

State of New Hampshire

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BIENNIAL REPORT

OF THE

Forestry Commission

For the Two Fiscal Years

ENDING

August 31, 1918

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Concord

November, 1918

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## REPORT.

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

The Forestry Commission herewith submits its report for the two fiscal years ending August 31st, 1918. A detailed report of the activities of the Commission is presented together with recommendations for the further development of forestry in the state. The war directly and indirectly has materially changed the activities of the department but it has emphasized the interest in and value of forestry.

The Commission granted leave of absence from June, 1917, to Mr. E. C. Hirst, State Forester, that he might go to Scotland with the New England Saw Mill Units which were operated under his management for the production of war timber by the British Government. Mr. A. B. Hastings was appointed Acting State Forester during the absence of Mr. Hirst who returned to the department in November 1918.

Since April 1914 important projects for the development of forestry in the state were temporarily suspended and three branches of work have received particular attention, namely the protection of forest growth against fire, the protection of our standing pine against the white pine blister rust and the production of fuel wood. The Department acted as a district recruiting office for the 10th and 20th Regiments, U. S. Forest Engineers, and assisted in other war work.

With two seasons of average fire hazard from weather conditions the damage has been less than in former years. Our lookout stations have discovered and reported 515 fires, and the town fire warden organization

has rendered excellent public service. The average cost of extinguishment was only \$26.12 per fire.

The white pine blister rust has continued to spread, but effective control measures now seem well under way. In combatting this most serious menace, New Hampshire has received aid on a dollar for dollar basis from the Federal Government. Public interest in this work found expression in appropriations by 43 towns aggregating \$7,125.00. Considerable money was also given by private owners. With the combined funds the Forestry Department was able to do effective educational work and begin control measures on a large scale. In eradicating the disease-carrying currant and gooseberry bushes a total of 84,343 acres have been cleaned. The average cost per acre during the past year has been \$0.39, while on some areas the cost has been as low as \$0.08 per acre. Experience in field work has now developed efficient methods so that the ultimate control of the disease in important pine growing localities appears entirely practicable.

When the production of fuel wood became an important public measure, cutting operations were immediately enlarged on the state forests. These cuttings were made in accordance with the principles of forestry, whereby the timberland is maintained in a productive condition and these principles were emphasized by the Department in the educational work on fuel wood production throughout the state. The state forests thus cut serve as excellent demonstration plots for woodlot owners. Over 1,500 cords of wood were removed at a fair profit.

The policy of purchasing forest land for planting and demonstration started six years ago has been continued within the limits of the appropriation, since it was found that this could be done with advantage and at reasonable costs per acre. Forest planting has been curtailed, not because of diminishing needs, for the need was never



greater, but for the reason that the high cost and scarcity of labor makes extensive planting inadvisable for the time being, and also in the interest of releasing labor for other work. This policy has made it possible to return to the treasury a part of the planting appropriation and yet keep the nursery ready for the resumption of reforestation on an increased scale when conditions again warrant. Certain land at the nursery has been utilized for farm crops. In all, \$11,318.11 of the Department's appropriation for the two years was unexpended.

Active co-operation with the Society for the Protection of New Hampshire Forests, the New Hampshire Timberland Owners' Association, the State Committee on Public Safety, the State Fuel Administration, the New Hampshire Department of Agriculture, the New Hampshire State College, the United States Forest Service and the United States Bureau of Plant Industry, has added much to the results secured in the work of the Commission during this period.

### RECOMMENDATIONS.

The war has awakened the allied nations to the importance of forestry as nothing else could have done. Italy, with small reserves of timber, could not supply her own needs. Great Britain, with no public forests and depending largely on lumber from over-seas, was soon in desperate situation. America, though still with considerable reserves of natural timber growth, could not utilize them on account of distance and lack of shipping. France, of all the allied countries, was in the strongest position with about one-fifth of her forests planted and cared for by the state. The public and privately owned forests of our allies have been severely depleted and the realization of this condition has led to the adoption of

strong public measures for planting the cutover and waste land.

In New Hampshire the effect of the war on our forests has been marked. Increasing demands stimulated cuttings. Our spruce mills were able to furnish high quality material for airplanes and considerable lumber for cantonments and other government requirements. It was in the white pine region, however, that the greatest expansion in cutting occurred where the portable mills increased production enormously. During the past year 160 such mills have been operating and it is an achievement to be proud of that we could quickly produce so much lumber for war requirements, but we must recognize the extent to which such production has depleted our supplies. It is certain that at least 35,000 acres have been so stripped in our pine growing regions during the past two years, and probably more than 100,000 acres have been cut over by all mills in the state. Not only does this increase the fire risk, especially in pine operations, but it increases our denuded land (non-agricultural) to 1,000,000 acres or more. A comprehensive state reforestation policy is the only sure means of relieving the continually increasing public burden of carrying so much non-productive forest land and of perpetuating many of our lumber industries.

On account of the increased public expense due to the war, it may be thought inadvisable for the State of New Hampshire to start an adequate reforestation program this year. If such be the case, it is the judgment of the Forestry Commission that for the immediate future, as during the war, the chief efforts of the Department be devoted to the protection of existing forests from fire and disease; that activities in other branches of forestry work be maintained as at present; and that a careful study of the relation of forests and forestry to the industrial, agricultural and economic life of the state be

made to determine on a policy that will secure the re-foresting of our large areas of non-productive forest land.

The following are the specific recommendations:

#### Fire Protection.

1. That the efficiency of the mountain lookout service be increased by the completion of fire detection maps and observation towers for all stations and by improving telephone communication.

2. That special efforts be made to augment the fire warden service for fire prevention and the extinguishment of fires in the important woodland towns.

3. That provision be made whereby a small portion of the state appropriation for forest protection be available to aid small towns in securing proper fire fighting equipment.

4. That the forest fire laws, being generally satisfactory, no further regulative legislation appears necessary at present.

#### White Pine Blister Rust.

That the present system of combating this disease be continued, whereby the state appropriation is used on a dollar for dollar basis with federal funds, and that towns and private owners be urged as last year, to appropriate for local control, such appropriations to be matched by federal funds and used with the state appropriations.

#### Acquisition of State Forests.

That the present policy of securing by purchase and gift tracts of non-agricultural land in different parts of the state for reforesting and demonstration purposes be continued, that no expansion of this policy be inaugurated immediately but the annual appropriation be continued for care and maintenance of the present tracts

and for the purchase of suitable land which at times can be secured at a reasonable price.

#### Reforestation Waste and Cut-Over Land.

1. That the state nursery be maintained and the plant improved by the erection of a new barn and packing house.

2. That on account of the present high cost of forest plantations the amount of state land to be reforested should not be increased until it can be done at a lower cost per acre, and that any savings thus made available be applied to improving facilities for the production and distribution of trees when conditions become more favorable.

#### Forest Survey.

From its settlement the colony and the State of New Hampshire has been pre-eminently a forest district. A very considerable part of the material prosperity of the state has been and is still dependent upon forest products directly or indirectly. Up to the present time natural reforestation has in a considerable degree replaced the forest crop but the time has arrived, somewhat accelerated by the recent war demands, for a scientific study and the inauguration of a carefully considered plan to stimulate forestry production. Unless such steps are taken and a considerable area annually reforested under such a plan, the people of the state cannot expect to continue to receive so large an income from this source. The Commission respectfully requests that it be empowered to make a careful survey and study of this problem to ascertain:

1. The condition of forest growth in the state;
2. The amount of non-agricultural waste land;
3. The relation of forest protection, improvement and

extension to the industrial, agricultural and economic life of the state; and that a report thereon be prepared for presentation to the next legislature.

We presume the people of the state understand that the state money expended through the Forestry Commission is by no means the entire amount of money devoted to forestry problems. In fact it is only about one-half the total, but the Forestry Commission serves the purpose of co-ordinating the assistance rendered by the Federal Government, by the towns, and from other sources in seeing that the entire sum is wisely spent.

Respectfully submitted,

W. R. BROWN,  
JASON E. TOLLES,  
GEO. B. LEIGHTON,  
Forestry Commission.

E. C. HIRST,  
State Forester on Leave.

A. B. HASTINGS,  
Acting State Forester.

## FOREST FIRE SERVICE.

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### Organization.

As in the past the State is divided into the North, East, West and South Fire Districts with a district chief appointed by the State Forester, in charge of each district. The district chief develops the town organizations in every way possible and has direct supervision of all lookout watchmen and patrolmen employed in his district. All town forest fire wardens and deputy wardens are appointed by the State Forester, being paid only when employed.

State highway patrolmen are appointed deputy wardens and serve as an excellent auxiliary force especially in the prevention of fires. The same applies to section foremen of the railroad companies which operate within the state.

### Fiscal Year 1917.

During the fiscal year 1917 there were no long periods of drought and serious fire hazards were therefore avoided. The period of greatest danger came in November when 51 town fires occurred in a little over one month. These fires were promptly handled by the town organizations however, with small loss.

In general the season was very favorable, only 209 fires having been reported at an average cost for extinguishment of \$21.45 per fire.

Railroad fires are not here included. They will be treated separately.

### Fiscal Year 1918.

In the fiscal year 1918 the presence of an unusually large amount of slash and dead material near the roads

and on cut-over areas gave the setting for a very serious fire situation. With the exception of one dry, windy week, April 28 to May 6, however, no great number of fires resulted, due to the fact that in general the rainfall was well distributed through the spring months. In July another period of danger was encountered, however, especially in the northern part of the state and several fires occurred. The rains in the latter part of July and August saved the situation. During this fiscal year there were 365 fires handled by the towns at an average cost per fire of \$28.69. The maximum rate per hour of paying fire fighters was increased this year 20 per cent or from 25c to 30c per hour. See tables on page 18 for figures of cost, damage, number of fires by months, etc.

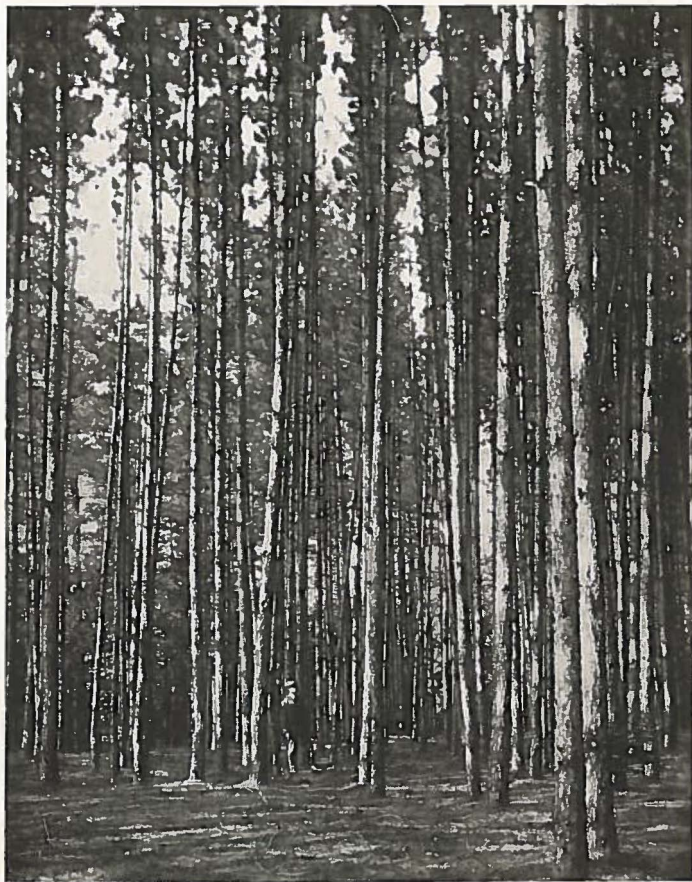
FIRE RECORD FOR FISCAL YEARS 1917 and 1918 BY COUNTIES.  
Fires handled by the Town Organizations

Name of County	Year	No. Fires	Total Area Burned	Average Area Per Fire	Total Damage	Average Damage Per Fire	Total Cost For Fire Fighting	Average Cost For Fire Fighting Per Fire
Belknap	1917	5	86 Acres	17 Acres	\$ 100.00	\$ 20.00	\$ 62.11	\$ 12.42
	1918	16	90	6	415.00	26.94	141.48	8.84
Carroll	1917	9	53	6	2,000.00	222.22	277.71	25.80
	1918	23	277	12	2,585.00	112.83	708.55	30.81
Cheshire	1917	21	186	9	565.00	26.90	392.48	18.69
	1918	30	731	24	1,186.00	39.60	966.33	32.21
Coos	1917	7	18	3	220.00	31.43	99.99	14.28
	1918	7	37	5	125.00	17.86	157.57	22.51
Grafton	1917	11	131	12	580.00	52.73	318.93	28.99
	1918	17	95	6	262.00	15.47	406.99	23.90
Hillsboro	1917	40	405	10	4,273.00	106.83	907.26	22.68
	1918	62	2870	46	36,596.00	596.06	2,838.07	87.71
Merrimack	1917	26	235	9	7,541.00	290.00	650.80	25.04
	1918	44	1989	45	41,233.00	937.11	1,552.59	35.30
Rockingham	1917	41	497	12	2,744.00	66.93	948.84	23.14
	1918	88	1787	20	7,587.00	36.33	1,940.19	22.05
Strafford	1917	17	86	3	162.00	9.52	248.27	14.60
	1918	45	614	13	3,540.00	78.68	1,631.52	34.03
Sullivan	1917	20	33	1.6	20.00	1.00	371.01	18.55
	1918	25	203	8	560.00	22.40	499.19	19.97
Totals for State	1917	197	1680	8.5	18,205.00	92.41	4,227.35	21.45
	1918	357	8683	24.3	94,488.00	264.61	10,342.47	28.69

Total Forest Fire Damage, Two Fiscal Years Ending August 31, 1918.

