUNICIPAL FORESTS.

**Present Extent.**

At the last session of the General Court, a law was enacted authorizing towns to purchase land and devote it to the practice of forestry under the supervision of the State Forester, the net revenue from the sale of wood and timber to be turned into the town treasury. No land has been bought by towns under this act, but several town governments have had purchases under consideration. There is already a considerable acreage owned by towns and cities in New Hampshire, and when the possibilities of town forests and what some towns have done becomes generally known, it is believed that towns owning land will take steps to develop it and others will purchase land for forestry purposes.

The forest owned by the town of Newington has proved a great aid to town finances. The tract contains 200 acres, most of which carried a dense pine growth, varying in age from 20 to 60 years. A few years ago it became necessary to make some town improvements. On a patch of six acres, the older growth pine on the town forest was sold. This brought in \$2,000, which made all the necessary improvements without increasing taxes. Plans are now under way to plant the cut-over land and to survey and map the growth, dividing it into age classes and forming a systematic plan of cutting and reforestation. In this way, the town government can tell for a long period of years in advance what the approximate revenue from the town forest will be. The Forestry Commission is prepared to assist towns in such work.

The City of Manchester now owns 1,800 acres around its water supply and the City Water Board has taken up active coöperation with the Forestry Commission in the improvement of the tract. As rapidly as possible the moth food trees, particularly oaks and gray birch,

are being removed and the open land planted to pine. During the past two years 89,000 pines have been set out.

The city of Concord owns about 400 acres held for water supply protection. The plan of management outlined by the Forestry Commission is on the same principle as for Manchester. Last year 50 acres of land badly infested with gipsy moths was lumbered, bringing in to the city a revenue of over \$8,000. The brush on this lumbered area was burned and a beginning has been made on reforesting it. So far 47,000 pines have been planted.

In Franklin there are 155 acres belonging to the city. Part of this is being used in coöperation with the United States Bureau of Entomology and the Forestry Commission in cutting out moth food trees and planting moth resistant trees. The object of this experiment is to ascertain the mixtures of tree species which will successfully resist moth attack. A tract known as the Sand Farm, recently left to the city by the late Hon. Warren F. Daniell, will make an excellent forest demonstration tract. Some pine growth already exists which can later be thinned, and 5,000 pines have recently been planted on the open land.

### **Purposes of Town Forests.**

A number of towns and cities in New England own land around their water supply basins and as public parks. In other cases, it has come to the town by gift or failure to pay taxes. Most of this land, if put under practical forest management will bring in good revenues to the town in addition to serving other purposes. Water supply lands must be owned by the municipality to protect the purity of the water. On such lands the aim of forestry is to plant all open land and get the watershed completely under forest cover, to cut out hardwoods and replace with evergreens which better

conserve the water supply and to cut mature timber from time to time for city revenue. Town or city parks can frequently be added to by purchase and so managed that the park forms the nucleus of the tract and serves for recreation purposes and the outlying land is managed for town revenue.

In New Hampshire, there is a good opportunity for municipal forestry on account of the amount of land already owned by towns and cities and the example of those that have already begun development. To encourage this movement it is recommended that provision be made for the Forestry Department to supervise the practice of forestry on town and city lands free of charge and to furnish trees free for planting on such lands.

## EDUCATIONAL AND SPECIAL PROJECTS.

### INFORMATION TO WOODLAND OWNERS.

The educational work of the Forestry Department has increased rapidly, showing a growing interest among land owners in the application of forestry to their woodlands. Many requests are received for information on special subjects, and also for inspection of and advice on the handling of woodlots. During the two years covered by this report the department has sent information by mail to over 7,000 persons; published three bulletins and three circulars on special subjects, the total distribution of these being over 15,000 copies; and prepared for the press numerous articles of interest to woodlot owners. The State Forester has carried on 50 educational meetings and lectures, and visited many woodlots. During the two years 170 woodlot examinations have been made and the owner given advice on the ground how to handle it.

The following is a list of publications made by the commission, which may be had upon application:

Bulletin III, "Wood-using Industries of New Hampshire."

Bulletin IV, "Reforestation Waste and Cut-over Land."

Bulletin V, "The Fire Wardens' Manual."

Bulletin VI, "The Chestnut Bark Disease."

Circular 4, "Laws and Instructions for Clearing Brush Along Highways; Planting and Care of Shade Trees."

Besides the work of the Forestry Commission, educational work in forestry and allied subjects is carried on through the New Hampshire College and Agricul-

tural Experiment Station at Durham. Courses of study in the college are given by Mr. J. H. Foster, Professor of Forestry. The purpose of these courses is not to educate professional foresters, but to teach the practical management of woodlots and timber tracts in this region as a part of general farm management, and to present a foundation knowledge of the subject for students who wish to take up forestry as a profession. Professor Foster also gives advice to farmers and land owners on the handling of woodlots, and has recently published a bulletin entitled, "Marketing White Pine in New Hampshire," Extension Bulletin No. 3, which may be had by applying to the Agricultural Experiment Station.

On account of the different phases of forestry and allied subjects, inquiries are often received for information on the control of gipsy moths and other insects and the suppression of tree diseases. The gipsy and browntail moth work is under the Commission of the State Department of Agriculture and is performed by the Entomologist at the New Hampshire Agricultural Experiment Station at Durham. The Pathologist at Durham also answers inquiries on tree diseases. Forestry problems involving special knowledge of forest insects or tree diseases are taken up in coöperation with the Department of Agriculture and the Experiment Station.

### FOREST TAXATION.

The subject of forest taxation has been a perplexing one in every state where forests occupy any considerable acreage. New Hampshire was the first state to make an investigation of the subject, and in 1908, the Forestry Commission, in coöperation with the United States Forest Service, published a report on investigations made throughout the state by Professor J. H. Foster, then an agent of the Forest Service. This report

gave a detailed account of the inequalities in the system then existing and made recommendations for legislation.

The Tax Commission, created in 1911, exercised its authority over local assessors to raise the valuation of woodlands along with other property. This focused public attention on the subject, and the Constitutional Convention of 1912 passed an amendment to permit the legislature to separately classify forest property for taxation. This amendment, however, was not ratified by the voters.

It seems probable that any laws which might be passed changing our methods of taxing forests would not be certain to be held constitutional by the courts. Vermont and Connecticut have this constitutional right and have recently passed laws relieving part of the annual burden of taxation from young and mature timber and providing for the collection of taxes when the timber is cut. The application of these laws is made optional with the woodland owner. It is reported that up to the present time few owners have taken advantage of the laws. Massachusetts has passed a more complicated law, classifying forest lands and providing different taxation methods according to the classification.

While waiting to see what the results will be in these states, an investigation is being carried on in New Hampshire to determine to what extent the rise in valuation has caused the cutting of immature timber. There has been complaint among woodlot owners in some sections of southern New Hampshire that the higher taxes are forcing them to cut timber which is still growing rapidly. Professor Foster is carrying forward and bringing up to date, in coöperation with the Tax Commission and Forestry Commission, the investigations made in 1908, to determine as nearly as possible the actual conditions. A report on this continued investigation will be ready by January 1, 1915.

## THE CHRISTMAS TREE INDUSTRY.

During the past few years there has been an increasing amount of public agitation, by persons interested in forest preservation, over the cutting of Christmas trees; so that the belief has become quite general that such cuttings are causing serious devastation in our young growing evergreen forests. This feeling found expression at the last two sessions of the legislature in the introduction of bills which would place almost prohibitive restrictions on Christmas tree cutting in New Hampshire.

Immediately after the introduction of this first bill in the legislature, the Forestry Commission began an investigation of the Christmas tree business to find out the extent and damage of such cuttings and the value of the industry to the state. Careful examinations were made of old and recent cuttings, and records of the number of trees shipped in 1910, 1911 and 1912 have been compiled. The three railroad companies have co-operated by giving the field agents of the commission free access to their records of such shipments at each station.

The investigation for the past three years shows that the cuttings have not been so extensive as was supposed. A total of 1,000,000 trees were cut during the three years, nearly all coming from Coös County and the northern part of Grafton County. Sullivan County furnished a few. To keep up the present annual cut in New Hampshire by raising the trees artificially would require the use of only about 1,500 acres of land.

The cut by years is as follows: 1910, 240,000 trees; 1911, 360,000 trees; 1912, 400,000 trees. Besides those used locally, New Hampshire trees were shipped to fourteen states, including the District of Columbia. New York, Pennsylvania and New Jersey used the

largest number, most of the shipments going to New York City and Philadelphia. Besides the above, trees were shipped from New Hampshire to the following states: Massachusetts, Delaware, Maryland, Virginia, Ohio, Indiana, Illinois, Michigan, Wisconsin and Missouri.

Balsam fir and spruce were the trees used almost entirely. Fir is used a little more than spruce because it is more symmetrical, the foliage more persistent after cutting, and more fragrant.

Christmas tree cutting, except for local sale, is carried on by relatively few firms, and most of the trees are purchased from small land owners. Tree dealers who operate on a large scale for large city trade either purchase the suitable trees on a specified tract for a lump sum, or at so much per tree on the stump. The trees are then cut and tied in bundles of one to five according to their size, hauled to the railroad and shipped to city jobbers. The amount which the land owner receives for the trees is only a small part of the price which they bring in the retail market. For a tree which costs fifty cents at retail in New York or Boston, the land owner would receive about five cents.

Where these trees are cut from scattering young growth in old pastures little harm results, but in many cases thrifty young stands of evergreens are cut into and the most perfect trees removed. Sometimes also tops of larger trees are cut off and used. This reduces the growing value of the young forest far beyond the small revenue received. It is possible to thin out young fir and spruce forests in such a way that Christmas trees may be secured from the thinnings, and the future growth be benefited, or at least not seriously injured by the removal. This requires careful selection in cutting and is not likely to be done by anyone except the land owner. Better results would be secured, therefore, if the owners did their own cutting and delivered the trees to buyers at shipping points.

Recognizing the great happiness which Christmas trees bring to our homes throughout the land, and also the possibility of making these trees a profitable by-product in the growing of forests, restrictive legislation would seem to be an unnecessarily severe means of preventing the small amount of annual damage. Rather would it seem advisable to educate the land owners in cutting these trees so as to improve their growth and in marketing them more profitably.

Last year Christmas was observed by a few of our New Hampshire cities for the first time with municipal Christmas trees. The tree used in Concord was secured from the Forestry Commission and brought from the state forest at Warner.

## THE CHESTNUT BARK DISEASE.

### Occurrence and Damage.

The chestnut bark disease has been in New Hampshire since 1909, but had not entered many towns until about 1912. When it was first discovered, the Forestry Commission took active steps to stamp it out. With the aid of the United States Bureau of Plant Industry and the Society for the Protection of New Hampshire Forests, the commission had all the chestnut region of New Hampshire thoroughly scouted, explaining the destructive nature of the disease to woodlot owners and showing them how to identify it and remove diseased trees.

Since 1912 the disease has spread rapidly and is now found in every town where there is any chestnut. It presumably came into the state from Massachusetts, is worse in the southern towns and is advancing northward. Some woodlot owners have been damaged over \$1,000. It is spreading so rapidly that unless some climatic or pathologic factor operates to check its progress,

it will be only a few years until all the chestnut in the state will be infected.

The center of infection is the vicinity of New York City. In the neighboring parts of Connecticut and northern New Jersey, it has killed every chestnut tree, and threatens to soon kill all chestnut in southern New England, New Jersey and Pennsylvania. The disease is now found as far south as North Carolina and as far north as central New Hampshire, which is the northern edge of the chestnut range.

#### **Pathology and Identification.**

The chestnut bark disease is caused by a fungus, *Endothia Parasitica* (Murr.) A. and A. A fungus is one of the lower order of plants, such as toadstools, punks on decayed logs, etc. Some of these fungi grow only on dead wood, while others thrive on live trees. The chestnut bark disease is one of the latter kind and grows in the inner bark of chestnut trees.

The disease is carried by spores, or minute bodies which correspond to the seeds of higher plants. These spores lodge in cracks or wounds in the bark. The warm, damp weather of spring causes the spores to sprout and send out small threads which penetrate the inner bark, or live part of the tree. Here the growth continues forming a canker or "sore," which spreads concentrically from the infected spot. The growth of the fungus kills the live inner layer of bark where the new wood is forming, and finally completely girdles the trunk, or the limb on which it started. If the point of attack happens to be on a limb, only the part above the canker will be killed immediately; the rest of the tree may survive several years. But if the disease gains entrance on the trunk, it kills the whole tree. Small reddish-yellow or deep orange-colored pustules, not much larger than a pin head, appear on diseased portions of the bark in summer. These pustules bear the fruiting

bodies and later allow the spores to escape and carry the disease to other trees.