Year	Railroad Fires	Other Causes	Total Damages
1917	\$ 19,948	\$ 18,205	\$ 38,153
1918	9,071	94,468	103,539
Totals	29,019	112,673	141,692





RED OR NORWAY PINE IN LISBON.



BRUSH CLEARED FROM TWENTY-FIVE FOOT STRIP BESIDE  
THE HIGHWAY.

Note the road on the extreme left

## NUMBER OF FOREST FIRES BY MONTHS

Fiscal Year Ending August 31, 1917.			Fiscal Year Ending August 31, 1918		
September	1916	19	September	1917	36
October	"	52	October	"	19
November	"	48	November	"	216
March	1917	45	March	1918	32
April	"	173	April	"	318
May	"	142	May	"	276
June	"	29	June	"	67
July	"	36	July	"	42
August	"	48	August	"	47
Total		592*	Total		1,068*

## CAUSES OF DAMAGE BY FOREST FIRES

Two Years Ending August 31, 1918.

Cause	Percentage of Damage to Total
<b>MECHANICAL CAUSES</b>	
Railroads.....	21 %*
Portable Mills.....	26½%
<b>HUMAN CAUSES</b>	
Burning brush, grass and rubbish.....	14%
Wood travelers, campers, hunters, fish men, flower and berry pickers.....	10
Miscellaneous.....	1½%
Incendiary.....	22 %
Burning Buildings.....	½%
Unknown.....	15 %
<b>NATURAL CAUSES</b>	
Lightning.....	2 %
	100 %

## Enforcement of Forest Fire Laws.

During the past year there has been an unusually large number of lumber operations throughout the State, the operators in some instances setting up a portable steam sawmill for the first time. This has naturally resulted in the production of very large areas of slash which constitute fire hazards in every town. Through careful canvass and inspection of sawmills and slash areas, in which the Commission has been greatly assisted by the town fire wardens, 151 new approvals for saw-

\*A large number of very small railroad fires are here entered. The very small fires resulting from other causes are often not reported.

mills have been issued and 185 cases of slash areas beside the highways and railroads, which were left contrary to the slash law, have been handled.

It has been the purpose of the Commission to secure the enforcement of the law in a thorough-going manner and with special emphasis during this period when fire fighters are more difficult to secure, when the danger of enemy activity is not to be overlooked and when the destruction of natural resources is more than ever to be guarded against by all good citizens. The assistance of the Attorney General has in certain cases been called for, but in general operators have been found ready to do what was required, after their attention was directed to the case.

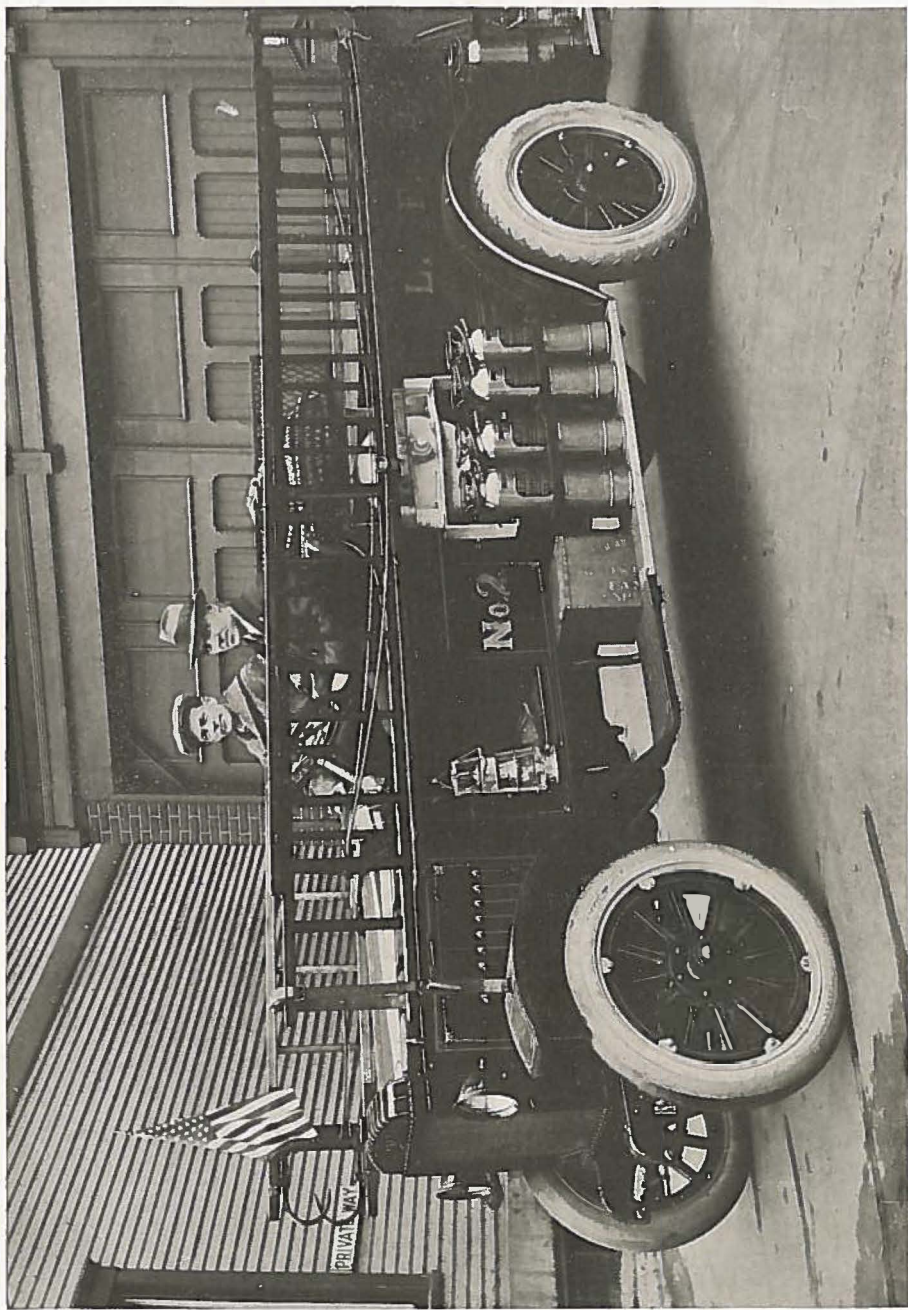
### **Prevention.**

In the coming two years emphasis will be placed more than ever upon the necessity of preventing forest fires and the loss of labor and resources which they inevitably cause. Active local organization in each town is absolutely essential to make this work effective. Wherever fire hazard is present to an unusual degree, the employment of patrolmen during dry periods is most important. The State will share such expense equally with the town within the limits of the state appropriation.

The newspapers will be used and school instruction urged to forward this work.

### **Local Organization for Fire Fighting.**

For the effective handling of Forest fires in any town advance organization is essential. Where no regular fire company is available for fighting brush fires excellent results in reduced costs and damage have been secured by some of our fire wardens through organization. In



LEBANON COMBINATION FIRE TRUCK.  
Will Carry Twelve Forest Fire Fighters and Equipment. Cost \$1,700.

each locality or part of the town where fires are likely to occur a definite understanding is entered into with several men who could be quickly organized into a fire fighting crew. These men in certain cases may be workers in a factory but more often are farmers or other workers living in the vicinity. When a forest fire is discovered these men, already organized, are called out without the necessity of a general alarm. A working crew is at once available with leaders chosen and tools and equipment provided.

#### Fire Fighting Tools and Equipment.

It is often found that the lack of proper tools and equipment causes a great deal of loss and added expense at the time of the fire. It is urged that equipment suitable for fighting forest fires be purchased by all towns to be placed, at the discretion of the town fire warden, at strategic points for emergency use.

During the last two seasons a trailer containing tools for fire fighting has been exhibited at different towns in the state in connection with fire warden conferences. This trailer is loaded with shovels, grub hoes, rakes and axes especially adapted for heavy work as well as "Double Forester" pumps, pails and chemical extinguishers, and has been recommended for purchase to towns which could not afford a regular fire truck. It can be easily attached to any automobile or wagon.

Where towns are unable to bear all the expense of securing fire fighting equipment it is believed that a portion of the Forestry Department's appropriation could be spent to good advantage in assisting them.

#### Forest Fire Laws.

At the last session of the legislature changes in the forest laws of the state were made in brief as follows:

*Employment of Forest Officers.*

The State Forester is authorized to use any regularly paid forest officer on any state or municipal forestry work or other public work, when in the judgment of the State Forester, the safety of wood lands would not thereby be endangered.

The State Forester is given power to issue an order for payment of any fire bill, settlement for which, by the town or city, is delayed beyond the thirty days limit and upon receipt of such an order the bill is forthwith to be paid by the proper disbursing officer of the town or city.

*Portable Steam Sawmills.*

The provision is added to the law concerning portable steam sawmills that the State Forester may require slash to be removed within a radius of one hundred feet from the mill and that when the mill is moved from one town to another proper notification must be given to the Department before the operation is resumed.

*Slash Beside the Highway and Railroad.*

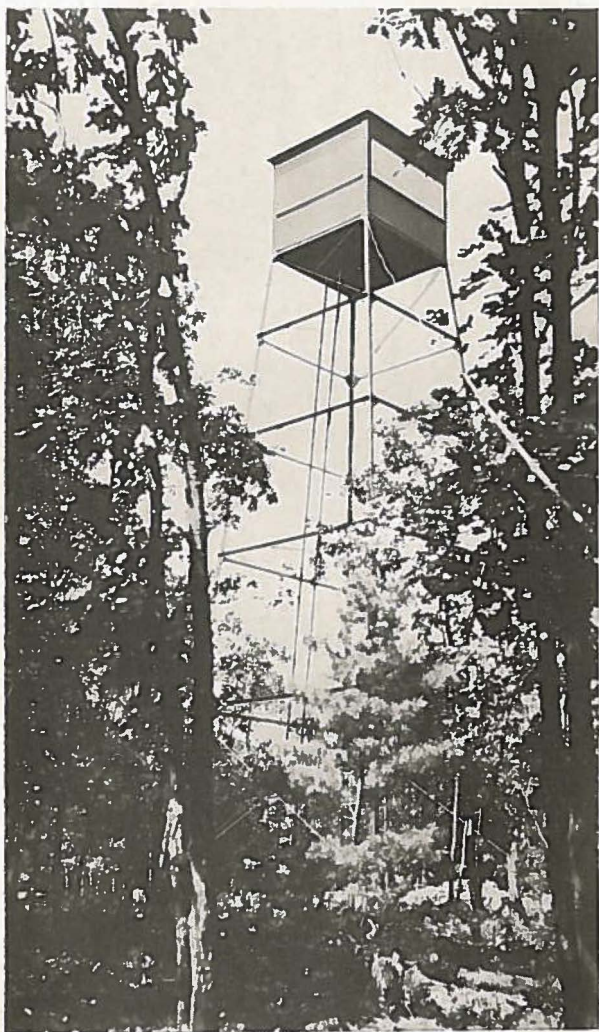
The requirement for the clearing of slash on land adjacent to railroad rights of way and public highways was changed by increasing the required clearance width along the railroad right of way from 40 feet to 60 feet and from the travelled part of the highway from 20 feet to 25 feet.

*Slash Cut on Land Adjacent to that of Another.*

A new requirement has been made that any operator cutting on land adjacent to that of another shall fell away from and not towards nor parallel with the property line of the abutting owner so that the slash from the tops, when on the ground, shall be as far from this property line as the felling of the trees in a practicable manner shall carry it.

*Roadside Slash.*

The State Forester is now empowered to clean up any cut brush which has been left within the limits of any public highway for a longer period than 30 days and to assess the cost against the town or other party responsible for the brush.



FIFTY-FIVE FOOT LOOKOUT TOWER.  
Jeremy Hill, Pelham.

It is believed that the fire laws as they stand are in general satisfactory and require no change at present.

### LOOKOUT STATIONS.

The two remaining mountain lookout stations, Israel and Chocorua, still owned by the Timberland Owners Association, were purchased by the State in the Fiscal year 1917. This makes a total of 29 stations now owned and operated by the State. One of these stations, namely that on Carter Dome, will in the future be operated by the United States Forest Service since the area covered by this lookout is now largely included within the White Mountain National Forest.

#### Lookout Improvements.

New towers have been built on the following mountains, Magalloway, Signal, Mt. Kearsarge (North), Carter Dome, and Jeremy Hill. The last named station consists of a fifty-five foot steel tower erected on the top of Jeremy Hill in Pelham, now the site of one of the state forests, and overlooking a large area not previously under the control of the lookout system. The telephone connections on Black Mountain (Cambridge), and on Israel Mountain have been converted from ground to metallic circuit lines.

The observation station on Pitcher Mountain has been closed in.

#### Large State Map.

A map of the state on a scale of two miles to the inch has been completed by the Commission. This will serve most useful purposes for organization and other plans.



### Location of Fires From Lookout Stations.

A print of the map above mentioned has been made with azimuth circles around all stations and with threads attached to the center of the circles. With the proper sections of this map in the hands of each lookout watchman, ready comparison of observations from two or more stations will be possible and accurate location of a given fire by the intersection of two or more lines of sight can be secured. To use this method the watchman must get in touch with a neighboring lookout when he observes a smoke and inquire as to the direction of the smoke from his station. Lookout watchman No. 2 can get this reading at once from his panoramic map by the use of the alidade attached and inform the inquiring watchman accordingly. The first observer can then lay off on the map, by the use of the threads, both his own observation and that of lookout watchman No. 2 and the point of intersection of the lines of sight will show closely the location of the smoke. It is believed that the use of this map will increase the efficiency of the mountain lookout service.

### Fires Reported by the Lookouts.

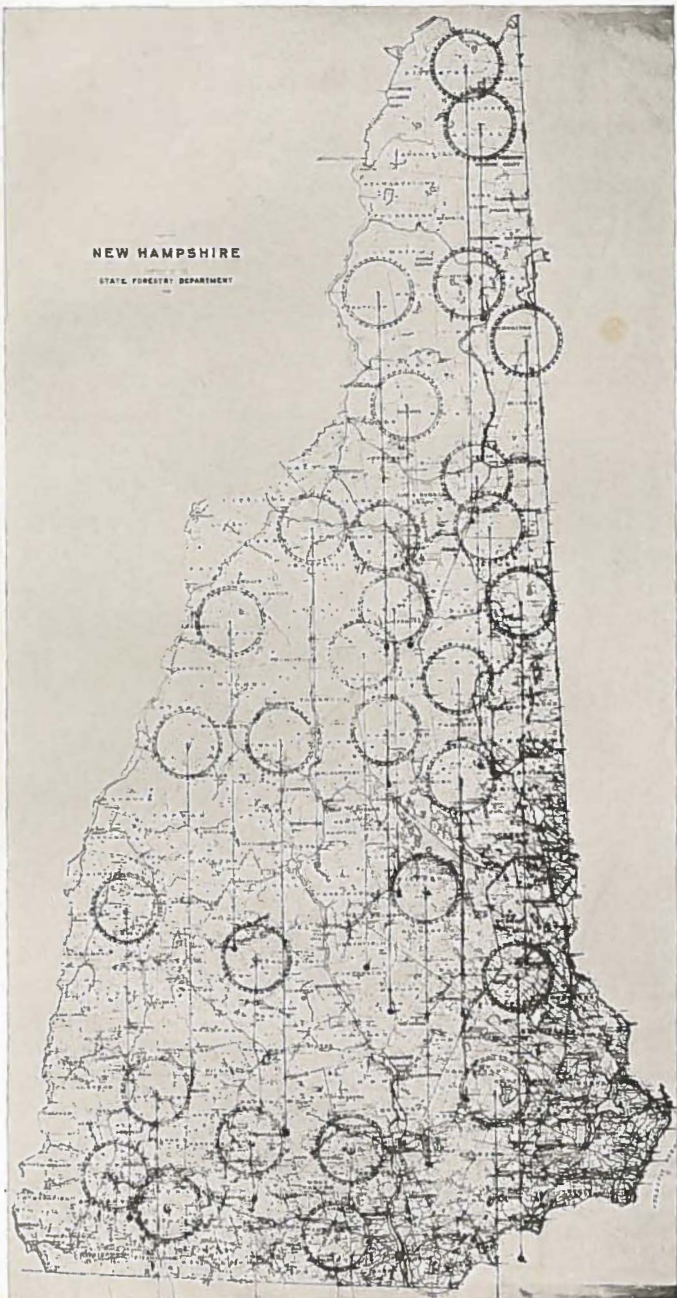
DATE	NORTH DISTRICT	EAST DISTRICT	WEST DISTRICT	SOUTH DISTRICT	TOTAL
1917	19	13	31	238	301
1918	18	17	20	169	214

### System of Secondary Lookouts.

In a great many cases quick action on forest fires is secured by notification from private citizens who live on high points of land. Many town fire wardens have already enlisted such men who are qualified for appointment as deputy forest fire wardens and an extension of this plan will add greatly to the efficiency of our organ-

NEW HAMPSHIRE

STATE FORESTRY DEPARTMENT



LOOKOUT FIRE LOCATION MAP.

Range intersections from two or more lookout stations will give accurate location of fire.

Scale of original map 1" equals 2 m.

ization. Such a volunteer force of men admirably situated for the quick location of fires is a most important factor in reducing the fire hazard through the state. When such a system of detection in addition to that of the regular lookouts is supplemented by an organization of men and equipment in each locality ready for prompt action upon call, the fire situation is very well in hand and minimum losses will be suffered.

#### Co-operation With United States Forest Service.

During the past two years a certain number of lookout watchmen have been supported with Federal funds under the terms of the Weeks Law. The amount of this support available has been approximately \$6,500.00 during each year. Annual inspection of these stations by a federal officer is resulting in increased efficiency and in cordial coöperation. It is to be hoped that this federal aid will be continued.

#### Coöperation With the New Hampshire Timberland Owners Association.

During the season of 1917 the New Hampshire Timberland Owners Association representing 782,592 acres of timberland, employed approximately fourteen patrolmen. The total cost of this patrol was \$4,800.00. For the season 1918 the corresponding figures are approximately as follows: area covered, 730,000 acres, number of patrolmen, 23, and cost approximately \$5,000.00. The protection provided in this way to the northern timber lands of New Hampshire is of vital importance to the State. The annual fund of approximately \$5,000.00 available for the work is placed in the hands of the secretary, Mr. W. H. Morrison, Gorham, N. H., who is also the district chief in charge of the forest fire work for the Commission in the northern district. The area now covered by this

association is approximately 730,000 acres. During the season of 1917 the assessment was  $\frac{1}{2}$  cent per acre. With the lookout stations operated by state and federal funds, the cost of fire fighting paid by the towns and the patrol of these extensive timberlands in the north country handled by the Timberland Owners Association, most satisfactory fire coöperation is being secured.

#### Railroad Fires.

Coöperation as in the past has been continued with the railroad companies whereby they are responsible for the extinguishment and damages of fires caused by locomotives. Their patrol service has been continued and a reduction of damage is noted. During the past two years the railroads were responsible for a little over twenty per cent of the forest fire damage in the State.



LARCH 70 YEARS OLD IN NORTHERN SCOTLAND.

## NEW HAMPSHIRE'S SHARE IN SENDING THE NEW ENGLAND SAW MILL UNITS TO SCOTLAND.

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The State of New Hampshire was able to contribute in a very material manner to the Ten New England Saw Mill Units which were sent to Great Britain and have been manufacturing lumber in Scotland for the British war industries. In addition to the part taken by the Governor in giving the project his strong support and the financial backing of the State, by the New Hampshire Committee on Public Safety, and by Mr. W. R. Brown, President of the State Forestry Commission who was Chairman of the Executive Committee in charge of organization, the State Forester, Mr. E. C. Hirst was granted leave of absence beginning June 1917, to go to Scotland as assistant to Mr. D. P. Brown of the Berlin Mills Co., General Manager of the Saw Mill Units. Soon after the mills were set up Mr. Brown enlisted in the army leaving Mr. Hirst as General Manager. Mr. A. B. Hastings was appointed Acting State Forester and had charge of the Department during the absence of the State Forester.

### Purpose of the Undertaking.

The pressing need of the British Government for more lumber than was being supplied for war purposes having become known to Hon. James J. Storrow and others, an appeal was made to the six New England States through their Governors and timber owners. The response was immediate, the six Governors pledged \$12,-

000 each from their respective states and the project was at once under way. The Public Safety Committee of Massachusetts took a leading part in the enterprise and committees were formed of New England lumbermen and foresters for the purpose of assembling 350 men, ten saw mills complete with all necessary equipment, and 120 horses. More money was needed and the lumber men increased their contributions until a total of \$160,000 was available. The entire plant was presented, F. O. B. Atlantic shipping point, as a gift to the British Government from New England. Details were carefully worked out so that the equipment was quite complete and thus lumber production began quickly after arrival. The first log was sawed a little over one month after the organization left America.

#### **Timber Tracts Operated.**

The timber tracts operated were in Northeastern Ross-shire and Southeastern Sutherland-shire, all mill sites being within a radius of five miles from the headquarters at Ardgay near Bonar Bridge Station, which is on the east coast of Scotland at the head of the Dornoch Firth. Seven mills operated on the estate of Sir Charles Ross, the inventor of the Ross rifle, and three on Andrew Carnegie's Skibo property.

The timber which was cut is typical of Scotch forests, consisting of Scotch pine, larch and Norway spruce. These three species have been used to some extent for reforesting waste land in New England. In Scotland they are grown more than any other forest trees and practically all the merchantable timber is in plantations started sixty to one hundred years ago. There is very little natural growth. On most of the area cut over by the New England Saw Mill Units the last clear cutting furnished lumber for the Napoleonic Wars, and the trees planted soon afterwards were of good size to furnish



LOGGING IN SCOTCH PINE FOREST.



dimension timber during the past year. Scotch pine is the most important lumber tree in the Scotch Highlands. It grows rapidly and the quality of the wood is about half way between the New England white pine and the Norway pine.

The mills and equipment proved to be very well adapted to lumbering conditions in Scotland, on account of the ease of moving from one "set up" to another. The continuance of these mills will thus make available a considerable amount of timber in scattered old plantations.

### **Results Accomplished.**

The good treatment accorded to our lumbermen was returned in the large amount of lumber produced. During the nine and one-half months of operating time, the Ten Units produced about 20,000,000 board feet of lumber products. This included railroad ties, dimension lumber and mine props. Over 60,000 railroad ties were made, and a good deal of special dimension lumber was sawed for different army and navy construction purposes. A large volume of the sidings and larger dimension sizes were shipped to resawing plants for manufacture into munition boxes.

The members of the New England Saw Mill Units were all recruited as civilians, each man having a separate contract with the British Government for one year. At the expiration of these contracts about one hundred men enlisted in the 20th U. S. Engineers (Forest) and thirty or more enlisted in the U. S. Navy at an American Naval Base in Scotland.

### **British Appreciation.**

The following extract from a letter addressed to the manager of the Units by Sir John Stirling Maxwell, Assistant Controller of Timber Supplies for Great Britain

will serve to give an idea of the appreciation with which this gift of the New England states was received by the British **Empire**.

"I desire to convey to you formally the thanks of this Department for the valuable assistance it has received from you during **the year you** have been in charge of the New England Sawmills Units.

Even in this time of great events, the action of the New England States in sending this expedition to Great Britain stands out as a notable episode. Thanks to the energy, zeal and **hard work** of yourself and your assistants, your mill foremen and men, the gift so generously designed by the Committee has most happily achieved its object. It has provided us in time of need with timber we could not otherwise have produced. It has bequeathed to us valuable plant and horses. On our side it leaves a feeling of profound gratitude and friendship towards the States that sent you. . . . ."

### **British Forest Policy.**

In connection with the work of the New England Sawmill Units the State Forester had an opportunity to learn intimately the forestry problems of the United Kingdom, which the war brought forcibly to the attention of the British public and to meet which a strong government policy has now been adopted. A brief statement of the case may be of interest in New England both as a warning against delay in public forestry work and as a splendid example of an adequate public forestry policy.

For many years prior to the present war there was little commercial incentive for the practice of forestry anywhere in Great Britain. Cheap water transportation permitted duty free lumber from other countries to be delivered in the British Isles at such low prices that investments in home grown timber yielded a low and somewhat uncertain return. The Government had from

A TYPICAL PLANT OF THE NEW ENGLAND SAWMILL UNITS.



time to time endeavored to stimulate the growing of timber by private owners through investigations and reports on forest conditions, the establishment of experimental and demonstrational timber tracts and the promotion of forest education. But with the low priced foreign timber which home grown products had to compete with, there were also high taxes imposed on most of the private forest estates. Planting by private owners was done more from a desire to improve the appearance of the estate, furnish game cover and promote forestry than from any hope of adequate financial return. A great amount of important educational work was done by the Royal Scottish Arboricultural Society and the Royal English Arboricultural Society.

The war thus found Great Britain in a serious situation in regards to timber for military purposes. Much larger supplies of timber were needed for warfare than had been anticipated and enemy submarine activities soon became a serious hindrance to securing the sea-borne timber on which the country had become accustomed to depend. It was necessary for the Government to organize a Timber Supplies Department, and begin immediately to requisition and purchase timber from private estates.

Military Contingents from the Dominions over seas were required to operate lumber on a scale large enough to supply the war industries. It was on account of this serious situation that the New England Saw Mill Units were organized and sent to Scotland to help in the production of lumber for war needs. Great Britain having supported admirable public policies for the forests of most of her overseas dependencies, had neglected her own forests, and in this respect was not in so strong a position as France, about one-fifth of whose forest area is owned and maintained in a productive condition by the

State, thus furnishing an adequate supply upon which the country could quickly call in time of need.

The Reconstruction Ministry of Great Britain made an investigation and report on forest conditions in the United Kingdom through its Forestry Sub-Committee, in which was recommended a public forest policy adequate for the country. The following is a brief summary of the report.

(1) The total area under woodland in the United Kingdom before the war was estimated at three million acres, the annual yield from which is believed to have been forty-five million cubic feet, or about one-third of what it should have been under correct silvicultural management. These figures indicate the unsatisfactory condition of British and Irish woods as at present managed, and prove the urgency of remedial measures in the interests of national economy.

(2) During the five years preceding the war the average annual imports of timber similar in character to that produced in the British Isles were equivalent to five hundred and fifty million cubic feet of standing timber. The home production was therefore less than eight per cent, of the consumption. The imports of timbers of all kinds during the years 1915 and 1916 were respectively three-quarters and two-thirds of the normal pre-war imports, and their cost for the two years was seventy-four million pounds (\$370,000,000), or thirty-seven million pounds (\$185,000,000) in excess of their pre-war value. These imports absorbed seven million net tons of shipping, equivalent to approximately fourteen million tons dead weight.

(3) The area of land utilized for rough grazing, but capable of growing first-class coniferous timber of the same character as that imported, is not less than three and probably more than five million acres. Two million acres could be devoted to timber production without decreasing the home production of meat by more than 0.7 per cent., and if so used would ultimately afford employment to at least ten times the number of men now engaged on that area.

(4) Dependence on imported timber has proved a serious handicap in the conduct of the war. The United Kingdom cannot run the risk of future wars without safeguarding its supplies of timber as every other Power that counts has already done.

(5) In order to render the United Kingdom independent of imported timber for three years in an emergency, it is necessary while making due allowance for an improved yield from existing woods, to afforest 1,770,000 acres. Taking 80 years as the average rotation, we advise that two-thirds of the whole should be planted in the first 40 years. We consider that the quota to be planted in the first 10 years should in view of the initial difficulties be limited to 200,000 acres, of which we advise 150,000 acres should be planted by the State and 50,000 acres by public bodies and private individuals assisted by grants, or by coöperation between them and the State. The area to be planted by the State in subsequent years may be reduced in the same degree as private individuals come forward to undertake the work.