The disease is recognized in summer by the dead yellow leaves at the top of the tree or on an infected branch. The smooth bark on young sprouts and limbs is frequently swollen soon after the disease starts. In other cases it is apt to be sunken, but may have a swollen margin around the border of the canker. The orange-colored pustules are quite characteristic, and in damp, rainy weather spores are often found in greenish-yellow strings over the canker. Where the disease is working under the thick bark of the trunk or a large limb, there may not be any noticeable shrinking of the bark, but the pustules will be found in the cracks. After the disease has worked for a season in such a place the bark will generally sound hollow when tapped. Diseased trees sprout vigorously, but the sprouts soon become infected and die. A clump of sprouts may be thrown out below any canker on the trunk where the disease has been working for several months. The length of time a tree has been diseased may be closely approximated by counting the annual rings on the oldest sprout below the canker and adding one year for the starting of the canker. In winter the dead leaves and burrs generally hang on above the diseased part and make the presence of the disease very easy to recognize.

The disease does not usually attack the wood more deeply than the very thin layer of woody cells formed in the current year; and therefore does not lower the value of the tree for timber or lumber, provided the tree is cut and used soon after the disease strikes it. A blight-killed tree deteriorates just as any other dead tree.

#### **Utilization.**

The spread of the disease has been so rapid during the past two years as to make futile all efforts to stamp it out in localities where infected trees were numerous.

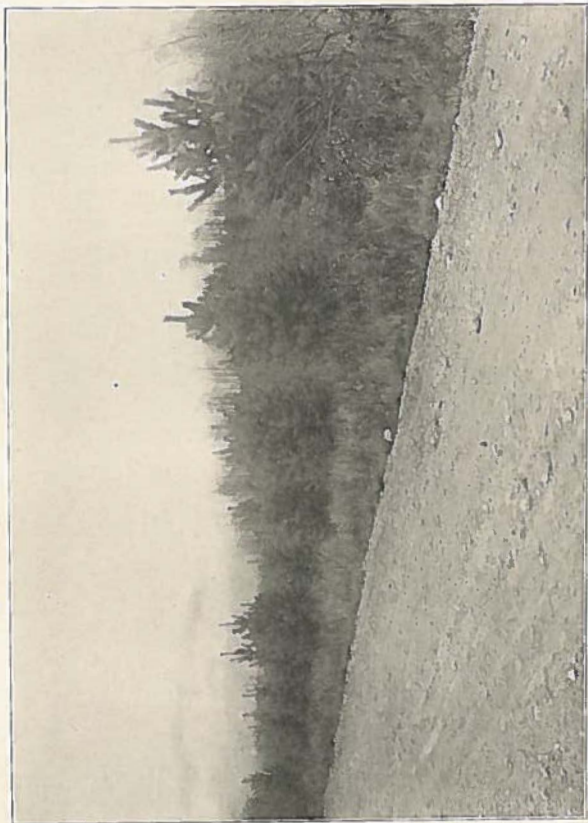
An attempt has been made to try and arrest the progress of the disease along the northern edge of the range where only widely scattered infected trees existed. The main work, however, has been to gather and publish all available information on the marketing of chestnut products and place this in the hands of woodlot owners in the chestnut region so they could sell to advantage chestnut which is now diseased or will soon die.

The Forestry Commission in coöperation with the Forest Service and Bureau of Plant Industry, United States Department of Agriculture, published in April, 1914, a bulletin covering this subject, which has been widely distributed. The data was secured by field agents who visited all wood users in the chestnut region of New Hampshire. During the coming year the information will be brought up to date and field agents of the department will visit upon request any woodlot owner.

## PLANTING AND CARE OF SHADE TREES.

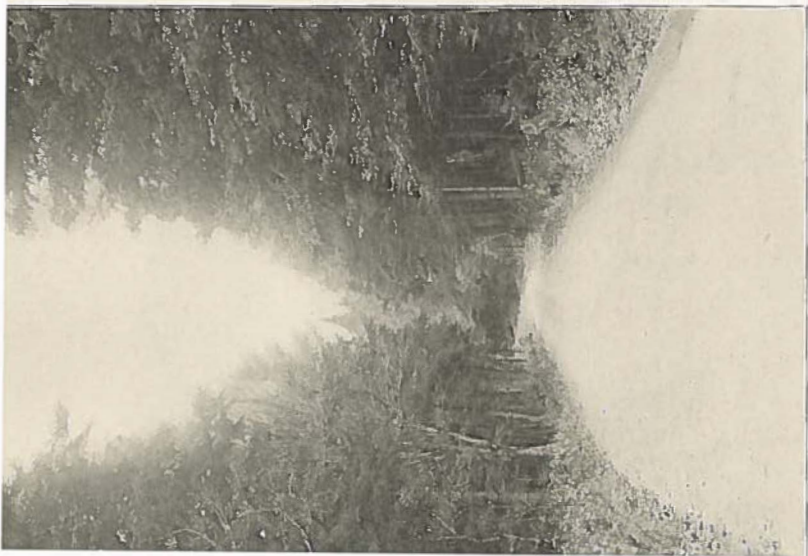
### **Little Protection from Old Laws.**

A law designed to protect roadside trees was passed in 1903. This law requires boards of selectmen to appoint tree wardens, making it the tree warden's duty to mark with metal tags furnished by the Forestry Commission all roadside trees desirable for preservation. It was unlawful to remove any trees so marked except with the tree warden's permission. In a test case, the Supreme Court decided that shade trees along the highway belonged to the abutting owner, and might not be taken by the town unless paid for. In 1905 the law was amended, authorizing towns to appropriate money for the purchase of such trees and making it the tree warden's duty to acquire them for the town. The result has been that very few towns have appointed tree wardens within recent years, and it has been difficult



SCOTCH PINES PLANTED AT BRETTON WOODS 10 YEARS AGO TO PROTECT  
AN EXPOSED ROAD.

Properly regulated shade helps in highway maintenance.



A NATURALLY SHADED HIGHWAY.

to induce them to do so for fear of the possible expenditures in the purchase of trees. An additional hardship has been worked on the towns because they are required to keep the roadside trees clear of moths, and yet cannot remove the trees if their removal is desirable, nor prevent their removal except by purchase.

The decision against the law of 1903 was based on the idea that the public owns no actual land in the highway limits, but only the right to travel over the highway, and may remove only trees that obstruct travel. Since it is now clearly recognized that properly regulated shade is a factor in highway maintenance, it is possible that a law might be passed giving the state and towns authority over all highway trees for this purpose.

#### **Provisions of the New Law.**

The General Court of 1913 amended the shade tree law with a view to preventing fire damage as well as encourage the towns to plant and care for roadside trees. This amendment requires the towns to cut and dispose of bushes and brush along the highways (see page 88), but to leave trees properly spaced for shade and ornament. It further authorizes the Forestry Commission to furnish trees to the towns for roadside planting free of charge. It recognizes that there is a direct relation between road maintenance and proper regulation of shade, and that while this object is being attained the appearance of the roadsides will be continually improved. On all state roads and trunk lines the law is to be carried out by the Highway Department, on town roads by the boards of selectmen, and in unincorporated places by county commissioners.

#### **Forestry Commission to Furnish Trees.**

Since it requires several years to grow trees large enough for roadside planting the commission will not have these trees ready to distribute until 1915. A number of towns have applied for trees, and the Highway

Department is planning to do some planting along state roads.

In general, the rule should be to plant along light, sandy roads trees that cast a heavy shade, and along roads where the soil is heavier, trees that cast a light shade. Along sandy roads evergreens are better trees to use. They have a heavy, constant shade, which helps to retain the moisture in the road. For such land white, Norway and Scotch pine are available. Where the soil is heavier, the object is to have as little shade as possible early in the spring, so that the frost will get out of the road early; and to maintain a fairly dense shade during the summer. For such situations, European larch and white ash are well adapted. Neither is subject to moth attack, both grow rapidly, have no leaves in early spring and a fairly dense foliage in summer.

Towns desiring to plant on an extensive scale should consult the Highway Department as to the kinds of trees and spacing that will be best for road maintenance. In special cases, where the Highway Department approves and the State Moth Agent decides that the town is well equipped to control moth infestations, the Forestry Commission may furnish maples, elms, and other desirable shade trees. Only moth resistant trees (evergreens and a few species of hardwoods) are being grown at the state nursery for roadside planting.

#### **Planting Around Rural Schools.**

In the spring of 1914, the commission distributed small packages of trees to a number of rural schools for planting on Arbor Day. The trees were set out along the roadside approaches to the school grounds, and complete instructions were sent for the care and planting. Each year trees will be sent to schools desiring to plant. Those schools that are successful in getting the trees to grow along the roadsides near the school grounds will later be furnished with additional trees and instructions for planting windbreaks and decorative groups around the schoolhouses.



A STRIP OF TIMBER LEFT ALONG THE EDGE OF A LUMBERING OPERATION.  
BY FRANK P. LORD, OSSIPEE.



THE SAME UNCUT STRIP AS SEEN FROM THE OTHER SIDE ALONG THE  
EAST SIDE STATE HIGHWAY.

## APPENDIX.

## FOREST LAWS.

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### AN ACT TO IMPROVE THE STATE SYSTEM OF FOREST PROTECTION.

(Chapter 128, Laws of 1909, as amended in 1911 and 1913.)

SECTION 1. On the first day of May, 1909, the Governor, with the advice of the Council, shall appoint a Forestry Commission of three members, one of whom shall hold office for one year, one for two years, and one for three years, and thereafter shall appoint their successors for terms of three years each; the said commissioners to serve without compensation, but to receive for their legitimate expenses in the exercise of their duties such sums as the Governor and Council shall audit and approve, to be paid from the treasury upon warrant of the Governor.

SECT. 2. The Forestry Commission shall appoint a state forester to serve at the will of the commission at a salary to be fixed by them, not exceeding \$2,500 a year. The state forester shall, under the supervision of the Forestry Commission, execute all matters pertaining to forestry within the jurisdiction of the state, and shall be allowed reasonable travelling field expenses and office expenses in the necessary performance of his official duties and within the limits of the appropriation, may hire such field and office assistants as in the judgment of the commission is necessary for the proper execution of his duties, and upon terms approved by the Forestry Commission, may enter into coöperation with departments of the Federal Government for the promotion of forestry work within the state. It shall be the duty of the state forester to direct, aid and coöperate with all district chiefs, forest fire wardens and other employees of the state as provided for in this act,

and see that they take such action as is authorized by law to prevent and extinguish forest fires and do other work which the Forestry Commission may undertake for the protection, improvement and extension of forests. He shall, as far as his other duties may permit, carry on an educational course of lectures within the state, and may conduct exhibits on forestry at fairs within the state. He may, under the direction of the Forestry Commission, conduct investigations within the state on forestry matters and publish for distribution literature of scientific or general interest pertaining thereto. He shall, under the direction of the Forestry Commission, prepare biennially a report to the Governor on the progress and condition of state forest work and recommend therein plans for improving the state system of forest protection, management, replacement and extension. Such report shall contain an itemized statement of all expenses incurred or authorized by the State Forester or by the Forestry Commission.

SECT. 3. The state forester shall, upon request and whenever he deems it essential to the best interests of the people of the state, coöperate with counties, towns, corporations, and individuals in preparing plans for the protection, management, and replacement of trees, woodlots, and timber tracts, on consideration and under an agreement that the parties obtaining such assistance pay his field expenses while he is employed in preparing said plans.

SECT. 4. The selectmen of all towns and the mayors of all cities shall, and other citizens may, as soon as may be, after this act takes effect, recommend to the state forester the names of such persons as may in their estimation be fit to fill the offices of forest fire warden and deputy forest fire warden in their respective towns and cities. After investigation the state forester may choose and appoint from the persons recommended, as above prescribed, not more than one competent person in each town or city to be the forest fire warden for said town or city and such deputy forest fire wardens as he deems necessary. Upon

the appointment of a forest fire warden by the state forester in any town or city, the term of office of the forest fire warden then or theretofore acting in said city or town shall immediately cease, and the new appointee or appointees shall thereafter serve for one year, or until a successor is appointed as hereinbefore provided. The state forester shall have the power in the exercise of his discretion to remove any forest fire warden or deputy forest fire warden from office. Upon the termination in any manner of the term of office of any forest fire warden, or deputy forest fire warden, a successor shall be appointed in the manner hereinbefore provided for the appointment of such officers originally. Forest fire wardens and deputy forest fire wardens themselves, or some agent or agents designated by them, shall, when directed by the state forester, patrol the woods in their respective cities or towns, warning persons who traverse the woods, campers, hunters, fishermen and others, about lighting and extinguishing fires. They shall post extracts from the fire laws, and other notices sent them by the state forester, along the highways, along streams and waters frequented by tourists and others, at camp sites, and in other public places. If, in or near woodlands, any person, other than the owner of said land or his agents acting under his direction, shall build a fire when warned not to do so by an authorized official, or shall fail to extinguish a fire when ordered to do so by an authorized official he may be arrested by such official without a warrant.