(6) It is not proposed to plant arable land, but a limited area of arable land should be acquired with the forest sites, wherever possible, in order to provide small holdings for forest workers. Our proposals carry with them the important contingent advantage that they will cause large areas of the United Kingdom, now almost waste to be put to their best economic use. They will also, if provision is made in time, afford the means for settling discharged soldiers on the land under healthy conditions.

(7) Forestry demands long views, but the first fruits are not so long delayed as many imagine. The policy of State afforestation which we recommend will begin to provide pitwood, from the quicker-growing species on the better kinds of mountain land, from the 15th year onwards; by the 40th year the plantations made in the first ten years alone will contain sufficient timber to keep our pits supplied, in emergency for two years on the scale of present consumption.

(8) The first essential is a Forest Authority equipped with funds and powers to survey, purchase, lease and plant land and generally to administer the areas acquired with compulsory powers to be exercised, when needed, after due inquiry and the award of fair compensation. The care of forestry, now divided among several departments, should be centralized in this body.

(9) We recommend that the Authority should be authorized to make limited grants for every acre replanted or newly afforested during the first 10 years after the war by public bodies or private individuals; such plantations to be made in accordance with approved plans and conditions.

(10) We estimate the cost for the first 10 years at 3,425,000£, (\$17,125,000). It may be necessary to invest 15,000,000£, (\$75,-

000,000) altogether in this enterprise during the first 40 years. After that time the scheme should be self-supporting. The financial return depends on prices, wages, bank rates, &c., which are difficult to forecast. Forests are a national necessity; the country must have them even though they yield less than the current rate of interest on the capital invested. The whole sum involved is less than half the direct loss incurred during the years 1915 and 1916 through dependence on imported timber.

(11) The above proposals are framed in the interest of national safety, which requires that more timber should be grown in the British Isles. There remains a further question. The United Kingdom derives more than half its imported timber from virgin forests in foreign countries, which are steadily being depleted. Canada contains the only large reserves within the Empire. Unless arrangements can be made with the Dominion Government for the effectual conservation of these reserves, it is inevitable that provision should be made within the British Isles on a far larger scale than is here proposed for purposes of defence. We consider that this question should be taken up at once with the Dominion Government.

If the Government should desire to employ the maximum number of men discharged from the Services on forestry work during the period of demobilization, the rate of planting may be greatly speeded up, provided the Central Authority is appointed at once, and charged with the duty of preparing schemes complete in every detail in readiness for demobilization. In that case the area which could be planted within the first five years would only be limited by the number of British-trained officers who could be obtained for the preparation of working plans, by the supply of plants, the area available for planting by the State, and by the willingness of private owners to coöperate. Plans of mutual advantage to afforestation and demobilization could be worked out without unduly interfering with our scheme as a whole (though the estimate of expenditure for the first ten years would require revision). They depend, however, on the demobilization policy of the Government, and it does not fall within the present terms of the reference to the Committee to prepare them. We are, however, as we have explained in the covering letter to our Report, prepared to work out the best methods to be adopted if we are instructed to do so, and receive guidance as to what the requirements of demobilization will be."

Since this report was submitted the Forest Authority recommended therein has been established as a separate Department of the British Government. It is understood that in the afforestation of waste and cut over land, three main plans will be pursued, as follows:

1. State Purchase:

Under which a small per cent. of the non-agricultural lands of the country will be purchased by the State, planted and maintained as state forests.

2. Leasing:

Under which waste land will be taken over from private owners on long term leases by the State and planted.

3. Coöperation between the State and private owners:

Under which the State would enter in a copartnership with the land owner; the owner to furnish the land and local management, the State furnishing the trees and doing the planting; the proceeds to be divided between the two.



## WHITE PINE BLISTER RUST.

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The importance and value of the white pine is becoming more and more appreciated in New Hampshire. It is a prolific seeder, a rapid grower and exhibits remarkable ability to thrive on a variety of soils. Lands cleared years ago for cultivation or pasturage, are now covered with excellent stands of white pine; in fact, in many parts of the state, it is the best crop that can be produced. It is apparent that any menace to such a valuable tree should be brought under control before it gains the upper hand.

The relation between plant and tree diseases and our economic needs is not fully appreciated by the majority of persons. Because of the fact that in many cases such pests are slow in development, they are often not considered seriously. The chestnut bark disease is an excellent illustration. When this menace first made its appearance, it was taken lightly. Today, within a period of less than ten years, this disease in Pennsylvania and Connecticut alone has destroyed millions of dollars worth of chestnut trees. The future of the white pine should not be left to chance.

### Nature of the Pine Blister Rust.

This rust, like the chestnut blight, is a bark disease, a parasitic plant which grows between bark and wood and which continues to grow under the bark down the branches to the trunk of the tree. It is generally introduced through the needles of a small branch or twig and, by preventing the vital processes of food and water dis-

tribution, kills the parts of the tree which it leaves above it as it girdles the twigs, branches, and trunk in succession. Although slower in development and spread than the blight of the chestnut, scores of diseased areas of pine have demonstrated conclusively that it is just as fatal, for in no case have trees once infected ever been known to recover. Upon the younger pines, the future crop, however, the progress of the disease is far more rapid.

### **Spread of the Rust and Means of Control.**

This disease can not spread from pine to pine but must first develop on the leaf of the currant or gooseberry bush, plants of the genus ribes. It should also be noted in this connection that the white pine is the only pine that is subject to this fungus growth. It has never been found on others such as the red (Norway), pitch and Scotch pines.

If all wild and cultivated ribes are removed from about the pines, the disease cannot spread to pines which have not already been infected and this fact offers the only known means of control.

### **Resemblance to Other Rusts.**

Contrary to the general impression, this type of disease is not a new one. There are many besides the white pine blister rust which require two hosts or plants for their development and existence. Among the most common and best known are the cedar-apple rust, the rust of quince and the wheat rust. The red cedar, the white cedar and the barberry bush, respectively, are carriers of these pests. Without them, the apple, the quince and the wheat are safe.

The wild varieties of ribes are of no economic value, and like the Canadian thistle in the middle west, and the ground juniper in the east, should be regarded as a weed

crop. It is an interesting fact to note that over 100 years ago, a law was passed in the State of Massachusetts declaring the barberry bush a public nuisance and pest and some attempt was made to effect its removal, at least in certain sections where wheat was under culture. Since that day the barberry has been eradicated on a large scale in wheat growing regions.

### Introduction Into United States.

The blister rust was introduced into the United States on white pine nursery stock and with the aptitude of so many European pests has developed and spread, especially throughout New England, to an alarming degree. Realizing the necessity of investigating the status of this disease in New Hampshire, the Forestry Commission, coöperating with the Bureau of Plant Industry, U. S. Department of Agriculture and the State Agricultural Experiment Station, conducted during the summer of 1916, a scouting campaign in the pine growing regions of the state. The financial burden of this work was borne chiefly by the Federal Government, but a small fund was provided by the Governor and Council to cover a short period when federal money was not available. The result of this investigation disclosed the presence of the disease on wild and cultivated ribes generally throughout the pine growing sections of the state. Some infection was found upon the pine, although in limited areas.

### Action Taken by the Legislature of 1917.

The necessity for prompt action in control of the rust was placed before the Legislature and "An Act for the Control of the White Pine Blister and Other Fungous or Insect Pests" (Chap. 187, Laws of 1917) was passed.

By this act \$28,000 was appropriated for work in control of the white pine blister rust for a two and a half

year period, in the expectation of securing an equal amount, which was later realized, from the Bureau of Plant Industry, U. S. Department of Agriculture.

The provisions of the act are printed in the appendix.

### **Work of the Commission Prior to 1917.**

Previous to the summer of 1917 the disease had been identified by investigation of the Forestry Commission and the United States Bureau of Plant Industry in the towns of Stratham, Marlow, Exeter, Brentwood, Epping, Nottingham, Kensington and Conway on the pine and in 71 others on currant or gooseberry bushes.

### **Present Status of the White Pine Blister Rust in the United States.**

The blister rust has now spread quite generally into Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Wisconsin, and Minnesota. Within the last year it has extended its range considerably in Wisconsin, but has not yet been found west of the Rocky Mountains. In other words it is spreading generally through the northern white pine regions, being much less of a menace in Pennsylvania than in New York and apparently no menace at all in Virginia.

### **The Problem of Local Control.**

The disease has already spread so generally throughout New Hampshire that it would be impossible to confine this pest by establishing an immune zone or strip across any part of this state.

It has become a question of local control which must be decided for each locality on the merits of the case.

### Distances to Which the Disease Spreads From Currant to Pine.

Individual cases are found where the disease is carried several miles from currant to pine. All the data in hand, however, goes to prove that if the currant and gooseberry bushes are removed from a pine stand and from a belt around the stand with a maximum width of one-third of a mile, the pine is safe from the disease in a commercial sense. This fact is of very great importance since it means that comparatively small areas of pine woodland can be protected locally against destruction by the blister rust. In many cases it has been found that the disease has not spread out dangerously from a given currant infection more than 200 to 800 feet and it is believed that a 1500 foot belt free from ribes about a pine forest will prevent the spread of the rust to this forest to cause injury in a commercial sense, provided, of course, the forest itself is cleared of such bushes.

### Season of 1917.

With the blister rust already located in 79 towns, certain areas were selected in Swanzey, Keene, Boscawen, Conway, Exeter and Stratham for eradication. A careful study of methods and costs was made and 23,091 acres were cleared up at an average cost of \$0.42 per acre. This cost in the case of the Conway area, amounted to a charge against the stumpage value of the white pine protected of a little less than one half of one per cent.

### Inspection of Nurseries.

All nurseries in the state where white pine is grown were carefully examined but in no instance was the disease found. Plantations made from stock shipped in from other states or countries were also examined and

in two instances the disease was found and the trees **destroyed.**

### Conclusions From the 1917 Work.

Before this field work was completed it became evident that the danger was even more general than at first supposed and a survey was made of those districts where the disease had got a start, or where the white pine value seemed to warrant expenditures for control work. As a result of this study seventy-nine towns were urged to appropriate money.

In this educational work, as also in later development of plans for the projects, Mr. Philip W. Ayers, Forester of the Society for the Protection of New Hampshire Forests took a most active and important part.

### Towns Appropriate for Fighting the Disease.

Forty-three towns made appropriations for control work against the white pine blister rust at town meeting in March 1918, a total of \$7,125.00 being appropriated with the understanding that money from state and federal funds would be available on the basis of three dollars of state and federal money to one dollar of town money. Each project was handled by itself under the direction of the Forestry Commission and with the coöperation of the United States Bureau of Plant Industry, through the office of Forest Pathology, whereby all monies spent by state and town were matched from Federal Funds. During the season of 1918 practically the entire blister rust activities in the state were devoted to these projects.

### Organization.

Mr. L. E. Newman, Agent of the Federal Office of Forest Pathology, has been in direct charge of the blister

rust work for the department as an assistant to the state forester. The organization under the efficient direction of Mr. Newman has been made up of town superintendents and field crews, each crew consisting of a foreman and five to seven men. Three town superintendents and eleven crews were employed through a part of the season. In addition to the above, help was freely given through consultation, inspection and field assistance by officers of the Office of Forest Pathology. Especially valuable field service along investigative and educational lines has been rendered during the last two summers by Dr. H. H. York of Brown University, a federal forest pathologist.

#### **Plan of Town Work.**

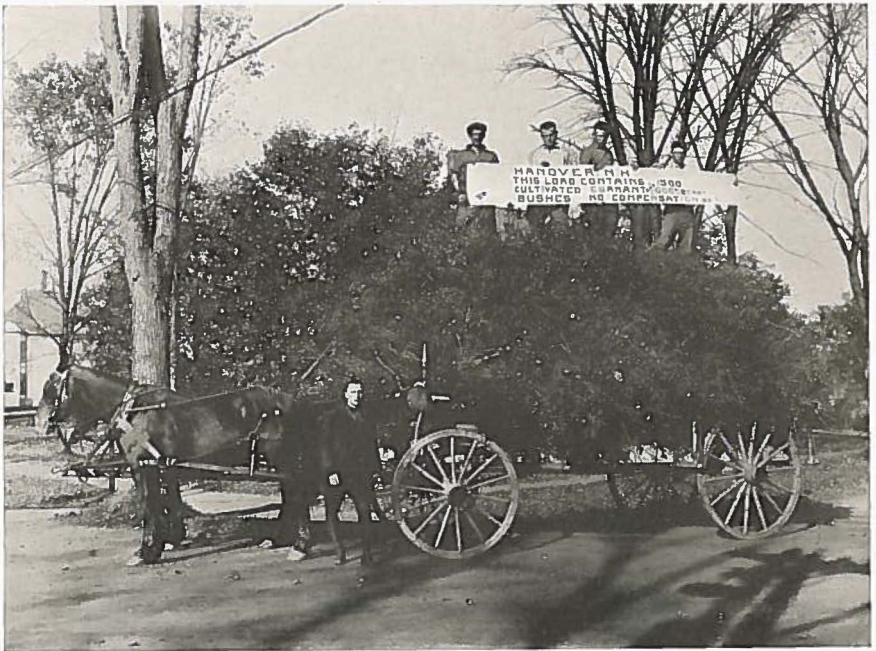
Before making the plan for work in a given town a careful study was first made of local conditions. The location of pine timberland and especially of the young pine was carefully noted and after consultation with the selectmen a control area finally decided upon in which the work would be concentrated.

The eradication, from this definite area, of currant and gooseberry bushes was the principal part of each town project. Owing to the limited amount of money available it was not possible to cover the whole of any town in one season. It was, however, hoped to establish an area sufficiently large to demonstrate the value of the work for the future and to show, for the present, what the real nature of the disease is and how control work can be done.