SECT. 5. In unincorporated places the state forester may appoint a forest fire warden and one or more deputy forest fire wardens to have the same powers and the same duties as the town forest fire wardens. When so appointed by the state forester, said forest fire wardens and deputy forest fire wardens shall succeed the present incumbent or incumbents, if any. The state forester shall have the power to remove said forest fire wardens and deputy forest fire wardens from office, at his discretion.

SECT. 6. The state forester shall, under the direction of the Forestry Commission, divide the state into not more than four fire districts, fixing the boundaries of such districts according to efficiency of supervision, and may appoint a district chief in each district. Said district chief shall serve at the will of the state forester and shall be allowed such wages and expenses as may be fixed by the Forestry Commission within the limits of the appropriation. It shall be the duty of the district chief to assist the state forester in directing and aiding all forest fire wardens and deputy forest fire wardens in his district in the performance of their duties, and to perform such duties as the state forester and Forestry Commission may direct in the protection, improvement, and extension of forests.

SECT. 7. It shall be the duty of the forest fire warden and deputy fire warden to extinguish all brush and forest fires occurring in his town, and either of them may call such assistance as he deems necessary to assist him in so doing, and may require the use of wagons, tools, horses, etc., for that purpose, but such authority shall not interfere with the authority of chiefs of city fire departments. If any person fails to respond to the warden's call for his assistance or the use of his property, he shall be fined not exceeding ten dollars for each offense. Forest fire wardens and deputy forest fire wardens in towns and unincorporated places shall be allowed for their services such remuneration as may be fixed by the Forestry Commission and the state forester. The owners of all property required by the forest fire warden or deputy forest fire warden in the extinguishment of a forest or brush fire shall receive reasonable compensation therefor.

SECT. 8. In case the forest fire warden or deputy forest fire warden and the persons summoned to assist him or furnish the use of property shall fail to agree upon the terms of compensation at the time or after the required service has been rendered, the dispute shall be referred to the commissioners of the county in which the city or town is located, for final settlement.

SECT. 9. The expenses of fighting forest and brush fires in towns and cities and other expenses lawfully incurred by forest fire wardens and deputy forest fire wardens of said town and cities in preventing forest fires shall be borne equally by the town or city and by the state. The forest fire warden shall render to the selectmen or the mayor, as the case may be, a statement of said expenses within one month of the date they are incurred, which said bill shall show in detail the amount and character of the services performed, the exact duration thereof, and all disbursements made by said wardens, and must bear the approval of the forest fire warden, and the approval also of the deputy forest fire warden, if said expenses were incurred by the authority of said deputy forest fire warden; said bill shall be audited, and if approved by the selectmen of the town or mayor of the city wherein such services were incurred, shall be paid on the order of the selectmen by the town or city treasurer. A duplicate bill, showing that the same has been audited and paid by the town, shall be filed by the selectmen or the mayor with the state forester, who shall draw his order on the state treasurer in favor of said town or city for the portion of said bill for which the state is liable in accordance with the provisions of this section.

SECT. 10. The forest fire wardens and the deputy forest fire wardens in unincorporated places shall render to the state forester a statement of such expenses as they have lawfully incurred under this act in fighting or preventing fires in woodlands within one month of the date upon which such expenses are incurred. The aforesaid statement shall show in detail the amount and character of the services performed, the exact duration thereof, and all disbursements so made by the forest fire warden, and the deputy forest fire warden, if said expenses were incurred by the authority of said deputy forest fire warden. The aforesaid statement shall be audited by the state forester and if by him approved he shall draw an order upon the

state treasurer for the same. The expenses incurred in fighting forest and brush fires and other expenses lawfully incurred by a forest fire warden or a deputy forest fire warden in preventing forest fires in an unincorporated place shall be borne equally by the state and said unincorporated place; but the total expense shall be paid in the first instance from the state treasury, and one half thereof shall be added to the tax assessed the following year against said place in the same manner as is provided by chapter 62 of the Public Statutes for the assessment of taxes in unincorporated places generally.

SECT. 11. Forest fire wardens and deputy forest fire wardens shall make reports to the district chief of the district in which they are located or to the state forester at such time and in such form as the state forester may require. If a warden has any reason to believe that any forest or brush fire in his city or town was caused in violation of statute he shall report to the state forester all the facts coming within his knowledge. The state forester may then bring the facts before the attorney-general of the state, who, if the facts as reported seem to him sufficient, shall take action to recover the penalty fixed by statute for such violation.

SECT. 12. No person shall kindle a fire upon public land without permission first had from the Forestry Commission, the state forester, district chief, forest fire warden, deputy forest fire warden, or from the official caretaker of such public land. No person shall kindle a fire upon the land of another without permission first had from the owner thereof or from the owner's agent.

SECT. 13. Between the first day of April and the first day of November, inclusive, of each year, no person shall kindle a fire or burn brush in or near woodland without the written permission of the forest fire warden or presence of the forest fire warden or person appointed to represent him.

SECT. 14. Fires kindled by throwing down a lighted match, cigar, or other burning substance, shall be deemed within the provisions of sections 12 and 13, and every person violating any provision of said sections shall be fined not more than two hundred dollars, or imprisoned not more than sixty days, or both.

SECT. 15. The state forester, or the forest fire warden, or the deputy forest fire warden, may arrest, without a warrant, any person or persons taken by him in the act of violating any of the laws for the protection of forest lands, and bring such person or persons forthwith before a justice of the peace or other justice having jurisdiction, who shall proceed without delay to dispose of the matter as justice may require.

SECT. 16. Every person who shall set fire on any land, that shall run upon the land of any other person, shall pay to the owner all damages done by such fire.

SECT. 17. If any forest fire warden or deputy forest fire warden provided for in this act shall wilfully neglect or refuse to perform the duties prescribed for him he shall forfeit not less than \$100 nor more than \$500, to be recovered in an action for debt, upon complaint of the Forestry Commission, and all forfeitures so recovered shall be paid into the state treasury.

SECT. 18. It shall be the duty of any person who discovers a forest or brush fire not under control or supervision of some person, to extinguish it or report it immediately to the forest fire warden or deputy forest fire warden or official in charge of forest protection, and failure so to do shall be punished by a forfeiture not exceeding ten dollars, to be recovered upon the complaint of the warden.

SECT. 19. All moneys received from fines imposed under and by virtue of the provisions of this act shall be paid to the state treasurer and kept by him as a separate fund, to be paid out by him upon the requisition of the state forester, for use in connection with the prevention and suppression of forest fires.

SECT. 20. Whenever any person or persons shall supply the necessary funds therefor, so that no cost or expense shall accrue to the state, the Forestry Commission is hereby authorized to buy any tract of land and devote the same to the purposes of a public reservation. If they cannot agree with the owners thereof as to the price, they may condemn the same under the powers of eminent domain, and the value shall be determined as in the case of lands taken for highways, with the same rights of appeal and jury trial. On the payment of the value as finally determined, the land so taken shall be vested in the state, and forever held for the purposes of a public reservation. The persons furnishing the money to buy said land shall be at liberty to lay out roads and paths on the land, and otherwise improve the same under the direction of the Forestry Commission, and the tract shall at all times be open to the use of the public. The Forestry Commission may take means for the protection of such reservation from forest fire, and, as far as compatible with the wishes of the donor, may plant and remove trees and otherwise improve the forest conditions.

The commission is empowered to receive in the name of the state free gifts of land for the purposes of forestry, in such manner that no cost of purchase shall accrue to the state, and may arrange for the registration of necessary papers, map and survey the land, protect it from fire, plant, cut and otherwise improve the forests as it is advisable within the limits of the appropriation.

The commission is empowered to purchase, with the consent of the Governor and Council, suitable tracts of land for use in demonstrating the principles of forestry, and make provisions for the management of the same, as is advisable within the limits of the appropriation.

All revenue derived from the sale of forest products from state land shall revert to the state treasury, except the revenue derived from the state nursery, which shall be reinvested in the state nursery by the Forestry Commission.

SECT. 23. The state forester, under the supervision of the Forestry Commission, is hereby empowered to acquire in the name of the state suitable land and maintain the same as a state forest nursery. He shall raise seedling trees of useful varieties for planting and shall, on terms approved by the commission, sell said seedling trees to persons who desire to plant them within the state. He may, under the supervision of the commission, enter into agreement with persons or institutions to grow seedling trees to be disposed of as above prescribed if the commission deems it expedient so to do.

SECT. 24. The state forester, with the consent of the Forestry Commission, is empowered to purchase in the name of the state the equipment of the present mountain lookout stations and to maintain such stations thereafter, and to establish and maintain additional mountain lookout stations, connected by telephone lines, to be used for the discovery and control of forest fires, and shall have the right to receive and hold in the name of the state gifts of land for observatory sites and rights of way for paths and telephone lines. If observatory sites or rights of way necessary for the maintenance and effective operation of lookout stations cannot be acquired by gift or purchase, the Forestry Commission shall have the right to acquire the same under the power of eminent domain, and the value thereof shall be determined as in the case of land taken for highways, with the same rights of appeal and jury trial.

SECT. 25. The state forester, under the direction of the Forestry Commission, may call annual conferences of the forest fire wardens and other employees of the Forestry Department in different sections of the state for the purpose of improving the service. Not more than ten such meetings shall be held within one fiscal year and not more than one meeting shall be held for the wardens of any one section within one fiscal year. Those summoned by the state forester shall be allowed their travelling expenses in

attending such conferences. He may, with the consent of the Forestry Commission, secure the attendance at such conferences of expert foresters from without the state, the said experts to be paid their necessary travelling expenses.

SECT. 26. For the purpose of prevention of fire, the state forester may establish at advantageous points throughout the state supply stations for tools and apparatus used in fire fighting and provisions necessary to men employed; make proper maps for the use of district chiefs and forest fire wardens, build fire trails and fire lines; employ paid patrols at suitable points and at necessary times, and use other means as seem advisable to the commission within the limits of the appropriations.

#### PORTABLE STEAM SAWMILLS REQUIRED TO USE SPARK ARRESTERS.

(Chapter 95, Laws of 1911.)

SECTION 1. No person, except when the ground is covered with snow, shall operate any portable steam mill unless the same is provided with a suitable spark arrester, approved by the state forester. Such approval shall be in writing, signed by the forester, and said approval may be revoked by the state forester in the same manner.

SECT. 2. It shall be the duty of the state forester to examine all portable steam mills or cause them to be examined, whenever he deems it necessary, to determine whether they are provided with suitable spark arresters, and whether the same are kept in constant use, as provided for in section 1 of this act. It shall be the duty of the town forest fire warden to examine portable steam mills, when requested to do so by the state forester, and make reports on the same in such form as the state forester may require.

SECT. 3. Any person operating a portable steam mill when the ground is not covered with snow, without a suit-

able spark arrester and the approval of the state forester, as herein provided, and any owner or part owner of said mill knowingly permitting its operation, shall be fined not less than fifty dollars and not more than one hundred dollars.

SECT. 4. All acts and parts of acts inconsistent with this act are hereby repealed, and this act shall take effect upon its passage.

### GOVERNOR AND COUNCIL MAY PROCLAIM A TIME OF DROUGHT.

(Chapter 59, Laws of 1909.)

SECTION 1. The Governor and Council when, in their opinion, the discharge of firearms might endanger property by starting fires in the woodlands during a period of excessive dryness, may suspend by official proclamation, posted and promulgated through the newspapers of the state, the open season, so called, for such time as they may designate.

SECT. 2. For the period which such proclamation shall cover, all provisions of the law relating to the closed season shall be construed to be in force, and if, during the continuance of such period, any person shall shoot an animal or bird for which there is no close season otherwise provided by law, he shall be punished by a fine of fifty dollars and costs.

SECT. 3. This act shall take effect upon its passage.

### PREVENTION OF FOREST FIRES ALONG RAIL- ROADS.

(Chapter 159, Public Statutes.)

SECT. 29. The proprietors of every railroad shall be liable for all damages to any person or property by fire or steam from any locomotive or engine upon their road.

SECT. 30. Such proprietors shall have an insurable

interest in all property situate upon the line of their road, which is exposed to such damage, and they may effect insurance thereon for their own benefit.

SECT. 31. Such proprietors shall be entitled to the benefit of any insurance effected upon such property by the owner thereof, less the cost of premium and expense of recovery. The insurance shall be deducted from the damages if recovered before the damages are assessed, or, if not, the policy shall be assigned to the proprietors, who may maintain an action thereon.

(Chapter 155, Laws of 1913.)

SECTION 1. Every railroad company or corporation operating locomotives within the state shall, subject to the approval of the Public Service Commission, equip and maintain in good condition a spark arrester and a suitable ash pan on every engine, except such engines as are operated by oil or electricity; and shall require its employees operating such engines to exercise due care to keep such devices in good order and to prevent the escape of live coals or sparks which may cause fires along the right of way; and shall, subject to the approval of the Public Service Commission, make and enforce regulations for the giving of fire signals and notifications of the existence and location of fires along the right of way to its employees. In carrying out this section, the Public Service Commission may serve orders and enforce compliance with such orders as provided in chapter 164, Laws of 1911, and amendments thereto.

SECT. 2. The state forester is hereby authorized to appoint as deputy forest fire wardens the section foremen or such other railroad employees as the authorized officials of the railroad may recommend. Such deputies when so appointed shall be vested with the powers and duties of deputy forest fire wardens as provided in chapter 128, Laws of 1909, and amendments thereto, except as such powers and duties are limited or extended by this act.

Railroad deputies thus appointed shall extinguish and supervise the fighting of forest and brush fires originating along the railroad right of way, but shall not be required to supervise the fighting of fires which do not originate along the right of way. The Forestry Commission shall instruct all wardens and other employees of the Forestry Department to cooperate with the railroad deputies in the prevention and extinguishment of railroad fires, to immediately notify the nearest station agent or railroad deputy upon the discovery of a fire along the right of way, and to combat such fire until the railroad deputy or other railroad official shall assume charge. A railroad deputy who receives notice of the existence of a fire adjacent to the right of way shall proceed forthwith to extinguish it. All just and proper expenses incurred in extinguishing forest or brush fires caused by the railroad company or its employees shall be paid by such railroad company; but the fact that such payment has been made shall not be admissible as evidence that such fire was so caused.

SECT. 3. Railroad companies shall promulgate among their employees instructions for the prevention and extinguishment of fires along the right of way; and shall, through the railroad deputies or other officials, organize and maintain a system of patrol during dry weather along the sections of its right of way where there is danger of fire. The fact that a section of the right of way was not patrolled shall not be admissible as evidence of negligence to debar such railroad from insurance on property, as provided in chapter 159 of the Public Statutes.

SECT. 4. Railroad companies shall have the right, subject to the provisions of this section, to enter upon forest or brush land adjacent to the right of way, without liability for trespass, for the purpose of clearing brush, grass and inflammable material from such land, for a distance of twenty-five feet from the railroad right of way, but shall not remove valuable timber growth without recompense to the owner. Prior to making such a clearing, the railroad

company shall give the owner thereof notice of its intention by letter deposited in the United States mail to his last known address, and thereafter by publishing said notice at least once in two papers of general circulation in the county. Said notice shall quote section 4 of this act. If the owner shall not file an objection to such clearing with the Public Service Commission within fifteen days from the date of such publication, he shall be deemed to have given consent. Upon the filing of such an objection by an owner, the Public Service Commission shall notify the owner the time and place when he may appear to show cause why such clearing should not be done. After a hearing, the Public Service Commission may sustain the objection or permit the clearing to be done and may prescribe the extent and methods of any and all such clearings. The Public Service Commission may require the assistance of the Forestry Commission and the state forester in furnishing information pertinent to the carrying out of this section.

SECT. 5. The Forestry Commission or its authorized agents shall have the right to enter upon railroad or other property to ascertain facts in regard to the carrying out of this act, and from time to time shall report such facts to the Public Service Commission.

SECT. 6. On and after July first, 1913, any person, firm or corporation cutting wood or lumber on property adjacent to the right of way of any railroad within the state shall dispose of the slash caused by such cutting in such a manner that the inflammable material shall not remain on the ground within twenty-five feet of any railroad right of way. Any operator of wood or timber on such land, or any owner of such land where cutting is done may be fined not more than ten dollars for each acre of such land or fraction thereof from which the inflammable material is not properly disposed of within sixty days from the cutting of the trees thereon; *provided* that any owner or operator who cuts wood or timber during the winter, after

November first, shall have until May first in Grafton, Carroll and Coös counties, and until April first in other counties, to remove the slash in accordance with the provisions of this section. If such slash is destroyed by burning, such burning shall be done with the permission of the town forest fire warden. The Forestry Commission is hereby charged with the execution of this section, and all owners or operators shall be required to use due care in clearing such land and shall not be relieved of liability of damage imposed by chapter 128, Laws of 1909, and amendments thereto. But no owner of such land shall be liable for damages resulting from fires not set by himself or his agents.

SECT. 7. This act shall take effect upon its passage.

(Chapter 125, Laws of 1913.)

SECT. 2. Whenever any railroad corporation shall deem it necessary for the public safety, or to prevent the kindling and spread of fire from its locomotives, that the land at or near any highway or farm crossing at grade, or upon the inside of any curve, be cleared and kept clear of buildings, trees, brush or other obstructions, or that a strip of land alongside its right of way be cleared and kept clear of trees, brush or other vegetation as a fire strip, or whenever to comply with any order made under the first section of this act it shall be necessary for any railroad corporation to remove buildings, trees, brush or other obstructions from land not owned by it, any such railroad corporation may apply by petition to the Public Service Commission for permission to take such land, or such rights and easements in land as may be needed for such purposes. Such petition shall set forth the title of the land involved, a description of the land, or of the rights and easements, and the purpose for which required. The commission, after notice and hearing, shall determine what land, or what rights and easements it is necessary for said

railroad corporation to take for the purpose specified, and shall make an order granting the same to said railroad corporation and fixing the compensation to be paid therefor. Upon the recording of a certified copy of said order in the registry of deeds in the county where the land affected lies, and payment or tender of payment of the compensation awarded, title to the land or to the rights and easements granted therein shall vest in said railroad corporation.

SECT. 3. At any time after the filing of a petition under section 2 of this act, the petitioner may record in the registry of deeds where the land affected lies a certified copy of said petition, and no sale, lease or other transfer of said land made after such record shall affect the proceedings, nor the title of said petitioner to any land, rights or easements which may be granted therein, but any person acquiring the title of any landowner may on his motion be substituted in place of said landowner as a party to said proceedings whenever the same may be pending.

SECT. 4. Any person aggrieved by any order awarding compensation for land or for rights and easements taken may appeal from said assessment by petition to the superior court setting forth the order appealed from, and said compensation shall be determined in the superior court, by a jury, if either party shall claim a jury trial. Such petition shall be filed in the superior court within fourteen days of the date of the order appealed from, exclusive of the day of the date of said order.

## TOWNS AND CITIES MAY PURCHASE FORESTS.

(Chapter 27.)

AN ACT AUTHORIZING TOWNS AND CITIES TO PURCHASE  
AND MANAGE LANDS FOR FORESTRY PURPOSES.

*Be it enacted by the Senate and House of Representatives  
in General Court convened:*

SECTION 1. Towns and cities 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.

SECT. 2. Any lands so purchased shall be managed under the direction of the state forester.

SECT. 3. The net proceeds, after deducting necessary expenses, from the sale of wood and timber from such lands shall be turned into the town treasury.

SECT. 4. This act shall take effect upon its passage.

LAW RELATING TO CUTTING BRUSH AND  
PLANTING AND CARE OF HIGHWAY TREES.

(Chapter 98, Laws of 1903, as amended.)

SECTION 1. Mayors of cities and selectmen of towns shall, immediately upon the passage of this act, and annually thereafter, appoint one or more tree wardens, who shall be discreet persons, resident of the city or town where appointed, interested in planting, pruning and preservation of shade and ornamental trees in public ways and grounds, whose business it shall be to perform the duties hereinafter specified, and shall be allowed such compensation for their services and expenses as the mayor or selectmen may deem reasonable.

SECT. 2. Towns and cities shall have control of all shade and ornamental trees situated in any public way or ground

within their limits, which the tree warden deems reasonably necessary for the purpose of shade and ornamentation; and it shall be the duty of the tree wardens, as soon as possible after their appointments, to carefully examine the trees, situated as aforesaid, and to plainly mark such trees as they think should be controlled by their municipality, for the purposes aforesaid. Galvanized iron disks shall be furnished by the secretary of the Forestry Commission to said officers as may be required by them for the purposes of this act at a cost not to exceed five hundred dollars a year. Said disks shall be painted red and have stamped on them the letters "N. H.," not less than an inch in height, and to be pierced in the center for the admission of a spike. The disks shall be inserted in each tree at a point not less than three feet nor more than six feet from the ground on the side toward the highway, by driving a spike through the disk into the tree within two inches of the spike's head, so that the disk may slide with the growth of the tree. If any of the spikes or disks shall be destroyed or defaced it shall be the duty of the warden to renew them as soon as possible after he is informed or discovers that they have been removed. They shall also have the power to designate from time to time, in the same manner as hereinbefore directed, such other trees within the limits of the public ways and grounds as in his (their) judgment should be preserved for ornament or shade.

SECT. 3. If any of the trees designated as aforesaid should prove to be private property, and the owners thereof refuse to release or convey their interest therein to the municipality, the tree warden shall acquire them for the use of the city or town by purchase if it can be done at a fair price. Failing in this, he may take said trees for the use of the city or town by appraising the fair value of the same and by causing to be served upon the owner thereof a notice of such taking, which notice shall state the number of each variety of tree so taken, the location of the same as near as practicable, and the value thereof

as fixed by him; and also by filing a copy of such notice as attested by him with the city or town clerk. If the owner shall be satisfied with the value stated in such notice, the tree warden shall cause the same to be paid to him forthwith. If the owner shall be dissatisfied with the action of said tree warden in valuing the trees so taken, he may, within thirty days after said notice has been served upon him, but not afterwards, apply to the selectmen to assess his damages. Such proceedings shall thereupon be had, including the right of appeal, as are provided in the case of assessment of damages in laying out highways by the selectmen; and thereupon such damages, if any, may be awarded as shall be legally and justly due to the landowner. Cities and towns are hereby authorized to raise and appropriate money to carry into effect the provisions of this act.

SECT. 4. Towns and cities may annually appropriate money, not exceeding in the aggregate fifty cents for each of their ratable polls in the preceding year, to be used by the tree warden in planting, pruning, protecting, and, whenever necessary, acquiring shade and ornamental trees within the limits of their public ways and grounds; and the Forestry Commission is hereby authorized to grow shade trees for roadside planting and to distribute said trees free of charge at the point where grown to towns for planting along roadsides, such trees to be planted under the supervision of the State Highway Department or the town tree warden. The State Highway Department may provide for the planting of such trees along any of the so-called trunk lines and pay the cost thereof from the maintenance funds available to the department under the motor vehicle law, and may plant such trees along any state roads and pay the costs of same from any appropriation available for such roads.

SECT. 5. Whoever desires the cutting and removal in whole, or in part, of any public shade or ornamental tree, may apply to the tree warden, who shall give a public hearing upon the application at some suitable time and

place, after duly publishing and posting notices of the hearing in two or more public places in town, and also upon the tree or trees which it is desired to cut and remove; *provided, however*, that the tree warden may, if he deems it expedient, grant permission for such cutting or removal without a hearing if the tree or trees in question is on a public way outside of the residential part of the town limits, such residential part to be determined by the tree warden. No tree within such residential limit shall be cut by the tree warden, except to trim it, or removed by him, without a hearing as aforesaid. The decision of the tree warden shall be final.

SECT. 6. It shall be unlawful to cut, destroy, injure, deface, or break any public shade or ornamental tree, or to affix to any such tree a playbill, picture, announcement, notice, advertisement, or other device or thing, whether in writing or otherwise, or to paint or mark such tree, except for the purpose of protecting it, and under a written permit from the tree warden, or to negligently or carelessly suffer any horse or other beast, driven or being lawfully in a public way or place, to break down, injure, or destroy a shade or ornamental tree within the limits of said public way or place; or to negligently or wilfully, by any other means, break down or injure any such tree.

SECT. 7. Mayors of cities, selectmen of towns, and county commissioners for unincorporated places shall annually during the months of August and September, and at other times when advisable, cause to be cut from within the limits of the highway all trees and bushes that cause damage to the highway, that endanger the safety of the traveling public, or that are objectionable from the material or artistic standpoint. Shade and fruit trees that have been set out or marked by the abutting landowners or by the town tree warden, and young trees standing at a proper distance from the highway and from each other, shall be preserved, as well as banks and hedges of bushes that serve as a protection of the highway, or that add to the beauty

of the roadside and it shall be unlawful for any one to deposit rubbish within the limits of any highway. On all state roads the plan of carrying out the provisions of this act shall be under the supervision of the State Highway Department. Said department shall make such rules and regulations for the purpose of carrying out the provisions of this act as shall, in its judgment, seem for the best interests of the state. Whenever any trees or brush cut along the highway is 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.

SECT. 8. Persons violating any of the provisions of this act shall forfeit not less than five nor more than one hundred dollars, to be recovered in an action of debt by the tree warden or any other person for the benefit of the town or city in which the tree is situated, or be fined not less than five nor more than one hundred dollars.