Educational work was carried on in conjunction with the town project and will be continued with the purpose of effecting material extension of areas already covered by the town and by private owners, with federal and state aid, if such aid is continued in the years to come. Posters were freely used, exhibits were arranged in store



CREW AT WORK CLEARING LAND OF CURRANT AND GOOSE-BERRY BUSHES.



CULTIVATED CURRANT BUSHES REMOVED BY BLISTER RUST CREW IN HANOVER.



windows and schools were reached personally by the town superintendents and others.

### Methods of Eradication.

With the areas selected and the several crews distributed, the actual work of destroying currant and gooseberry bushes (ribes) was begun. In general each crew, consisting of a foreman and five or six men, worked as a unit. The ground was systematically covered by natural boundary divisions with the crew stripping the area back and forth until it was completely covered. The men worked five abreast, six to eight feet apart and were followed by the foreman who checked up the work and kept them in line.

It was sometimes possible to increase the speed and reduce the cost considerably by a careful preliminary mapping of the area so that that part only, upon which currant and gooseberry bushes were present, was covered by the crew. This plan is being tested at the present time. It promises to be an important factor in reducing cost.

### Private Coöperation.

A very significant development in the work has been the desire of private owners to have their pine land covered even at their own expense.

In the towns of Peterboro, Wilton and Milford this interest on the part of private owners led to material extension of control areas. In Peterboro alone \$753.15 was contributed for this work which resulted in the removal of currant and gooseberries from 2,038 acres. This interest on the part of private owners, which is not confined to the above named towns, points to possibilities which will be of fundamental importance in making plans for the future.

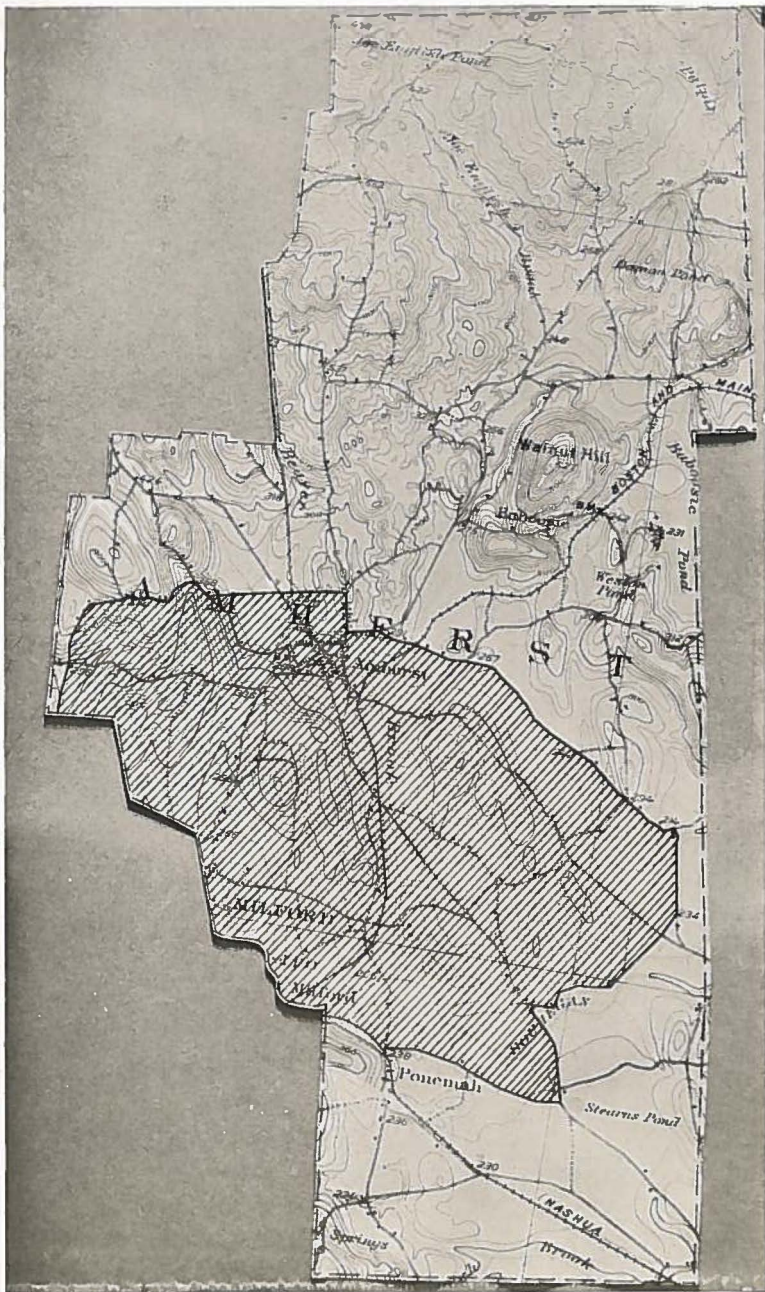
### Number of Times an Area Must be Covered.

In order to completely prevent the spread of blister rust it will be necessary to have ribes kept out of the land in question, no matter how many times the area will have to be covered. The fact that some bushes sprout freely and that new seedlings will grow adds much to the difficulty of complete eradication. Investigations indicate, however, that less than three per cent of wild ribes produce fruit each year. It is believed to be safe to figure that an area once covered will not have to be reworked more than two or three times, in order to make it safe from the blister rust in a commercial sense.

### Cost of Control Versus Value of White Pine.

If the disease has already been introduced into a locality and currant and gooseberry bushes are well distributed, as they have been found to be throughout most localities in the white pine region, it is believed to be certain that a considerable proportion of the white pine, under twenty years, will be killed before it reaches maturity unless the currant and gooseberry bushes are destroyed. If a stand of pine is attacked after reaching maturity or even after thirty years of age, it will probably come through to market with merchantable products. The area from which this timber is taken, however, cannot be counted upon to produce white pine in the future unless all ribes are removed.

In either case the cost of keeping currant and gooseberry bushes out of the pine area and for a distance of perhaps 1,500 feet therefrom should be considered in the nature of an insurance charge against the values involved, and the advisability of undertaking the work is a question which the owner can decide for himself in so far as his special property is concerned.



MAP OF THE TOWN OF AMHERST.

Shaded portion indicates the area from which wild currant and gooseberry bushes were removed in the control of the white pine blister rust.

From the viewpoint of the state it is of great public interest that the white pine be protected and maintained, and it is believed that with an annual consumption of approximately 200,000,000 feet, board measure, of white pine and with extensive areas of young pine which are continually coming to maturity, an insurance charge against this value up to  $\frac{1}{2}$  of one per cent would not be exorbitant. If, as it appears, this work can be done at a cost which will be less than  $\frac{1}{2}$  of one per cent of the stumpage value of white pine protected, for each time the ground is covered and even provided that it is found that the ground must be covered once in five years the average insurance rate may not be greater than approximately one tenth of one per cent if computed each year.

#### **Details of Town Projects.**

The tabulation on page 46 shows in brief the results accomplished by the several town projects undertaken in 1918.

In addition to the above towns, Hopkinton, Hillsborough, Antrim, Rumney, Plainfield, Wakefield, Kensington, Hampstead, Nottingham, Milton, Alton, Gilford, Strafford and Henniker appropriated a total of \$2,100.00. Owing principally to difficulties in securing labor the crews were not able to reach these towns before the close of the 1918 field season. Plans are now being made for handling the projects in the spring of 1919 in such of these towns as decide to make money available for the work at that time.

#### **Federal Coöperation.**

During the period May 15, 1917 to November 1, 1918 Federal funds have been expended on a dollar for dollar basis to offset monies spent by the state and towns in the amount of \$24,888.60.

## REPORT OF FORESTRY COMMISSION

Name of Town.	Amount of Town appropriation	Description of Area	Area Covered	Total Cost of Work.	Cost per Acre	Number of Wild Ribes Destroyed
Amherst	\$ 150	Amherst Village & Southern End of Town	6,592	\$ 650.33	.09	550
Bartlett	1/25	Lower Bartlett	2,540	1,587.48	.65	46,345
Bethlehem*	200	North of Bethlehem Street	1,284	778.16	.60	38,990
Brentwood	200	Northeast corner of township	1,105	1,125.15	1.01	74,269
Dover	200	Eastern section near Rollinsford	1,230	700.55	.56	6,788
Dublin	150	Dublin Village and South	2,502	663.53	.26	15,082
Durham	125	Durham Village and South	544	735.59	1.35	13,066
Exeter	250	Northwest section of town	930	2,484.28	2.67	74,687
Farmington	150	North of Village Inc. town	300	253.00	.84	1,960
Fitzwilliam	150	Southeast end of township	1,376	696.64	.50	51,854
Franconia	200	Central part of town	4,622	619.33	.16	66,438
Hampton	200	East and west of Village	1,750	1,099.86	.62	39,488
Haver	250	Haver Village	1,700	1,069.49	1.69	47,068
Lisbon	125	Near Lisbon town line	300	509.49	1.69	14,971
Lisbon	200	West of Village	260	807.96	3.23	41,930
Littledon	200	Near State road	700	813.44	1.14	72,677
Meredith	100	Road to Meredith Center and State Road	1,287	407.36	.68	2,089
Rillfort	250	Town line south	8,768	1,086.72	.21	3,687
Newfields	125	East half of township	2,540	606.02	.20	17,122
Newmarket	200	Northwestern section	1,171	885.37	.75	4,725
Ossipee	150	Village and East of State road	953	506.36	.59	6,879
Peterboro	200	From Center to Mountainview	3,600	912.58	.26	64,310
Piermont	150	Village and So. half of town	8,237	1,044.18	.23	49,786
Rollinsford	150	Village and E. and W. of State road	669	619.76	.92	10,000
Swanzey	150	Southeast section of town	1,200	614.39	.51	15,549
Tamworth	175	Northwest section to West Swanzey	4,512	1,225.30	.27	106,633
Lilton	150	Village to W. Ossipee State road	2,660	617.31	.25	50,168
Wolfeboro	250	West half of town	2,325	621.67	.26	4,695
Wilfont	150	Wolfeboro centre to Wolfeboro Falls	2,060	948.11	.43	22,254
		Southwest part of town and Wilfont Centre	5,254	441.67	.08	1,000
Totals	\$5,275		66,292	\$26,018.89	.39	959,315

\* Estimate cost.

The Wilfont Area is being eradicated by a new method of preliminary scouting for the purpose of locating the wild currant and gooseberry bushes. This method promises much towards reducing the cost per acre. It is planned to adopt the same method in all towns where it is possible.

**Recommendations.**

It is recommended that work in control of the White Pine Blister Rust be continued during the coming two years and be classed in the same category as fire protection, being necessary for the continued prosperity of a principal industry in the state. It is assumed that Federal aid will be continued and that many towns will appropriate such sums as are necessary for coöperative control of the disease. The annual State appropriation should be about the same as at present.

## WOOD FUEL.

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### Increased Use of Wood.

During the winter of 1917 wood was, to a limited extent, used as a substitute for coal in domestic heating as well as in factories in this state. In spite of the fact that the season opened with probably less than the usual amount of cordwood ready for use, it is certain that before spring the consumption of wood for the state reached an amount greatly in excess of that of normal years.

The Forestry Commission took active interest in measures for stimulating the cutting of wood in coöperation with the Society for the Protection of New Hampshire Forests, the Extension Service of the State College at Durham, the State Fuel Administration and the U. S. States Relation Service. A campaign of propoganda was carried on urging householders and others to increase the use of wood for fuel in place of coal and particularly urging that more cordwood be cut. A census taken of the situation in each town indicated a decided shortage in wood supply, and this was the basis for the campaign for increasing production.

Detailed study was made of conditions in the Concord fuel district which included Concord and seven neighboring towns. This study gave data on the amount of cordwood cut or to be cut from each woodlot and the amount for sale on the stump. It also indicated the places where the work was held up on account of scarcity of labor.

At the time when the Monday closing law was put in force in the factories the Commission was able to furnish

for the Concord district a list of woodlots where stumpage was for sale or where the owner desired to employ choppers, in cooperation with the Fuel Administration

The State Fuel Administrator appealed to the ministers and school teachers to help get wood cut. Many schools organized for the work.

At the State College 307 men gave their pledge to the president to cut at least one cord of wood each during the Christmas vacation. The later reports showed 327 cords cut.

The boys of Kimball Union Academy were interested and cut nearly seventy-five cords in one day.

Boys in High Schools in Manchester, Concord, Penacook, Hopkinton and many other places were enlisted in cutting wood and gave ready response.

In many towns semi-public action was taken to insure a supply of wood fuel at a reasonable cost. In the case of Claremont the Chamber of Commerce, through the purchase of cordwood, built up a reserve for the town and succeeded in reducing the price of wood from approximately \$20.00 to \$12.00 per cord. In Lancaster somewhat similar action was taken, a wood reserve being secured by a group of public spirited citizens who were willing to contribute money to the enterprise.

Price fixing was not attempted but in certain cases the question of prices was very effectively handled locally and by mutual agreement between the dealers and the local Fuel Administration.

In November 1918 Mr. E. C. Hirst was appointed Director of Wood Fuel for New Hampshire by the State Fuel Administrator.

### **Wood Fuel as a Substitute for Coal in 1919.**

At the beginning of the winter 1918-1919 it appears certain that substitution of wood fuel for coal will be



called for in parts of the country where wood is locally available during the coming winter in spite of the fact that such splendid progress is being made in the production and distribution of coal.

Machinery for production and transportation has been taxed to the limit and for this reason any one of several different factors might interfere either with production or transportation so as to prevent the supply upon which the state is counting.

The supply of anthracite coal is short and will probably stay short in so far as the total need is concerned. This statement has been repeated time and time again by federal officers competent to judge. It is certain that the burden of fuel production which is placed upon the country can be definitely lightened by a general partial substitution of wood fuel for coal.