SECT. 9. All acts and parts of acts inconsistent with this act are hereby repealed, and this act shall take effect upon its passage.

## LIST OF FIRE WARDENS AND DEPUTIES.

(An asterisk (\*) means forest fire warden.)

TOWN.	NAME.	TELEPHONE
BELKNAP COUNTY.		
Alton .....	Oscar Duncan* .....	3-21
	Arthur D. Rollins, W. Alton.	
	John W. Proctor.	
	Frank Carpenter .....	34-4 Wolfeboro
	Phillip L. Drew.	
Barnstead .....	Charles E. Thyng,* R. F. D. 4,	
	Pittsfield .....	7-3
	E. B. Drake.	
	H. C. French, South Barnstead	8009-11 Pittsfield
	F. J. Holmes, R. F. D., Center	
	Barnstead.	
	L. J. Ayers, Gilmanton I. W.	
Belmont .....	C. O. Judkins*.....	8-12
	Edwin W. Blaisdell, R. F. D.,	
	Laconia .....	337-31 Citizens
	John Bryant .....	19-1/2
	R. H. Hoadley, R. F. D. 3, La-	
	conia .....	523-21
	Luke H. Rickert, R. F. D. 1,	
	Laconia .....	247-4 Citizens
Center Harbor .....	James R. Lovett,* Meredith.	
	Guy Cram, R. F. D. 1, Center	
	Harbor .....	14-3
Gilford .....	Charles H. Gove,* R. F. D. 4,	
	Laconia .....	574-2
	Frank Grant, R. F. D. 5, Lake-	
	port .....	562-8
	Fred J. Potter, R. F. D. 4, La-	
	conia .....	573-14
	Gilbert S. Young, Lakeport,	
	N. H.	
Gilmanton .....	Albert W. Hill,* R. F. D. 4,	
	Pittsfield.	
	Bert A. Maxfield .....	13-3
	O. W. Price, Gilmanton I. W.	
Laconia .....	Arthur W. Spring*.....	432-4
	Caleb J. Avery, The Weirs.....	123-4 Citizens
	W. H. Rand, 78 Oak St., La-	
	conia.	

TOWN.	NAME.	TELEPHONE.
Meredith .....	Charles N. Roberts*	
	F. A. Mead .....	16-14
	Lewis A. Higgins, R. F. D., Laconia.	
	Frank P. Corliss, R. F. D., Box 68, Meredith.....	325-2 Citizens
New Hampton .....	Charles D. Thyng*.....	4-1-1/4-1 Citizens
	Thomas J. Hayes, Winona.....	12-2 Citizens
	Victor L. Huckins, R. F. D., Ashland .....	10-11 Citizens
	F. A. Emerson, Bristol.	
Sanbornton .....	F. H. Hunkins,* R. F. D. 1, Laconia .....	233-2 1/2
	Edwin W. Lane, Hill.....	78-2 Citizens
	Charles H. Odell, R. F. D. 1, Laconia.	
	F. J. Thomas, R. F. D., Tilton	130-21 Citizens
	J. M. Hunt, Tilton.....	120-13 Citizens
Tilton .....	Joseph F. Leary,* Box 1.	
	John M. Hunt.....	120-13 Citizens
	H. C. Wyatt, R. F. D. 1, Tilton.	
CARROLL COUNTY.		
Albany .....	Archie Nickerson,* Pequaket..	4-6 Madison
	George B. Reed, Passaconaway.	13-12 or 15-12 Conway
	William Bourgault, Passacona- way .....	Mayo Farm, Passa- conaway
Bartlett .....	F. J. Ward.*	
	Horace E. Beane, Kearsarge....	North Conway
	Rufus M. Hall, Glen.....	18-41
Brookfield .....	Wallace F. Lang,* R. F. D. 1, Sanbornville .....	6-14 Sanbornville
	F. J. Woodus, Sanbornville.	
Chatham .....	A. B. Stiles,* South.....	Fryeburg, Me.
	Preston Chandler, North.....	Fryeburg, Me.
	W. H. Seavey, Kearsarge.....	12-31 No. Conway
	J. E. Kezar, Hastings, Me.....	4 Hastings, Me.
Conway .....	Fred T. Hale*.....	11-2
	H. S. Mason, Center.	
	Chester Potter, Center.	
	Horace E. Beane, Kearsarge....	North Conway
	M. A. Heath, Greenhill.....	11-23 Fin's Ldg.
	J. H. Woodward, Fryeburg, Me.	
	John H. Smith, North.....	3-11 No. Conway
	A. P. Irish, North.	
Eaton .....	John H. Bryant,* Snowville....	21-12 Conway
	Orin N. Currier, R. F. D., Freedom.	
	Geo. M. Perkins, Box 113, Eaton Center .....	9021-4 Conway

TOWN.	NAME.	TELEPHONE
Effingham .....	Richard Dearborn* .....	31 Pine River Line
	Oscar Avery, R. F. D. 1, Mountainview .....	Pine River Line
	John L. Marston, R. F. D. 1, Mountainview .....	Pine River Line
	Eugene Tewksbury, Effingham Falls.	
Freedom .....	John E. Perkins*.....	12-31 Mountainview
	L. G. Burnham.	
	G. F. Huckins.	
	H. J. Pascoe, West Ossipee....	13-12 Mountainview
Hart's Location.....	C. H. Morey,* Bemis.....	9602-4 No. Conway
	H. T. Hartshorn, Bemis.	
Jackson .....	Jonathan Meserve,* Box 43, Jackson.	
	D. W. Davis, Intervale.	
	O. W. Hayes.	
	J. E. Kezar, Hastings, Me.....	4 Hastings, Me.
Madison .....	Jos. E. Burke,* Silver Lake.	
	H. E. Chick.....	3-14
	Victor Staples.	
Moultonborough ....	Ernest Davis* .....	8-31
	Geo. A. Blanchard.	
	Lynde E. Davis, Center Harbor	15-12
Ossipee .....	F. E. Palmer,* Moultonville....	Mountainview
	W. H. Lord, Mountainview....	Mountainview
	Albert O. Huckins, Mountainview .....	18-11 Mountainview
Sandwich .....	Daniel S. Watson,* Whiteface..	11-22 Sandwich
	J. A. Hansan, Whiteface.....	11-13 Sandwich
	R. A. Steele, Center.....	13-22 Sandwich
	Victor M. Davis, Sandwich....	Center Sandwich
Tamworth .....	Samuel A. Hidden,* Tamworth.	12-5
	Thomas Boyd, South.	
	Edmund Hammond.	
	John F. Sanborn, Chocorua.	
Tuftonboro .....	Edwin B. Edgerly,* Mirror Lake	157-24 Wolfeboro
	Ernest M. Hunter, Melvin Village.	
Wakefield .....	Reed A. Lang,* Sanbornville.	
	Nathan O. Weeks, East.....	1-3 Wakefield
	R. B. Buzzell, Horn's Mills....	7-25 Milton Mills
	I. L. Lord, Union.....	6-21 Milton Mills
Wolfeboro .....	Ralph F. Horn*.....	42-12
	Frank J. Lucas, South.	
CHESHIRE COUNTY.		
Alstead .....	C. J. Newell*.....	7-13
	Willis E. Crabtree, Center.	
	Chas. E. Ellis, East.....	27-23

TOWN.	NAME.	TELEPHONE
Alstead .....	W. O. Blake, Surry. Herbert N. Webster, Surry. John P. Kemp, East.	
Chesterfield .....	A. H. Post,* Spofford..... Perley A. Richardson, Brattleboro, Vt. Louis D. Herrick, Box 600, Brattleboro, Vt. ....	8770 Keene 74-4 Brattleboro
Dublin .....	John A. Joslin, Spofford. Chesley Cripps. A. H. Childs*..... J. A. Grau, Monadnock..... F. A. Adams..... Thomas S. Lynch. C. D. Scribner.	17 18-12 43-11
Fitzwilliam .....	Edgar B. Holman.* Clarence Damon.	
Gilsum .....	Leroy E. Gilson..... John H. Laing.* Andrew J. Baker. George H. Howard, R. F. D., Surry.	23-5 Fitzwilliam
Harrisville .....	Bernard F. Bemis,* Chesham.. George G. Mason, Chesham. Charles A. Gnehm, Christ.	8077-3 Harrisville
Hinsdale .....	Fred Trudel, Monadnock. Fred A. Buckley.*	
Jaffrey .....	Elbert M. Dodge. Joseph Lemire,* R. F. D. P. N. Proctor, R. F. D..... William C. Royce, East..... Percy Cutter.	11-3 14-6
Keene .....	Edward L. Leighton, East. Louis A. Nims*..... George H. Matthews..... Herbert A. Davis..... Robert E. Faulkner..... Aden H. Hall. Walter L. Moore..... Henry W. Nims..... Horace Robbins. Herbert Blauchon.	139 343-11 343-11 158-W 351-22 351-11
Marlboro .....	Cyrus H. Kinsman*..... A. A. Wallace..... Norman N. Collins..... Lewis A. Higgins.	6-14 6-13 4-4
Marlow .....	W. W. Howe*..... Karl F. Huntley. Henry C. Mosher.	606-M

TOWN.	NAME.	TELEPHONE
Nelson .....	W. S. Mansfield,* Munsonville. W. P. Tolman, Chesham..... Clarence Guillo, Munsonville. Chas. H. Osgood.	8-23 Harrisville
Richmond .....	S. A. Bullock,* R. F. D., Win- chester .....	2-14 Richmond
	Albert B. Conway, R. F. D., Winchester.	
	Silas O. Martin, R. F. D., Winchester .....	21-14 Fitzwilliam
Rindge .....	Albert L. Hale,* East..... Elwin C. Jewell, West. George C. Todd, Center.	9-22
Roxbury .....	Lorenzo W. Davis,* R. F. D. 2, Keene .....	343-6 Keene
	Cbas. A. N. Nye, Marlboro.	
Stoddard .....	C. B. McClure,* Munsonville. John T. McCoy, South.	
	Henry E. Spaulding.....	28-11 Hancock
Sullivan .....	T. A. Hastings,* East..... Frank L. Fifield, East.	8010 or 6-2
	E. F. Nims, Center.....	548-11
Surry .....	Hollis W. Harvey*..... S. H. Clement, Keene.	342-3 Keene
	Frank E. Ellis, R. F. D. 1, Keene.	
	Leon A. Hodgkins.	
Swanzy .....	E. J. Bullard*..... Leonard A. Newell, East. Walter Marsh, Westport. Amasa A. Marsh, Westport. Walter Oakman.	C. E. Stone
Troy .....	Asa C. Dort*..... Frank Despres	1-4 Keene
	Oliver P. Whitcomb.....	561-2
Walpole .....	W. D. Knowlton*..... George A. Gale, North.	10-12
Westmoreland .....	George A. Johnston,* East. A. S. Chickering, Depot. Edward C. Greene. Henry S. Holsington, R. F. D., Depot. Wm. E. Lawrence, Depot. A. Harley Rodgers, Depot.	
Winchester .....	Orvel B. Peirce*.....  John J. Qualters..... Alexander Pierce. E. H. Naromore.....	62-14 or 15-2 Win- chester 8009-11 Winchester 34-12

TOWN.	NAME.	TELEPHONE
COÖS COUNTY.		
Berlin .....	Willfred Hodgdon* .....	141-31
	Joseph Durant.	
	Harry L. Marston.....	163-3
	Joseph Cote.	
Carroll .....	John Palge,* Twin Mountain...	51-5 Whitefield
	Manson G. Hunt, Whitefield.	
	H. R. Currier, Meadows.....	16-42 Jefferson
Clarksville .....	W. W. Young,* Beechers Falls,	
	Vt. ....	64-5
	Roy J. Young, Clarksville.....	55-11
	Fred Hall, Pittsburg.....	59-5
Colebrook .....	L. M. Lombard* .....	15-4
Columbia .....	John Gray* .....	22-21
	Wm. Hapgood, Coös.....	24-11 No. Stratford
Dalton .....	W. B. Aldrich,* R. F. D. 2,	
	Lancaster .....	55-2 Whitefield
	F. B. Tillotson, Whitefield.....	54-4 Whitefield
	J. M. Atkins, Whitefield.....	54-2 Whitefield
	Frank G. Carpenter, Littleton.	115-5 Littleton
Dummer .....	Ernest Goodrum,* Milan.....	9011-13 Milan
	H. S. Lockhart, West Milan....	16-24 Groveton
Errol .....	Ira C. Beecher* .....	9011
	Dwight C. Thurston.....	20 Farmers
	James Bunnell.	
Gorham .....	W. J. Perkins,* Box 328, Gor-	
	ham .....	36-23
	Eugene Beaudette .....	10-2 Gorham
	John Sanborn.	
Jefferson .....	L. D. Kenison,* Starr King....	1-13 Jefferson
	W. B. Paschal, Bennett's Land-	
	ing .....	9-13 Jefferson
	Levi C. King, R. F. D. 1,	
	Whitefield.	
	H. R. Currier, Meadows.....	16-42 Jefferson
Lancaster .....	Samuel R. Amadon* .....	73-12 Lancaster
	Blon C. Morse.	
	J. E. McIntire.....	77-3 Lancaster
Milan .....	Walter C. Rand* .....	4-3
	L. A. Bickford.....	10-12 Milan
	H. S. Lockhart.....	16-24 Groveton
Northumberland ....	Wm. Hayes,* Groveton.....	15-3 Groveton
Pittsburg .....	W. N. Judd* .....	59-21
	Allen Farnham .....	57-12 W. Stewarts-
		town
	Horace Wright .....	52-11 W. Stewarts-
		town
	H. S. Lord.	