A reserve of wood fuel can best be secured by the early placing of orders on the part of all consumers who cannot cut wood for themselves, but can use it in place of coal. The wood of New Hampshire should be brought to the front as a substitute for coal during these years when the coal supply of the country is being so severely taxed. Wood can be used in the furnace to advantage provided it is supplemented by coal. It can be used in place of coal in any kitchen range and sometimes with even greater satisfaction.

### **Fuel Value.**

The following table prepared by Professor K. W. Woodward of the New Hampshire State College shows the weight per cord of some of our principle fuel woods, also its approximate fuel equivalent in tons of hard coal.



DENSE STAND OF MIXED RED AND WHITE PINE WITH HARD-  
WOODS IN CONWAY.

Improvement cutting of hardwood has netted a profit of about \$2.75 per cord.



CONWAY WHITE AND RED PINE.

Note the red pine on the left. The stumpage value of these two trees  
on this land is practically the same.

SPECIES	WEIGHT PER CORD	FUEL VALUE IN TONS OF HARD COAL
Hickory.....	4500 lbs.	1 ton
White Oak.....	4300 "	1 "
Sugar Maple.....	4000 "	" "
Red Oak.....	4000 "	" "
Beech.....	4000 "	" "
Yellow Birch.....	4000 "	" "
Paper Birch.....	3800 "	" "
White Ash.....	3800 "	" "
Grey Birch.....	3500 "	" "
Red Maple.....	3500 "	" "
Poplar.....	2500 "	" "

Soft wood tops will weigh from 2,200 to 3,000 pounds per cord and will have a fuel value approximately equivalent to  $\frac{1}{2}$  ton of hard coal. The weights given are for air dry wood which contains approximately 25 per cent moisture.

### Production of Cord Wood and Improvement of Woodlots

#### (1). Cleaning of White Pine Stands.

The cutting of grey birch or other hard wood out of young stands of white pine can often be done with profit under the present market conditions and proves to be greatly to the advantage of the white pine which is thus released for more rapid growth. When this work can be done without financial loss it is decidedly worth while from the point of view of improving the pine. In the forest of the Yale Forest School near Keene, N. H. an area was cut in this way during the past winter and, in spite of enforcement of cutting restrictions to protect the white pine, an average stumpage price of approximately \$1.50 per cord was received for the grey birch and the pine was left in excellent condition.

#### (2). Hard Wood Thinning.

Many maple sugar orchards are greatly in need of thinning and will be much improved if the defective trees are taken out. The best production of sugar is only secured when the stand is so thinned that the crowns of the trees have ample room to spread out.

There are few hard wood stands in the state which cannot be improved by taking out dead and defective trees and species of less value. In the average hard wood forest of this state the following species should be favored on account of their value and capacity for growth: white ash, bass wood, sugar maple, red oak, yellow birch, thrifty poplar and white birch and beech in some cases. All defective and overmature trees and in general red maple, gum, elm, grey birch, and iron wood should be removed in order that the trees of greater value may be given a chance to grow.

### (3). Fuel Wood from Tops.

Extensive slash areas have been left near market centers to a greater extent during the past year than ever before. It is now possible in many cases to sell cordwood from soft wood slash at a profit. If this work can be done without loss or with a small profit it is decidedly to the advantage of the owner of the land since the fire hazard in the cut over area is greatly reduced, the land left in better condition for other uses, and most important of all, a real saving in resources is made.

### (4). Thinning of Pine Stands.

The thinning of pine lots too young for lumber is possible at this time provided the market is near. A twenty-year old stand of pine which is fairly dense can be greatly improved by the cutting out of those trees that are ill formed or that are interfering with better trees so that the growth of the stand may be increased. A fair yield of cordwood will result.

In thirty year old stands thinning will result in a few thousand feet B. M. per acre of merchantable lumber as well as some cordwood, while in well stocked stands forty years old as much as ten thousand feet B. M. per acre may be cut and the stand be thereby greatly improved.



EXTENSIVE CLEANING OF WHITE PINE IN BELMONT.



HARDWOODS REMOVED FROM DENSE MIXED STAND IN RAYMOND.

### Methods of Cord Wood Cutting.

As in the past the most satisfactory manner in which to have cordwood prepared for the market is the old fashioned way of having it chopped, split and corded in four foot lengths on the ground. It is very difficult, however, to get this work done at the present time. In many cases it has proved more practicable to cut tree lengths in the woods, snake them to a common yarding point and then saw into stove or other lengths by power.

### Cord Wood Cut on State Forests.

During the past two seasons approximately 1500 cords of fuel wood have been cut on twelve state forests. These operations have in general been carried on for the purpose of improving soft wood growing on the tract and have resulted in securing an average profit on the stump of approximately \$1.41 per cord.

### Improvement Cutting on Private Woodlots.

During the winter of 1917 there were a great many cord wood operations carried on by private parties, some of which have resulted in decided improvements in forest conditions on the area covered. These cuttings have been largely in young pine stands where hard wood was removed. It is a most encouraging sign to find that a large number of woodland owners are, of their own initiative, practicing forestry at the same time that they are producing fuel wood. The following cases have been especially noticed on account of the excellent results secured.

Woodlot of Mr. F. Folsom, Raymond, N. H.

Improvement cutting of approximately 50 cords of maple and birch in young pine stands with substantial margin of receipts over cost for stumpage.

Woodlot of Mr. W. W. Dudley, Raymond, N. H.

Cutting of 200 cords of hickory, oak and birch, leaving a thrifty young growth of pine. Stumpage was here figured at \$1.50 to \$4.00 per cord.

Woodlot of Mr. John A. Hodgman, Milford, N. H.

Approximately 80 cords of red maple fuel wood removed from a tamarack swamp at a substantial profit.

Woodlot of Professor George Baker, Chocorua, N. H.

A pine stand, 25 to 40 years old, much improved by the removal of hard woods.

Woodlot of Mr. Samuel D. Felker in Barrington, N. H.

Several hundred cords of hard wood cut from a mixed stand of hard wood and pine. The careful leaving of the pine in good growing condition will result in an excellent stand of timber on a considerable part of the area covered.

#### **Advice to Wood Lot Owners.**

Forty examinations of wood lots have been made by the Department and recommendations given to the owners. The Department considers this work of vital importance and believes that it can be of direct help to the wood lot owner who desires to make his timber land permanently productive of valuable crops. Over 40 lectures have been given during the past two years on forestry subjects by the Department.

## PUBLIC FORESTS.

### (NATIONAL, STATE AND MUNICIPAL.)

#### Summary of Public Forests in New Hampshire.

White Mountain National Forest.....	381,218 acres
State Forests, received by gift or purchase	10,716
State Tracts acquired under the reforestation law .....	285
Municipal forests .....	5,329
Total area public forest land.....	397,548 acres

#### Owned by Forest Societies and Institutions.

Society for the Protection of New Hampshire Forests .....	2,257 acres
Appalachian Mountain Club.....	721
Yale Forest School.....	900
Total .....	3,878 acres

A total area of 1,120,000 acres has now passed title to the Government in the eastern mountains of the United States. The following statement on the progress of federal acquisition and management in the White Mountains is given by Mr. J. J. Fritz, Gorham, N. H. Supervisor of the White Mountain National Forest.

#### The White Mountain National Forest.

**Extent.**—About 381,200 acres have been approved for purchase in the White Mountain National Forest, of



which 289,237 acres have passed title, 266,291 acres being in Coos, Carroll and Grafton Counties, N. H. and 22,946 acres in Oxford County, Me.

### Administration.

The headquarters office is at Gorham, N. H. Permanent ranger headquarters are located as follows:

Bartlett, office in village.

North Woodstock, just above the depot.

Martin's Location, in Peabody River valley, about six miles south of Gorham.

Bethlehem, on Gale River near Pierce's Bridge.

Permits to camp and build fires may be secured upon application to any of the rangers, guards, or the Forest Supervisor at Gorham. Maps of the White Mountain area showing the location of the national forest, ranger headquarters, and other features may be secured upon application to the Forest Supervisor at Gorham.

### Improvements.

Ranger stations are connected by telephone, and as fast as funds are made available the lines will be extended to points within the forest. Complete plans have been made whereby telephone lines and trails will be constructed to best provide for fire protection.

But a small amount of the funds appropriated at the last session of congress for the coöperative construction of roads in the national forests will be available in the eastern forests. As the income from forest uses increases, a sum equivalent to 10 per cent of same will be available for road construction in coöperation with the state and counties in which the national forest is located. Numerous trails have been improved as tracts have been acquired in order that the area would be more accessible for the purposes of fire protection.

### Recreation.

A general plan for the development of recreational uses on the Forest is in a formative stage. During the present year the Crawford Bridle Path and Valley Way have been taken over by the Forest Service and a start made towards bettering the conditions of same from the Crawford House to Appalachia. A through trail will eventually be maintained by the Service along the Mt. Alban Ridge, Razor Brook to Bartlett and thence across the divide into Swift River and Wonalancet. Thus it will be made possible for trampers to go from the north to the south boundaries of the Forest with a fair degree of comfort. Recreation within the National Forests can be enjoyed with privileges equal to those enjoyed within National Parks. All correspondence relating to the uses of the Forest should be addressed to the Forest Supervisor, Gorham, N. H.

### Reforestation.

As yet no attempt has been made to reforest cut-over and burned areas, since natural reproduction is generally very good. Should it be found that areas are not reproducing properly, planting work will be taken up.

### Timber Sales.

Several sales have been made of hard and soft wood timber on areas that the government has already acquired. All timber to be removed is marked or designated by a forest officer. Soft-wood brush is required to be burned while cutting is in progress. Spruce and balsam fir is utilized to a 4-inch top diameter and in log lengths down to 8 feet. Ordinarily a cutting diameter of 12 inches, breast height, is the minimum allowed for spruce, fir, hemlock and pine. Hard woods are utilized down to 4-foot lengths, according to the species being

removed. Such portions of the tops as are not utilized for cordwood must be limbed out so that they will lie close to the ground to insure their rapid decomposition. All timber is scaled before removal from the forest. The cubic foot rule is employed in scaling national forest timber, 161 cubic feet equaling 1,000 board feet Blodgett or New Hampshire rule, which is the standard log rule in the White Mountain region.

In timber sales amounting to over \$100, the regulations require that they must be advertised in at least one newspaper for a period of at least 30 days previous to the closing of bids. All timber is paid for in advance, and in large sales a bond is required to insure compliance with the terms of the contract.

The general policy of the Forest Service will be to make small sales rather than large ones, having always in mind to serve the greatest number of people within and adjacent to the forest, and to protect the forest cover in the removal of the timber, or in other words, to make improvement cuttings. Close utilization, brush disposal, the improvement of the stand, stream flow, protection and fire prevention are the primary results sought, and the removal of mature timber wherever the conditions warrant.

Under the terms of the Weeks Act, 25 per cent of the net revenue from national forests is paid to the state treasurer to be disbursed to the towns from which this revenue is derived.

### STATE FORESTS.

The following tabulation shows the essential facts concerning the tracts of land secured by gift or purchase by appropriations made available to this department for the care and acquisition of state lands to date.

STATE FORESTS AND RESERVATIONS.

Name of State Forest	Date Acquired	Town	Locations	Acres
*Miller Park Reservation	1891	Peterboro	Mt. Pack Monadnock	3
*Cathedral and White Horse Ledges	1801	Conway	West of No. Conway	40
*Monadnock Reservation	1905	Jaffrey	Mt. Monadnock	492
*Haven Reservation	1908	Jaffrey	North of Jaffrey P. O.	05
*Harriman Reservation	1911	Warner	Mink Hills	210
†Crawford Notch Reservation	1913	Hart's Location	Bemis Brook to Carroll line	5,925
*Merriman Reservation	1913	Bartlett	North of Intervale	400
State Nursery and Experimental Forest	1914	Boscawen	Gerrish	142
*Ruckins' State Forest	1914	Ossipee	East of Ossipee P. O.	100
Dunbarton State Forest	1914	Dunbarton	On road to East Wear	56
*Joseph B. Walker State Forest	1915	Concord	Two miles west of city	45
Davilsville State Forest	1915	Warner	Southeast part, near Davilsville	32
Alton Bay State Forest	1915	Alton	One-half mile south Alton Bay	209
Mast Yard State Forest	1915	Hopkinton	Between Tyler and Mast Yard	245
Sentinel Mountain State Forest	1915	Piermont	East part of road from Wentworth	143
Livermore Falls State Forest	1915	Campton	Between Livermore Falls and Campton P.O.	134
Blue Job State Forest	1916	Farmington	Blue Job Mt.	99
Mascoma State Forest	1916	Canaan	Northwest of Canaan St.	174
Litchfield State Forest	1916	Litchfield	East of Reed's Ferry	122
Salmon Falls State Forest	1916	Rochester	On State road south of Hays	20
Bear Brook State Forest	1916	Allenstown	On Deerfield Road	413
*Sugar Hill State Forest	1916	Bristol	North of Village	57
Kearsarge Mt. State Forest	1917	Willmot	On northeast slope of Kearsarge Mt. including the top	509
Jeremy Hill State Forest	1917	Pelham	East Central part of town	63
Stoddard State Forest	1918	Stoddard	Southeast part of town	71
Marlow State Forest	1918	Marlow	North part of town between the Blue and Brown Trunk Line Highways	76
Cardigan Mt. State Forest	1918	Orange	North shoulder of Cardigan Mountain	700
Total Acreage.....				10,576
Special Gift to State for Reforestation or Other Purposes.				
Scribner-Fellows Tract	1918	Ashland	South of R. R. Station	140

TRACTS REFORESTED UNDER THE NEW LAW.