TOWN.	NAME.	TELEPHONE
Randolph .....	F. C. Wood*.....	16-32 Gorham
	T. S. Lowe.....	16-2 Gorham
	Walter Simonds.....	B. & M. Station
	H. R. Currier, Meadows.....	16-42 Jefferson
Strelburne .....	James Simpson* .....	49-14 Gorham
	A. A. Wilson.....	49-3 Gorham
	Seymour C. McAllister.....	49-11 Gorham
	C. D. Peabody.....	48-2 Gorham
	H. C. McKeen.....	49-14 Gorham
	J. E. Kezar, Hastings, Me.....	4 Hastings, Me.
Stark ... ..	James W. Hickey*.....	16-4 Groveton
	Albert M. Emery, Box 56, Groveton .....	32-3
	L. A. Jackson, Crystal.....	16-43 Groveton
Stewartstown .....	Geo. H. Carr,* R. F. D. 3, Colebrook.	
	Wm. Hall, Route 4, Colebrook.	
	H. S. Little, Colebrook.....	27-221
	Israel Dearth, Beecher Falls, Vt. ....	64-12
	Urban S. Tyrrell, Beecher Falls, Vt.	
	Claude D. Knights, Colebrook..	19-3
Stratford .....	W. H. Kimball*.....	Stratford Hollow
	Wm. Hapgood, Coös.....	24-11 No. Stratford
Wentworth's Location	J. R. Turner*.....	9011-11
Whitefield .....	G. M. Clement*.....	24-21 Whitefield
	Vernon E. Samson.....	59-6 Whitefield
	B. C. Goodwin.....	58-5 Whitefield
GRAFTON COUNTY.		
Alexandria .....	H. L. Phillips,* R. F. D., Bris- tol .....	11-11
	Stias A. McMurphy, R. F. D., Bristol.	
	John H. Austin, R. F. D., Bristol.	
Ashland .....	L. G. Fifield*.....	133-2 Ashland
	Wm. F. Timlin.....	20-4 Ashland
Bath .....	Henry S. Lang.*	
	H. F. Tewksbury, Woodsville..	83-12 Woodsville
	Stephen J. Burton, Woodsville.	112-24 Woodsville
Benton .....	L. H. Parker,* R. F. D. 2, Woodsville .....	4-6 Wildwood Line
	F. M. Tyler.	
	E. A. Marden.	
	Geo. Fillian, E. Haverhill.....	7-13 Pike
	W. W. Eastman.....	16-4 Pike
	Harry L. Bruce.....	16-5 Pike

TOWN. *	NAME.	TELEPHONE
Benton .....	Edward V. Eastman, c/o E. W. Bemis, R. F. D. 2, Pike, N. H.	103-25 Pike
	J. D. Lawrence, Glenciff, N. H.	7-22 Pike
Bethlehem .....	W. S. Phillips,* Lock Box 43, Bethlehem .....	16-2 Bethlehem
	Wm. A. Green.....	14-4 Bethlehem
	H. E. Kimball, Pierce Bridge..	9-3 Bethlehem
	T. E. Moran, Fabyan.	
Bridgewater .....	David T. Atwood,* Plymouth...	30-4 Ashland
	W. W. Gilmpatrick, Plymouth.	
	M. L. Lockwood, Bridgewater..	15-4
Bristol .....	Clarence N. Merrill.*	
	Clarence A. Smith.	
Campton .....	Lewis F. Avery,* West.	
	Fred E. Pulsifer, Plymouth.	
	Waldo J. Bump, R. F. D. 3, Plymouth .....	11-3 Plymouth
	L. W. Palmer, Plymouth.....	139-14 Plymouth
Canaan .....	A. W. Hutchinson*.....	29-3
	Ralph Dodge.	
	Wallace G. Fogg, West.	
	Allie Green.	
	Eugene A. Shepard, Center....	24-14 Canaan
	Ira B. Stevens.....	16-11
	F. J. Cody.	
Dorchester .....	Geo. W. Rowen,* Cheever.	
	Henry M. Merrill.	
	Herbert M. Ashley, Cheever.	
	Geo. N. Burnham, North.	
Easton .....	C. A. Young*.....	12-22 Franconia
	Albert P. Lane.	
Ellsworth .....	Wm. M. Whidden.*	
Enfield .....	Joseph Pillsbury* .....	17-11 Enfield
	Norman Wilson, Lebanon.....	114-12 Lebanon
	I. D. Fogg, Mascoma.....	54-4
Franconia .....	E. B. Parker* .....	28-4 Franconia
	W. P. Wakefield, Profile House	Profile House
	A. Raymond Bowles.....	125-4 Franconia
	H. E. Kimball, Pierce Bridge..	9-3 Bethlehem
Grafton .....	A. F. Hoyt.*	
	Geo. S. Barney, R. F. D. 2, Canaan.	
	Frank Sargent, Canaan.	
Groton .....	Chas. A. Davis,* North.	
	Charles E. Matthews.	
Hanover .....	H. W. Barnes,* East Lyme.	
	H. B. Fullington.	
	A. D. Storrs.	
Haverhill .....	George A. Wells*.....	108-22 Pike
	E. W. Bemis, Pike.....	4-2 Pike

TOWN.	NAME.	TELEPHONE
Hebron .....	Harry S. Morgan.* Walter R. Merrill, East. Oscar Roby.	
Holderness .....	Charles A. Haskell,*..... O. M. Pratt, Route 4, Plymouth John H. Evans, R. F. D. 4, Plymouth .....	13-11 Ashland. 53-21 Plymouth 54-4 Plymouth
Landaff .....	Frank L. Piper, R. F. D., Ash- land. C. M. Gale,* R. F. D. 2, Lisbon Burt J. Carleton, Lisbon..... Austin J. Hall, Route 2, Woods- ville.	42-3 Lisbon 49-2 Lisbon
Lebanon .....	Roy W. Joslyn*..... A. R. Heath, Mascoma..... Israel D. Fogg, Mascoma..... Thos. J. McNamara, West.....	22-14 Lebanon 54-13 54-4 55-3
Lincoln .....	Geo. E. Henry*..... C. B. Shiffer, No. Woodstock.	16-3 No. Woodstock
Lisbon .....	Harry A. Clark*..... Fred R. Ash, Littleton..... Walter Jesseman..... Harry H. Young, Franconia.	116-13 Lisbon 45-14 Lisbon 49-5 Lisbon
Littleton .....	Horace H. Samson,* 230 Main Street .....	125-3 Littleton
	Horace Albee, Pattenville..... G. O. Carpenter, North..... Fred Foss, West. Joseph Morse, East. Frank Weller.	61-5 Littleton 168-13 Littleton
Livermore .....	James C. Donahue*..... David Murray..... C. B. Shiffer, No. Woodstock...	2 Livermore 31 Livermore Mills Central Office
Lyman .....	Al F. Parker,* R. F. D., Lisbon	41-41 Lisbon
Lyme .....	Geo. A. Pushee,* Center..... Sidney A. Converse..... Arthur E. Derby, Center. Henry S. Pushee.....	5-5 Lyme 3-5 Lyme 73-10 Lyme
Monroe .....	Oscar Frazer* .....	35-11 Barnet, Vt.
	Hugh Nelson .....	7-12 Barnet, Vt.
Orange .....	Charles H. Ford,* R. F. D. 2, Canaan .....	8-13
	John Peterson, Grafton.	
Orford .....	Harry M. Russell*..... Warren Chase, R. F. D. 1, Pike. John Stickney, Piermont.	18-22 Fairlee, Vt.
	Chas. E. Brock.....	13-210 Fairlee, Vt.
Piermont .....	George L. Webster.* Fay S. Emery..... Gideon Lamontague .....	7-110 Piermont 4-310 Piermont
	George Maker, Pike.....	17-2

TOWN.	NAME.	TELEPHONE
Plymouth .....	L. D. Fogg*.....	209-12 Plymouth
Rumney .....	Burgess Youngman,* West.....	22-21 Rumney
	Arthur G. Wright, Quincy.....	5-14 Rumney
	George C. Silsby.....	28-2 Rumney
	Fred R. Ford.....	7-2 Rumney
Thornton .....	Frank L. Houston,* R. F. D., Campton .....	5-24 Campton
	L. W. Bradley, Woodstock.....	32-22 No. Woodstock
	William Lyford, Campton.....	23-4 Campton
	E. L. Smalley, R. F. D. 3, Campton .....	5-3 Campton
	Frederick Murphy, No. Wood- stock.	
	C. B. Shiffer, No. Woodstock...	26-2 No. Woodstock
Warren .....	A. N. Batchelder*.....	9-21 Warren
	Harry A. Fifield.	
	Edmund N. Morrill.....	5-11 Warren
Waterville .....	Joseph L. Tuttle*.....	22-2 Campton
	Charles O. Brewster.....	22-5 Campton
	Thomas Ledward .....	Elliott's Hotel
Wentworth .....	Freeman B. Ellsworth*.....	Davis's Store
	Lester C. Hutchins, West Rum- ney .....	18-12 Rumney
Woodstock .....	E. E. Woodbury*.....	14-2 No. Woodstock
	A. M. Otis, West Thornton.....	24-13 Campton
	George F. Gordon, North.....	8-22 No. Woodstock
	C. B. Shiffer, North.....	26-2 No. Woodstock
	Frederick Murphy, North.	
HILLSBOROUGH COUNTY.		
Amherst .....	W. W. Sloan*.....	51-3 Milford
Antrim .....	Charles D. White*.....	12-13
	Morris Burnham.	
Bedford .....	George H. Hardy.*	
	Ira Barr .....	4-4 Bedford
	John Sargent.	
Bennington .....	Henry W. Wilson*.....	16-13 Antrim
	J. H. Balch, Antrim.....	17-11 Antrim
	Henry A. George, Box 47.	
	Frank G. Traxler.	
Brookline .....	Harry Marshall.*	
	O. D. Fessenden .....	35-2 Townsend, Mass.
Deering .....	Harry D. Locke,* Main Street..	42-2 Hillsborough.
	Edward W. Colburn, West.	
	Arthur O. Ellsworth, Center.	
	Chester S. McAllister, R. F. D. 2, Antrim .....	3-12 Hillsborough
	John F. Loverin, No. Weare.	

TOWN.	NAME.	TELEPHONE
Francestown .....	George R. Smith.* Fred H. Epps. A. J. Miller. ✓ Fred A. Pettee.....	29-14 New Boston
Goffstown .....	Fred W. Perham. George L. Eaton,* Grasmere....	14-25
Greenfield .....	George E. Flanders..... Fred J. Aiken*..... George Blanchard, R. F. D., Lyndeboro. Daniel O. Flynn. Page A. Lowe, South Lynde- boro.	4-3 Goffstown 13-3
Greenville .....	Harry W. Hardy. Victor L. Parker*.....	20 Greenville 41-2 Greenville
Hancock .....	Luman E. Metcalf, Box 183.... Chas. L. Batchelder.....	11-3 8000
Hillsborough .....	Wm. W. Hayward*..... Charles A. Sheldon, R. F. D.... Alvah M. Wood..... Dana R. Bruce,* Lower Village Fred B. Monroe.....	9-2 16-4 4-31 Hillsboro'h U. V. 47-13
Hollis .....	Albert J. Burnham, Upper Vil- lage .....	5-12
Hollis .....	Thomas Devoy. Lester J. Hayden,* R. F. D., Brookline .....	4-23 7-3
Hudson .....	C. F. Worcester .....	7-2 Hollis
Hudson .....	R. W. Leslie, E. Pepperell, Mass. ....	11-12
Hudson .....	George F. Hills..... W. N. Hayden, R. F. D., Nashua .....	567-21 Nashua 333-W Nashua
Hudson .....	James E. Merrill*..... Phillip J. Connell.	
Iditchfield .....	✓ I. N. Center,* R. F. D., Hudson Walter A. Crowell, R. F. D. 3, Manchester .....	12-3 Merrimack 12-2 Merrimack
Lyndeboro .....	✓ Fred McQuestion, R. F. D. 1, Hudson.	
Lyndeboro .....	E. K. Warren*..... Chas. L. Perham, R. F. D., South .....	5 Wilton 18-3 Wilton
Manchester .....	Edward Dolliver, R. F. D., South .....	21-7 Wilton
Manchester .....	Carl B. Thurber,* 88 Manches- ter Street .....	1026 or 94
Manchester .....	Charles Caron, 402 Rimmon St., McGregorville .....	1454 or 1482
Manchester .....	John A. Connelly, 225 Grove St.	8051-4

TOWN.	NAME.	TELEPHONE
Manchester .....	John W. Gott, 95 Douglas St., West .....	1481
	John H. Hamer, Vol. Fire Co., Amoskeag .....	838-W
	Harvey Stowe, Auburn.....	2150
	Albert L. Worthen, 1005 Cilley Road .....	269 or 373
	Charles E. Longa, 10 No. Adams Street.	
Mason .....	John T. Smith*.....	25-7 Greenville
	James O. Reed.....	24-5 Greenville
	Clarence H. Reynolds.....	25-6 Greenville
	George C. Arnold, Greenville...	11-14 Greenville
	Stanley A. Flagg.	
Merrimack .....	Bert L. Dutton,* Thornton's Ferry .....	3-5 Merrimack
	Arthur Bowers, R. F. D., Nashua.	
	A. G. Gordon, Reed's Ferry.	
	Charles H. Fields, Reed's Ferry	13-31 Merrimack
	Harry M. Greene, Thornton's Ferry.	
Milford .....	W. L. Winslow*.....	152-2
	Fred A. Conrey.....	32-11
	Fred Jones .....	35-24 Milford
	Harry H. Thorp .....	52-4 Milford
Mont Vernon.....	Charles H. Raymond,* R. F. D., Milford .....	113-11 Nashua
	Herbert Edwards.	
	George F. Holt.....	42-2 Milford
	Charles H. Whitney*.....	112-5
Nashua .....	Luther Robbins, Hollis Depot..	55-7 Nashua
	A. P. Smith.*	
New Boston .....	Fred C. Brown.	
	James W. Dane.....	14-6
	Perley A. Todd.....	33-3
	George M. Strong, R. F. D. 1..	21-14
New Ipswich.....	A. E. Chase.*	
	J. M. Burton, Temple.	
	Fred L. Mansfield.....	18-24
Pelham .....	F. M. Woodbury.*	
Peterborough .....	T. E. Driscoll*.....	101-2
	Fred S. Gilchrist.....	122-13
	H. C. Lane.....	115-3
	Edward P. Vose.....	125-3
Sharon .....	Alpha Wilson,* Peterboro.	
	Joseph Saucier, R. F. D., Peterborough.	
Temple .....	J. W. Edwards*.....	19-12 Greenville
	John E. Colburn.....	42-2 Greenville
	George H. Fish.	

TOWN.	NAME.	TELEPHONE
Weare .....	F. E. Cutting,* East.....	20-31
	Edwin Barnard, Riverdale.....	4-21 Weare
	Orrin D. Dow, North.....	1-32 Weare
	C. F. Eastman, South.....	5-31
Wilton .....	Frank L. Proctor*.....	12-6 Wilton
	Frank N. Gray.....	10-12
	W. A. Burton.....	9-10
	Stanley H. Abbot.....	2-2
	Geo. W. Perham.....	7-15 Wilton
	George S. Proctor.....	3-3 Wilton
	Orville H. Frye.....	1-16 Wilton
Windsor .....	J. R. Nelson,* Hillsborough	
	Upper Village .....	1-44
MERRIMACK COUNTY.		
Allenstown .....	Charles V. Fisher,* R. F. D. 1,	
	Suncook .....	33-2 Suncook
	R. F. Kimball, Suncook.	
	George Dowst, Suncook.....	9-13 Chichester
Andover .....	Dennis E. Fenton*.....	19-3
	Ara M. Lovering, East.	
	Eli D. Messer, Potter Place.	
Boscawen .....	Samuel N. Allen*.....	Salisbury
	Walter Eastman, Gerrish.	
	Frank B. Folsom.	
	E. A. Griffin.....	12-11 Salisbury
Bow .....	Frank D. Clough,* R. F. D. 3,	
	Concord .....	786-2 Concord
	Harry Clough, R. F. D. 3, Con-	
	cord .....	8-15 Dunbarton
	Frank E. Woodbury, R. F. D.	
	4, Manchester.	
	William A. White.	
Bradford .....	F. H. Gillingham.*	
	George W. Cofran.	
	Moody Gillingham .....	6-4
	Fred Smith.	
Canterbury .....	Lowell T. Mason*.....	5-3 Citizens
Chichester .....	W. S. Langmaid,* North.....	16-4
	Abraham L. West, R. F. D. 7,	
	Concord .....	18-11 Chichester
	Frank L. Winslow.	
Concord .....	David J. Adams*.....	144-M
	Levin J. Chase.....	407-W
	Fred N. Dodge, Penacook.	
	Elbridge Emery, East Concord.	687-5
	Wm. M. Emerson.....	694-7
	Wm. H. Gay.	
	George A. Hill, R. F. D. 2.....	76-M
	Eli Langlois, Jr., 5 Perry Ave.	1012-M

TOWN.	NAME.	TOWN.
Danbury .....	E. A. Farnum.* Warren A. Powers. Noah E. Lund.	
Dunbarton .....	Ernest E. Murphy*..... A. L. Burnham, Goffstown..... Walter C. Walker, R. F. D. 2, Concord. J. Chas. Weatherbee, R. F. D. 2, Concord. Perley E. Warriner, R. F. D., Concord .....	5-31 5-23 Dunbarton     4-3 Dunbarton
Epsom .....	George H. Yeaton*..... George Dowst, Suncook..... Albert Sherbourne. Harold S. Bickford, Gossville.	12-3 Chichester 9-13 Chichester  
Franklin .....	Clarence O. Wells, Short Falls.	9-31 Chichester
Henniker .....	James Huntoon* .....	269-2
	H. A. Tucker*..... J. E. Marshall. W. C. Goss.	8001  
Hill .....	H. A. Cummings..... Clyde A. Blake*..... Frank R. Woodward..... Walter C. Dickinson, Danbury.	8001 Henniker 341-4 345-6
Hooksett .....	Edwin A. Tyrrell*..... Orin J. Cate. Lucius B. Morrill, R. F. D. 1, Manchester.	Suncook 32-3  
Hopkinton .....	W. H. Milton,* Contoocook..... James G. Rice, Contoocook..... Marl D. Chase, R. F. D. 1, Concord .....	9-31 7-21 Contoocook  689-25 Concord
	George E. Patch, R. F. D. 1, Concord .....	691-24 Concord
	Arthur J. Boutwell, R. F. D., Concord .....	688-2 Concord
Loudon .....	Arthur K. Marston* .....	12-5 Citizens
	G. W. Rowell, Chichester..... Edward H. Sleeper.....	7-12 18-5 Belmont
Newbury .....	Mark W. Muzzey.* Chester A. Gove, Mt. Sunapee.. Moody Gillingham, Bradford.... George J. Messer, Blodgett's Landing .....	9-14 Sunapee 6-4 Bradford  15-3 Sunapee
New London .....	Archie O. Gove, Mt. Sunapee.. Ira S. Littlefield*..... Roy E. Emery, Elkins..... Wm. M. Kidder..... H. C. Hoyt.....	9-12 Sunapee 4-23 8-5 6-3 10-4

TOWN.	NAME.	TELEPHONE
Northfield .....	Joseph F. Leary,* Box 1, Tilton Walter H. Bosworth, Tilton.... Byron Shaw, Franklin. Walter B. Hill, Tilton.	81-13
Pembroke .....	Fred M. Pettingill,* Suncook... Minot R. Fife, R. F. D. 14, Concord.	34-12
Pittsfield .....	John H. Jenness.* Roy Watson.	
Salisbury .....	Burton F. Sanborn,* Route 1, Andover .....	13-15
	John Shaw .....	2-5
	Herbert E. Webster.	
Sutton .....	H. L. Pillsbury,* North..... F. B. Johnson, South.....	7-2 Sutton 1-8 Sutton
	Fred A. Sawyer, Warner.....	18-4 Warner
Warner .....	Jesse M. Downes.* J. E. Marshall, Wilmot Flat. L. E. Newman, Potter Place.	
Webster .....	Harris Goodwin,* R. F. D. 16, Penacook .....	4-21 Salisbury
	F. T. Colby.	
	A. E. French.....	20-3 Salisbury
	M. J. Walker.	
Wilmot .....	F. E. Goodhue*..... J. C. Howlett, Wilmot Flat. C. T. Atwood, South Danbury. J. E. Marshall, Wilmot Flat.	9101-3 Franklin
ROCKINGHAM COUNTY.		
Atkinson .....	John H. Smith*..... Elmer E. Conley, Westville..... C. P. Stowell, Westville.....	556-W Haverhill 41-3 Salem 5-14 Palstow
Auburn .....	Fred H. Hall*..... Geo. A. Palmer..... Harvey Stowe, Massabesic, Man- chester.	10-21 Candia 11-11 Candia
Brentwood .....	John J. Knights*..... John F. Swasey, Exeter..... James L. Stevens, Exeter. Fred Rand, Rockingham County Farm.	6-22 Kingston 55-6 Exeter
Candia .....	Charles P. Roble,* R. F. D. 1, Manchester. John D. Underhill.....	14-3 Candia
	George V. Gage, East.	
Chester .....	John H. Roble.* James W. Towle..... Wm. B. Underhill.....	2-8 8004-8

TOWN.	NAME.	TELEPHONE
Chester .....	Walter P. Tenney.....	8003-30
	Wm. T. Owen.	
	James E. McCannon.	
Danville .....	Herbert E. Colby*.....	6-14 Haverhill, Mass.
	Warren Hoyt.	
	Lewis H. George.	
Deerfield .....	Howard P. King,* R. F. D.,	
	Raymond .....	3-13 Deerfield
	Chester E. Maynard, R. F. D.	
	1, Raymond.....	26-14
	George Dowst, Suncook.....	9-13 Chichester
	Otis A. Meloon, South.....	8005-3
Derry .....	John D. Blake,* Box 134.....	42-3
	Arthur G. Low, R. F. D. 2....	33-3
	Arthur C. Sargent, Derry Vil- lage .....	68-3
	Herbert H. Kimball, R. F. D. 3.	
	John F. Coyne, R. F. D. 3, Derry Village.	
	George Doran, R. F. D. 3, Derry.	
	William Bennett, 43 South Ave.	
	Maurice Hurlby.	
East Kingston.....	D. M. Evans,* East Kingston.	
	Leslie Webster, East Kingston.	5-2
Epping .....	James D. Whittemore*.....	14-4
Exeter .....	George H. Carter.*	
	G. F. Adams, 34 Auburn Street.	
	H. L. Tuttle, 7 Garfield Street.	37-J
Fremont .....	Ell N. Marcotte*.....	5-4 Raymond
	Walter H. Lyford, Epping.....	29-12
	Alden F. Sanborn.	
Greenland .....	W. A. Odell*.....	878-R
	Thornton N. Weeks.....	1079-X
Hampstead .....	John S. Corson*.....	1-2
	Albert H. Little, Westville....	3-13
Hampton .....	Howell M. Lamprey*.....	73-11
	William S. Brown.....	63-11
Hampton Falls.....	F. Henry Fogg.*	
	S. C. Hawes, R. F. D. 1,	
	Hampton Falls .....	61-4 Exeter
	Wm. A. Janvrin.	
Kensington .....	George A. Prescott*.....	62-5
	Ralph B. Fish, East Kingston.	135-5
	Bertram Palmer, East Kingston	
Kingston .....	Arthur H. Marshall.*	
	Daniel W. Swett.	
Londonderry .....	J. E. Ray*.....	39-5 Derry
	Frank E. Avery.	
	Nathan P. Watt*.	