Name of Donor	Location of Tract	Acres Deeded	Trees Planted
W. D. Baker	Rumney, near Quincy Station	25	25,200
Jason E. Russell	Mason, near George Arnold's	25	25,500
George D. Pattee	Campton, near donor's house	5	6,650
George B. Leighton	Dunbln, on Keene road	25	29,500
	Half-way between Tilton and Franklin Falls		
Charles E. Tilton	Falls	25	10,800
John Q. Hodgman	Amherst, Merrimack road	18	30,000
Charles H. Allen	Concord, northwest corner of town	25	29,600
Edward H. Carroll	Warner, on road to Pumpkin Hill	25	25
Ernest R. Kimball	Mason, near Pratt Pond	26	18,950
Charles H. Pattee	Campton, near Geo. Pattee's	8	9,900
Charles F. Young	Merrimack	25	24,500
Jeremiah E. Smith	Northfield	17	8,850
George E. Barnard	Bow	13	6,550
Chas. H. Woodman	Madison	25	25
			230,900

\*Acquired by gift of owner or by local subscription.

†Not purchased by Forestry Commission; acquired by Governor and Council under special act (Chap. 180, Laws of 1911).

DESCRIPTION OF TRACTS ACQUIRED IN  
FISCAL YEARS 1917 AND 1918.

**Scribner-Fellows Tract.**

The Honorable W. B. Fellows, Secretary of the State Tax Commission, has given a tract of 140 acres located near the railroad station at Ashland to the state as a memorial. Although this land was recently cut over there still remains a considerable amount of excellent young pine growth.

It is the wish of the donor that this land shall be put to such use as will be most advantageous to the state. The suggestion has been made by him that it be used for demonstration work in forest planting since there appears to be no other special need for the land at present and since the tract from its nature and location is admirably adapted for planting. The soil and site conditions are unusually favorable for the growth of timber.

It is recommended that the Forestry Commission be authorized by law to use this tract for forestry purposes until such time as the state may need it for institutional or other uses.

**Kearsarge Mountain State Forest.**

Approximately 509 acres of forest land on the side of Kearsarge Mountain comprise this tract and, with the exception of 58 acres of ledge, very good forest growth is assured on this area. Most of the spruce saw timber was cut some time ago, but there is left over 50 acres of spruce of pulp wood size. There is a large amount of soft wood reproduction as well as of the better hard wood species and good hard wood nearing maturity. The open pasture land above the site of the old Winslow House, which was formerly a well known mountain resort, will be planted in the near future.

### **Jeremy Hill State Forest.**

This tract consists of 63 acres comprising the top of Jeremy Hill. It is covered with a mixed growth of hard woods, mostly oak, with a few acres of excellent young pine. Upon the top a steel lookout tower, fifty-five feet high, has now been completed which will serve as an important link in the system of lookouts which are operated in the southern part of the state.

### **Cardigan Mountain State Forest.**

This tract consists of seven one hundred acre lots located on the northeastern shoulder of Cardigan mountain. From five of these lots six million feet of spruce has recently been logged, while on the remaining two is a valuable stand of young spruce and old growth hard woods of excellent quality which has been free from logging operations for forty years or more. This land was purchased as a reserve for growing timber which it is anticipated will bring excellent return for the money invested. The open land will be planted.

### **Stoddard Tract.**

An area of seventy-one acres was purchased in the town of Stoddard on the highway from Hillsboro to Keene. This tract lies on both sides of the highway and will make an excellent demonstrational forest for the handling of timber land in this part of the state. It is fully stocked with growing and mature mixed hard woods at the present time. Thinning operations will be carried on.

### **Marlow Tract.**

Approximately 75 acres was purchased in the town of Marlow for a demonstrational plantation. The fact that

this area lies on either side of the State highway between Newport and Keene makes it very desirable from the demonstrational point of view. It is almost completely cut over and will be in excellent shape for planting in the near future.

#### **Mast Yard Tract.**

Forty acres of land for the most part barren, but which contains about 33,000 feet of white pine, was purchased as an extension of the present Mast Yard State Forest in Hopkinton. This extension will make it possible to increase the length of the fire line already built beside the railroad right of way and will then protect the whole area which has long been subject to frequent burning over by railroad fires. This land will make an excellent site for the planting of pine.

#### **Recommendations.**

It has been found that the cost per acre of cut-over land has not materially increased during the past two years and for this reason the continued purchase of such land for forest development has been advisable. It is strongly recommended that the appropriation for purchasing and planting of state lands be maintained at present and increased as soon as may be in order that the state may more fully do its share in maintaining and improving timber production.

## REFORESTATION.

During the past two years the following tree stock has been disposed of as indicated below.

### Planting Record from State Nursery.

Period	Trees Planted on State Forest	Trees Planted on "Ten Year Tracts"	Trees Sold for Private Planting	Totals
Fall 1916	88,200	29,300	29,300	146,800
Spring 1917	76,950	87,400	99,766	264,106
Fall 1917	57,000	15,500	2,500	75,000
Spring 1918	26,000	10,575	86,256	122,831
Totals	248,150	142,775	217,812	608,737

Very little planting has been done by the Commission during this season owing to war conditions. The nursery has, however, been kept in normal growing condition in order that trees may be ready for a full planting program after the conditions become stabilized. The cost of planting, difficulty in securing men, and danger of interfering with agricultural work has made it seem advisable to postpone operations for the present. This is done, however, with the full realization that reconstruction work should include greatly increased activity in forest planting in order that our forest land may be placed in condition to produce larger timber crops and to insure against future shortage.



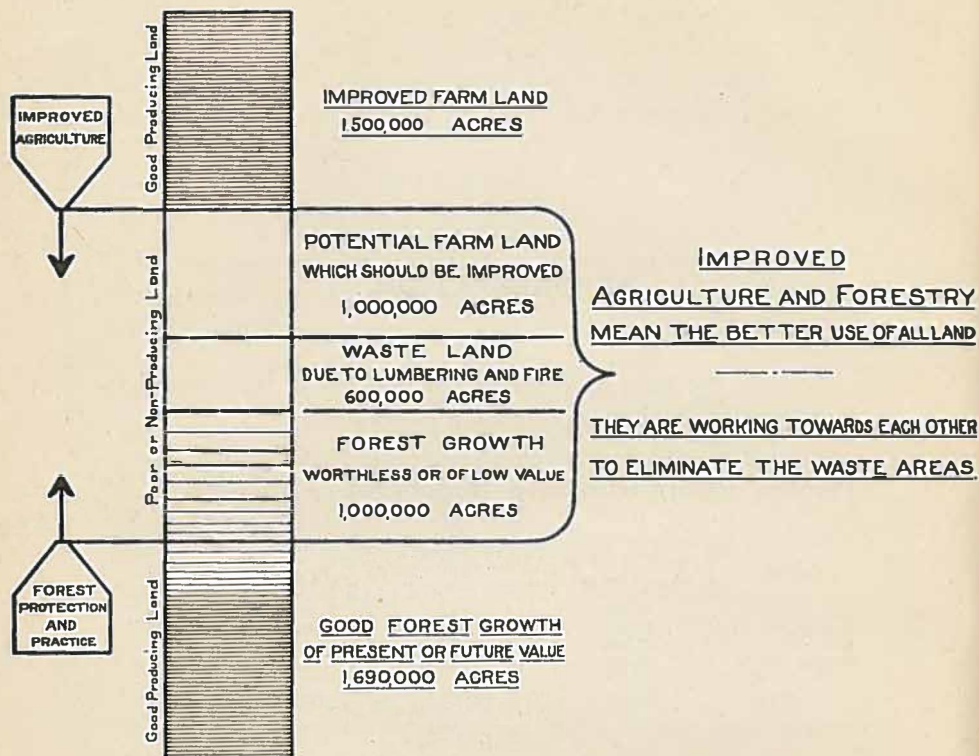


Diagram showing waste-land problem of New Hampshire.

More than half the land surface of the state (over 3,000,000 acres) is better suited to tree growth than to any other use.

Of this potential forest land at least 600,000 acres are not reproducing forest crops due to cutting and fires, and on about 1,000,000 acres the forest growth is scarce or of inferior quality. It is the business of forestry to make all of this land of high productive value in wood materials.

There is said to be approximately 1,000,000 acres of idle farm land in the state which should be im-

proved for agricultural uses. The Forestry Commission does not advocate the use of such land for forest planting and the fact that this million acres of unimproved land must be put to agricultural use before agricultural and forestry interests are brought into conflict, in so far as the use of land is concerned, makes it apparent that no such conflict can exist.

On the 600,000 acres of waste land above mentioned timber should be grown and it will in the future be good business sense on the part of the state to reclaim this land. It is not too early now to plan for acquisition and reforestation of such forest land on a larger scale than heretofore practiced.

#### **Plans for Immediate Future.**

For the immediate future reforestation will not be attempted by the Commission on a large scale on account of the present high cost of planting and the scarcity of labor. The accumulation of high costs at the start on planting operations causes a very heavy burden to fall upon the project as a whole, owing to the long period during which these initial costs are accumulating interest, and for this reason planting operations to be financially successful must be initiated at a reasonably low cost. Only such planting is being attempted as will utilize trees from the nursery which cannot be satisfactorily held for later planting.

#### **Farm Crops as War Measure.**

In the spring of 1917 approximately ten acres were planted at the State Nursery to potatoes, corn and beans, and the following products were sold: 390 bushels of potatoes; 30 bushels of beans; and 4,400 pounds of corn. The season proved to be an unfavorable one for the beans

and although nearly seven acres were planted only 30 bushels of beans were harvested.

During the 1918 season 56 bushels of spring rye were raised on two and a quarter acres of land and 7 bushels of beans were harvested from one-half acre of land which is in this way being prepared for pine transplant beds.

### IMPROVEMENT OPERATIONS ON STATE FORESTS.

During the past two years the improvement operations of the Commission have been almost entirely such as would produce fuel wood and have been conducted with the idea of stimulating the production of fuel. On twelve state tracts in different localities approximately 1500 cords of wood has been cut. Mr. L. N. Watson has had field supervision of these projects for the State Forester and through his industry, aided by favorable market conditions, has been able to accomplish difficult cleaning operations at a profit to the state. Details of these cutting operations follow.

#### Haven State Forest.

This forest area of 95 acres lies just outside and north of Jaffrey village. The lot is principally middle aged pine, spruce and hemlock with about one quarter of the area covered by young hardwoods. Thinning operations are needed in a large part of the tract. A number of hardwood trees of the spreading type have been removed from among the younger growth and several remain which should come out. These trees were felled as carefully as possible and very little desirable growth was injured. All parts of the tree which could be made into logs were sold as such, while the rest of the tree was cut into cordwood and the limbs piled in open spaces and burned. A stumpage of \$0.92 per M was realized from 18,473 feet of logs, while the return on 75 cords cut from the tops paid for the working up of the wood.



White Pine in Belmont Improved by Removal of Hardwoods at a Total Profit, Including Stumpage of \$6.75.



White Pine on the Haven State Forest After Overmature and Inferior Hardwoods were Removed.

### **Crawford Notch State Reservation.**

As a result of a blow down, the main part of which occurred in 1915, there was a large amount of hard wood which should be utilized on this tract. Owing to the fact that most of the wind blown trees still had parts of their root system in the soil, the deterioration of the wood is not great. A fuel wood project is here being undertaken which contemplates placing on the market approximately 2,000 cords of fuel and peg wood. One hundred and fifty cords of beech and maple were cut last winter. A crew is now on the ground limbing out trees and snaking them to yards where they are being cut into fuel and bobbin wood by power. This project was undertaken in order that the supply of fuel wood in the state might be increased to meet emergencies of coal shortage.

### **Dunbarton State Forest.**

This tract of 56 acres located in the town of Dunbarton three-quarters of a mile east of Everett station, was an abandoned farm which has grown up to bushes and hard wood trees. On acquiring this land the bushes were cut by the road and burned, small clearings were planted wherever advisable with red and white pine, and a little over 8 M feet of small oak and chestnut were sold for a stumpage of \$4.80 per M. All wood was cut from the tops the sale of which could be made to pay for cutting, (about 39 cords). Brush was lopped until it lay flat on the ground. The past summer two men cut all of the material fit for fire wood and piled all brush resulting from the 185 cords of wood so cut. The labor on this job, inclusive of the piling of brush, cost \$3.00 per cord, and left the ground in first class condition for planting. Twenty cords of poplar were peeled and cut along with the wood at a cost of \$4.50 per cord. A stumpage of about \$2.75 will be realized on the cordwood and about \$7.00 on the poplar.

### **Davisville State Forest.**

This tract is a burned area of 32 acres between Davisville and Diamond stations on the south side of the state road, improved by clearing operations. In the past year twenty-three cords of maple and birch left by the fire were cut into cordwood. Solid blocks of white, red, and Scotch pine have been set by the roadside and alternate rows of red and white pine

over the rest of the tract. In later thinning operations the less desirable species will be taken out leaving the trees best adapted for good development under these site conditions.

### **Mast Yard State Forest.**

This area of 204 acres of hard burned land is located in the town of Hopkinton, one mile east of Tyler station on the south side of the railroad. It is principally a reforestation tract, and the greater part of the work done has been planting. About 140 acres have been planted up to the present time with 147,000 pine transplants. The average cost for the trees and labor has been \$10.76 for each acre reforested. About ten cords of wood, principally birch, has been cut from the pine growth in connection with other work and sold locally.

### **Livermore Falls State Forest.**

This is a tract of 134 acres representing many types of forest growth, just east of Livermore Falls bridge on the west side of the highway. About twenty-five acres in the northern part of this lot were covered with a mixed growth of young soft woods and over mature hard woods. These hard woods together with those in a deep ravine, were sold on the stump for \$0.50 per cord for fuel wood, and \$2.50 per cord for peg wood, posts, etc. The contractors were held responsible for the young growth and protected it in every possible way from injury. In this operation the trees were felled, limbed out and snaked full length into open spaces, where they were sawed up and split into cord wood; 436 cords of fuel wood, 14½ cords of peg wood, and 5¾ cords of oak resulted from this operation. As soon as all material is removed, the open spaces will be filled in with young stock from the forest nursery.