TOWN.	NAME.	TELEPHONE
Newcastle .....	J. O. White.*	
Newfields .....	Perley R. Bean*.....	54-22 Exeter
	Harry G. Atwood.....	54-15
	William Pease.	
Newington .....	Jackson M. Hoyt*.....	302-2
Newmarket .....	Daniel J. Brady*.....	36-2
	Fred A. Langley.....	32-12
Newton .....	A. W. Sargent*.....	3-3 Plaistow
North Hampton.....	Otis S. Brown,* Little Boar's Head.	
	Gilman H. Moulton.	
	Geo. L. Garland.	
Northwood .....	Chas. C. Holmes.*	
	George B. Small, Center.....	5-21 Northwood Ctr.
	Geo. M. Bartlett, Northwood Narrows.	
Nottingham .....	P. B. Batchelder,* So. Lee.	
	A. H. Cooper, E. Northwood.	
	F. L. Gove, R. F. D., Raymond.	
	A. W. McDaniel, R. F. D., Barrington.	
	T. M. Rollins, R. F. D., Raymond.	
Plaistow .....	Fred P. Hill.*	
	Elden C. Smart, R. F. D., Harvardhill, Mass.....	206-J
	Theodore Fecteau, Westville....	5-13
Portsmouth .....	Wm. F. Woods*.....	230 House, 122 Work
Raymond .....	Geo. E. McClure,* Box 99.....	34-14
	Joseph A. Blake.....	27-2
Rye .....	C. D. Locke.*	
Salem .....	F. N. Emerson,* Center.....	35-6
	Chas. J. Palmer, Jr., North....	41-15
	Joseph G. Abbott, Box 148, Salem Depot.....	44-5 Salem
Sandown .....	James F. Sargent,* R. F. D. 3, Chester .....	2-31
	J. W. Dimmock, R. F. D. 3, Chester.	
	Clarence I. Drowne, R. F. D. 3, Chester .....	2-32
Seabrook .....	Frank W. Chase.*	
	Robert McQuillin, R. F. D. 9, Hampton Falls.	
	Emery M. Eaton.	
South Hampton.....	C. M. Evans*.....	139-3
	Edgar W. Wyman, R. F. D. 1, Amesbury, Mass.....	138-6 Amesbury, Mass.
Stratham .....	John F. Emery*.....	59-14

	NAME.	TELEPHONE
Windham .....	J. W. M. Worledge,* Center.... Charles O. Parker, Windham Depot. Albert W. Farmer, West.	11-21 Hudson
STRAFFORD COUNTY.		
Barrington .....	Walter Buzzell* .....	12-4
	William H. Felker, R. F. D. 1, Rochester .....	2-5
	L. B. Haley, East.	
Dover .....	James Smith* .....	186-R
	Ernest B. Folsom, R. F. D. 3.. John H. Wesley.	251-4
Durham .....	John H. Foster.* C. W. Stone.	
	Chas. S. Langley.....	59-13 Newmarket
Farmington .....	Arthur E. Jewell,* Box 636.... Arthur G. Scruton, R. F. D. 2, Rochester. William V. Ware.	41-12 Farmington
	James W. Foss, Rochester..... Albert B. Felker, R. F. D. 1, Rochester, Box 55.	223-12
Lee .....	G. A. Dudley,* Newmarket....	56-11 Newmarket
Madbury .....	Wm. H. Knox,* Middle Street, Dover .....	259-14
	Arthur W. Simpson, R. F. D. 6, Dover .....	253-12
Middleton .....	George H. Cook.* Charles Knowles. George S. Davis.	
Milton .....	Fred P. Jones,* Union.....	41-15 Milton
	Fred B. Roberts.....	23-2
	H. R. Jewett, Sanbornville....	9-4 Milton Mills
	Isaac L. Lord, Union.....	6-21 Milton Mills
New Durham.....	Wm. R. Webster.* F. J. Lucas, So. Wolfeboro. Geo. W. Bennette.....	13-42
Rochester .....	Chas. E. Randall*.....	Fire Department
	Louis M. Richardson, Gonio. W. E. Horne, 47 Chestnut St. A. R. Tuttle, Gonio. Peter McShane, 20 Common St. John A. Allen.....	159-12
	Hector Vezina, Gonio. Donald C. Mason, East.	
Rollinsford .....	Chas. E. Lord,* Salmon Falls.. Charles Plumer, R. F. D. 2, Dover .....	593-M
	Lorenzo E. Baer, Dover.....	252-26 587-M

SHEEP.	NAME.	TELEPHONE
Somersworth .....	E. A. Farley.*	
Strafford .....	Geo. P. Foss,* Center.....	13-14 Barrington
	Martin S. Brock.....	3-13
	J. H. Perkins, Center.....	9-7
	Albert M. Leighton.....	15-6 Barrington
	Albert B. Felker, R. F. D. 1, Box 55, Rochester.	
	SULLIVAN COUNTY.	
Acworth .....	Weston C. Kemp,* East.....	3-11 Lempster
	Guy S. Neal.	
	B. P. Chapman, South.....	26-11
Charlestown .....	G. L. Richardson*.....	15-3 Charlestown
	Arthur Streeter.....	33-2
Claremont .....	P. J. Sheridan,* 77 Central St..	367-W
	Martin Pederson, Claremont Jct.	76-5
	Alfred Pierce .....	271-Y
	Arthur L. Fitch.	
Cornish .....	James B. Chadbourne,* R. F. D. 4, Windsor, Vt.....	76-11 Windsor, Vt.
	Elwin W. Quimby, R. F. D. 3, Windsor, Vt.....	74-13 Claremont
	Fenno B. Comings, R. F. D. 4, Windsor, Vt. ....	45-12 Windsor
	Geo. C. Huggins, Cornish Flat.	274-24 Claremont
	C. S. Lear.	
	E. J. Hurley, Croydon Flat....	16-5 Newport
Croydon .....	F. W. Putnam*.....	9-21 Croydon
	E. J. Hurley, Croydon Flat....	16-5 Newport
	George O'Rourke, Croydon Flat	138-13 Newport
Goshen .....	Geo. F. Crane*.....	2-11 Goshen
	Archie O. Gove, Mt. Sunapee..	9-12 Sunapee
Grantham .....	Perley Walker* .....	9-5 Croydon
	E. J. Hurley, Croydon Flat....	16-5 Newport
	Geo. M. Austin.....	2-6 Croydon
Langdon .....	Geo. H. Royce,* Charlestown..	33-5 Alstead
	Emery W. Henry, R. F. D. 1, Alstead .....	28-24
	M. F. Bragg, Alstead.	
Lempster .....	F. A. Barton*.....	8001-2
	E. E. Hurd.....	5-4 Lempster
	A. K. Hodgman, East.....	5-2 Lempster
Newport .....	Geo. E. Lewis* .....	37-13
Plainfield .....	Louis E. Shipman,* Cornish....	156-11 Windsor, Vt.
	E. J. Hurley, Croydon Flat....	16-5 Newport
Springfield .....	Chas. H. Brooks,* R. F. D., Canaan .....	23 Sunapee
	H. C. Hoyt, New London.....	10-4 New London
	B. D. Vanderhoof, R. F. D. 3, Canaan.	

	NAME.	
Sunapee .....	F. M. Sargent*.....	22-14 Sunapee
	John W. Rowell.....	18-13
	Austin W. Russell, George's Mills .....	9021-12 Sunapee
Unity .....	Orin J. Bailey,* Quaker City..	61-12 Claremont
	H. F. Wright, East.....	0-23
	A. Harry Anderson, Center.	
Washington .....	J. W. Wood,* Box 54, Washington .....	9-22 Hillsborough
	W. E. Farnsworth.	
	UNINCORPORATED PLACES. CARROLL COUNTY.	
Hale's Location.....	John H. Smith,* No. Conway...	3-11 No. Conway
	UNINCORPORATED PLACES. COös COUNTY.	
Atkinson & Gilman- ton Gr.....	Joseph Perrault, Wilson's Mills, Me.	
Bean's Grant.....	George Howland,* Crawford's..	9017-2
Bean's Purchase....	F. D. Bronson, c/o Glen House, Gorham .....	47-12 Gorham
Cambridge .....	A. E. Bennett,* Errol.	
Crawford's Purchase	P. J. Martin,* Bretton Woods.	
Dartmouth College Grant .....	D. T. Wentworth,* Gorham....	27
	Geo. Miglierini, Bretton Woods.	
	James Cilley, Wentworth Loca- tion.	
Kilkenny .....	Geo. A. Webster,* Lancaster...	73-5 Lancaster
	Frank Leavitt, Lancaster.	
Millsfield .....	A. L. Bowker,* Errol.....	5-41 Colebrook
Odell .....	M. J. Hayes,* Groveton.	
Sargent's Purchase..	Thomas Croley, Glen.....	Rocky Branch Store House
Success .....	C. S. Bean,* 89 Church Street, Berlin.	79-3 Berlin
	Joseph Durant, Berlin.	
Webster and Hubbard Grants and Carlisle	Horace Wright,* Pittsburg.....	52-11 West Stewart- town

## STATEMENT OF EXPENDITURES.

(From September 1, 1912, to August 31, 1914)

## I. Year ending August 31, 1913.

The appropriation from September 1, 1912, to August 31, 1913, was divided into twelve accounts:

1. State forester, salary.....	\$2,500.00
Unexpended balance .....	0.00
Total appropriation .....	<u>\$2,500.00</u>
2. State forester, travelling expenses.....	\$435.11
Unexpended balance .....	64.89
Total appropriation .....	<u>\$500.00</u>
3. Clerk, salary .....	\$900.00
Unexpended balance .....	0.00
Total appropriation .....	<u>\$900.00</u>
4. Salary and expenses of four district chiefs employed six months .....	\$2,095.07
Unexpended balance .....	4.93
Total appropriation .....	<u>\$2,100.00</u>
5. Incidentals .....	\$1,199.89
Unexpended balance .....	0.11
Total appropriation .....	<u>\$1,200.00</u>
6. Printing blanks .....	\$499.87
Unexpended balance .....	0.13
Total appropriation .....	<u>\$500.00</u>
7. Printing biennial report .....	\$499.91
Unexpended balance .....	0.09
Total appropriation .....	<u>\$500.00</u>

8.	Reimbursing towns for fighting forest fires	\$4,499.12
	Unexpended balance .....	0.88
	Total appropriation .....	<u>\$4,500.00</u>
9.	State forest nursery:	
	Expense of operation .....	\$1,524.94
	Sale of nursery stock .....	1,224.94
	Total appropriation .....	<u>\$300.00</u>
10.	Mountain lookout stations .....	\$2,999.18
	Unexpended balance .....	0.82
	Total appropriation .....	<u>\$3,000.00</u>
11.	Forest fire warden conferences .....	\$370.89
	Unexpended balance .....	629.11
	Total appropriation .....	<u>\$1,000.00</u>
12.	Forest fire prevention .....	\$1,499.79
	Unexpended balance .....	0.21
	Total appropriation .....	<u>\$1,500.00</u>

## II. Year ending August 31, 1914.

The appropriation from September 1, 1913, to August 31, 1914, was divided into fourteen accounts:

1.	State forester, salary .....	\$2,500.00
	Unexpended balance .....	0.00
	Total appropriation .....	<u>\$2,500.00</u>
2.	Field assistance, salaries .....	\$1,464.93
	Unexpended balance .....	35.07
	Total appropriation .....	<u>\$1,500.00</u>
3.	Clerks, salaries .....	\$1,776.73
	Unexpected balance .....	23.27
	Total appropriation .....	<u>\$1,800.00</u>

4.	State forester and assistants, travelling expense .....	\$934.97
	Unexpended balance .....	65.03
	Total appropriation .....	<u>\$1,000.00</u>
5.	Salaries and expenses of four district chiefs employed six months .....	\$3,128.81
	Unexpended balance .....	771.19
	Total appropriation .....	<u>\$3,900.00</u>
6.	Incidentals .....	\$1,499.75
	Unexpended balance .....	0.25
	Total appropriation .....	<u>\$1,500.00</u>
7.	Printing blanks .....	\$791.69
	Unexpended balance .....	8.31
	Total appropriation .....	<u>\$800.00</u>
8.	Reimbursing towns for fighting forest fires .....	\$7,500.00
	Unexpended balance .....	0.00
	Total appropriation .....	<u>\$7,500.00</u>
9.	State forest nursery:	
	Expense of operation .....	\$1,655.06
	Sale of nursery stock .....	1,155.06
	Total appropriation .....	<u>\$500.00</u>
10.	Mountain lookout stations .....	\$4,883.46
	Unexpended balance .....	116.54
	Total appropriation .....	<u>\$5,000.00</u>
11.	Forest fire warden conferences .....	\$365.79
	Unexpended balance .....	634.21
	Total appropriation .....	<u>\$1,000.00</u>

12.	Forest fire prevention .....	\$2,348.66
	Unexpended balance .....	151.34
	Total appropriation .....	<u>\$2,500.00</u>
13.	Acquisition and care of state land.....	\$3,506.37
	Unexpended balance .....	1,493.63
	Total appropriation .....	<u>\$5,000.00</u>
14.	Suppression of chestnut bark disease.....	\$474.18
	Unexpended balance .....	25.82
	Total appropriation .....	<u>\$500.00</u>

**III. Special funds.**

1.	Money collected from fines, used for forest fire prevention .....	\$94.30
	Unexpended balance .....	0.70
	Total appropriation .....	<u>\$95.00</u>
2.	Reimbursing towns for balance due on ac- count of fighting forest fires for year ending August 31, 1912.....	\$2,955.80
	Unexpended balance .....	44.20
	Total appropriation .....	<u>\$3,000.00</u>