### **Blue Job State Forest.**

This 99 acre woodlot on the east slope of Blue Job Mountain resembles very closely many lots that have had the valuable timber culled out. The inferior and undesirable trees are gradually being removed from over and among young conifers and turned into fuel wood. The cost of this work is very small, as the watchman employed on the near by lookout station gives his time to this work on damp days. About thirty-five cords have

been removed in this way during the past two years. Valuable young soft wood growth is being released by these cuttings. Spruce and pine will be used to plant the open area as fast as the wood is removed.

### Mascoma State Forest.

This tract of 174 acres located on the Mascoma river in the town of Canaan, is rapidly being put in shape as a growing spruce lot. In the northeast corner of the tract about twenty-five acres have been cleared of all hard wood trees, the slash having been piled away from young spruce and pine and then burned. This gave a cleared area for reforestation and 18,000 Norway spruce were here set. In the southeast corner of the lot, sixty cords of grey birch were cut from among soft woods. These were cut in long lengths and drawn together in large piles where they were sawed by machine to four foot lengths. This wood cost \$3.31 per cord to cut, \$1.37 per cord to yard and \$0.79 per cord to saw in four foot lengths, making a total of \$5.47. Another operation followed this one where labor was hired to clear the land and cut the material into wood, 30 cords being cut at a cost of \$4.17 per cord, making a total for the two operations of 90 cords. These costs include the handling of the brush in both cases.

Two thousand Norway spruce were used in the spring to fill in the vacancies left after the birch was removed, and the following fall 4,000 more Norway spruce were used to complete the filling in. At present the cutting of more birch from among the young soft woods is under way, and further planting will be done as the inferior hard woods are removed.

### Bear Brook State Forest.

This tract of 413 acres, located just south of the Allenstown station on the west side of the highway, is principally a planting area. The hard woods from a small area of mixed growth were sold on the stump (about 75 cords) for \$75.00. After this improvement cutting several thousand Norway spruce were set among the remaining soft woods. A few thousand cuttings of the big tooth poplar were planted in a favorable location near by. Several acres of young growing pine were freed from the whipping of small hard woods, growing among them. These young hard woods were cut two to three feet from the ground, and in many cases were only partly cut off, being then bent to the

ground. This proved to be a very successful method of cutting as the sprouts grew very slowly, and in many cases died before the first year's growth was complete.

### **Sugar Hill State Forest.**

This tract, well covered with timber growth and consisting of 57 acres, is located on the south slope of Sugar Hill and very close to Bristol village. The forest is made up principally of hard woods, with a small amount of both young and mature pine near the base of the hill. An improvement operation was undertaken this past winter to put this last named area in good growing condition. Where the pine was most dense only a few hard woods were found and they were taken out for the stumpage, while among the more scattered pine the hard wood was sold on the stump for \$1.00 per cord. About 85 cords of poplar were sold on the stump for \$4.50 per cord. In each case the contractor was obliged to meet certain requirements for the disposal of brush resulting from the operation. Planting will be done in the near future to fill gaps in the forest made by taking out the hard wood.

### **Kearsarge Mountain State Forest.**

Heavy cutting of spruce in the lower areas of this forest left young spruce scattered among larger and undesirable hard woods. The removal and turning into cordwood of these hard woods has been contracted to local parties from stump to car at \$6.50 per cord, 18 cords having been cut. It is hoped to clear this area of all undesirable material in the next few years, and produce a forest of desirable and valuable trees. Spruce will be the principal tree used in reforestation, which is already under way on a few open areas.

### **Charles E. Tilton Reforestation Tract.**

This tract of land, deeded to the state under the provisions of Chapter 163, Laws of 1915, lies in the town of Tilton, on the south side of the state road, about half way between the city of Franklin and the village of Tilton. About three acres are old field land and the balance is covered with hard wood with patches of young white pine, varying from a full stand to scattered trees, seeded from older trees left from previous cuttings. Immediately after the state took over the tract the hard wood



bushes were cut and burned by the roadside, and pine transplants from the State Forest Nursery were planted in the old field.

The next step was to get rid of inferior hard woods on the tract in order that pine, to which the land is well adapted, might be encouraged. Two hundred and thirty-six cords of fuel wood have been cut as well as a small amount of poplar for excelsior. All brush was piled and small pines preserved. The chopping cost \$2.70 per cord for 236 cords and the wood brought \$6.00 per cord on the lot giving a stumpage of \$3.30 per cord. The stumpage received for the poplar was \$4.18 per cord. All piles of brush which are far enough away from the pine to allow burning without damage, will be burned on damp days or when there is a little snow on the ground.

Red and white pine will be set on the areas which have been cleared of hard wood, in alternate rows six feet apart and six feet in the row, and the whole tract will soon be a producing pine forest.

### Summary.

The following list shows the names of the tracts operated upon, amounts of cord wood cut and margin of receipts over expenditures secured as stumpage. In certain cases sales have not yet been completed and the stumpage figure must therefore be considered an estimate.

Tract	Operation	Number of Cords Cut	Estimated Stumpage per cord
Blue Job Mt.	Improvement Cutting	85	\$1.75
Davisville	Clearing for planting	23	0
Dunbarton	Improvement cutting and clearing for planting	224	3.00
Haven	Improvement cutting	75	0
Kearsarge Mt.	Improvement cutting	18	3.00
Livermore Falls	Improvement cutting	436	.50
Mascoma	Clearing for planting	90	0
Maat Yard	Improvement cutting	10	0
Sugar Hill	Improvement cutting	85	1.00
Bear Brook	Improvement cutting	75	1.00
Crawford Notch	Clearing of blow down	150	.75
Charles E. Tilton			
"Ten Year Tract"	Clearing for planting	236	3.30
Total number of cords cut		1457	
Average stumpage indicated			\$1.41

## APPENDIX

## FOREST LAWS.

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

(Chapter 128, Laws of 1909; amended by Chapter 166, Laws of 1911; amended by Sections 2 and 6, Chapter 159, Laws of 1913; amended by Section 13, Chapter 127, and Section 25, Chapter 142, Laws of 1915; amended by Section 1, Chapter 39, Section 1, Chapter 179, Section 1, Chapter 191, Section 6, Chapter 220, Laws of 1917.)

#### Forestry Commission.

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.

#### State Forester. Direction of fire protection; scientific investigations; educational work; publications.

Section 2. The Forestry Commission shall appoint a state forester to serve at the will of the commission at a salary to be fixed by commission, not to exceed \$3,000 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 traveling 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 cooperate 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.

#### **Advice and co-operation with counties, towns and woodland owners.**

Section 3. The state forester shall, upon request and whenever he deems it essential to the best interests of the people of the state, cooperate 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.

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

Section 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. He may appoint a forest fire warden or deputy forest fire warden for two or more towns or parts of towns. 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.

#### **Appointment of wardens in unincorporated places.**

Section 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.

#### **District Chiefs. Division of state into fire districts.**

Section 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.

**Duty of wardens to fight forest fires; persons must respond to warden's call; compensation; wardens may be employed on other public forestry work.**

Section 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. Any regularly paid forest fire warden, deputy forest fire warden, lookout watchman or fire patrolman may be directed and used by the district chief or the state forester on any state or municipal forestry work or other public work when in the judgment of the state forester the safety of woodlands is not endangered thereby.

Section 8: Owners of 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. 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, the dispute shall be referred to the district chief, the state forester or the Forestry Commission for settlement, and the decision of the commission shall be final.

**Expenses of forest fires shared by town and state; town pays bill; state reimburses town.**

Section 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 towns and cities in preventing forest fires shall be borne equally by the town or city and by the state. The forest fire wardens shall render to the selectmen or the mayor or the proper city department a statement of said expenses as soon as possible after 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, if he finds the same to be correct, shall forward it to the state treasurer with his approval, and the governor shall draw his warrant 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. If any such bill is not paid by a town or city within thirty days from the date rendered by the forest fire warden, the state forester may investigate the cause thereof and may issue an order for the payment of said bill. Upon receipt of said order the said bill shall be paid forthwith by the selectmen of the town or mayor of the city or the proper city department.

#### **Payment of fire bills in unincorporated places.**

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.

**Wardens to report fires; securing evidence of law violation.**

Section 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.

**Permits required for kindling fires.**

Section 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.

**Permits required for burning brush.**

Section 13. No person shall kindle a fire or burn brush in or near woodland, except when the ground is covered with snow, without the written permission of the forest fire warden, the presence of the forest fire warden or person appointed to represent him.

**Penalties for violation.**

Section 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.

**Power of arrest without a warrant.**

Section 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.

#### **Payment of fire damages.**

Section 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.

#### **Penalty for willful neglect of duty by warden.**

Section 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.

#### **Person discovering fire must extinguish it, or report to nearest warden; penalty.**

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.

#### **Fines used for fire protection.**

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 by him upon the requisition of the state forester, for use in connection with the prevention and suppression of forest fires.

#### **State Forests. Acquisition by gift or purchase; management by Forestry Commission; revenue goes to state treasury.**

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 purpose 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.

#### **State Forest Nursery. Sale of young trees to land owners.**

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.

**Fire Lookout Stations. Establishment and maintenance; acquisition of observatory sites.**

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.

The state forester may co-operate with the forestry departments of the states of Maine, Massachusetts and Vermont in the establishment and maintenance jointly of lookout stations serving New Hampshire and any of the other said states.

**Fire Warden Conferences.**

Sect. 25. The state forester, under the direction of the Forestry Commission, may call conferences of the forest fire wardens, deputy forest fire wardens, and other employees of the forestry departments in different sections of the state for the purpose of improving the service. Those summoned by the state forester shall be allowed their traveling 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 traveling expenses.

**Special work in preventing fires.**

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.

**AN ACT TO PROVIDE FOR THE USE OF SPARK ARRESTERS ON PORTABLE STEAM SAWMILLS.**

(Chapter 95, Laws of 1911; amended by Sections 1 and 2, Chapter 159, Laws of 1917.)

Portable steam sawmills required to use proper spark arresters; removal of all brush 100 feet from the mill may be required.

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, and unless the slash caused by wood and timber cutting shall have been removed for a distance not less than one hundred feet from said mill, when required to do so by the state forester, or his authorized agent. Such approval of a spark arrester shall be in writing signed by the state forester, and said approval may be revoked by him in the same manner. When any such mill is moved from one town or city to another, said mill shall not be operated until the owner or operator thereof has notified the Forestry Commission, or the district chief or the town forest fire warden of the new location of said mill.

**Examination of mills.**

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.

**Penalty for violation of law.**

Sect. 3. Any person violating any of the provisions of this act shall be fined not less than fifty dollars and not more than one hundred dollars.

**AN ACT CONFERRING SPECIAL AUTHORITY UPON THE GOVERNOR AND COUNCIL TO CLOSE THE OPEN SHOOTING SEASON DURING PERIODS OF PROTRACTED DROUGHT.**

(Chapter 59, Laws of 1909.)

**Governor and Council may proclaim a time of drought, suspending the open season.**

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.

**Penalty for violation.**

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 closed season otherwise provided by law, he shall be punished by a fine of fifty dollars and costs.

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**AN ACT TO REVISE AND AMEND THE FISH AND GAME LAWS**

(Chapter 133, Laws of 1915.)

**Fish and game wardens to extinguish or report forest fires.**

Sect. 69. . . . "It shall be the duty of all such wardens while in and about the forests to caution persons of the danger from fires in the forests, and to extinguish a fire left burning if in their power. It shall be their duty to give notice to all parties interested when possible, and to the forest fire warden of the town interested in particular, of fires threatening to extend beyond control. Pending the arrival of such fire warden, they shall assume all the powers of such wardens or provided by statute."

**AN ACT FOR THE PROTECTION OF FOREST PROPERTY  
FROM FIRE ORIGINATING ALONG RAILROADS AND  
HIGHWAYS.**

(Chapter 155, Laws of 1913; amended by Chapter 100, Laws of 1915;  
amended by Chapter 161, Laws of 1917.)

**Railroad companies required to use proper spark arresters and  
ash pans.**

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.

**Section foremen may be appointed deputy fire wardens; town wardens and deputies to co-operate in putting out railroad fires; expenses paid by railroad.**

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 co-operate 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.

**Railroad companies shall instruct employees in fire prevention; shall patrol dangerous places during drought.**

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.

**Railroad companies may clear inflammable ground litter in woodlands abutting right of way.**

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.

**Forestry Commission may investigate carrying out of law.**

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.

**Lumber slash must be cleared back 60 feet from railroad right of way; and 25 feet from trolley right of way or public highway; trees are to be felled away from property line of abutting owner.**

Sect. 6. On and after July 1, 1917, any person, firm or corporation cutting wood or lumber on property adjacent to the right of way of any steam or electric railroad or public highway, or adjacent to the land of another, shall dispose of the slash caused by such cutting in such a manner that the inflammable material shall not remain on the ground within sixty (60) feet of the right of way of any steam railroad, or within twenty-five (25) feet of the right of way of any electric railroad or the traveled part of any public highway; and when cutting on land adjacent to the land of another, shall fell the trees away from and not towards nor parallel with the property line of the abutting owner so that the slash from the tops of said trees, when on the ground, shall be as far from the said property line as the felling of the trees in a practicable manner will carry it. 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 (10) dollars for each acre of such land or fraction thereof, or for each one hundred (100) linear feet or fraction thereof from which the inflammable material is not properly removed or disposed of within sixty



(60) days from the cutting of the trees thereon; provided, that any owner or operator who cuts wood or timber during the winter, after November, shall have until May 1 in Grafton, Carroll and Coos counties, and until April 1 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. All owners or operators shall be required to use due care in clearing such land, and shall not be relieved of liability for 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.

**Railroads liable for fire damage; may insure and have an insurable interest in abutting property.**

(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.

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**AN ACT FOR THE CONTROL OF THE WHITE PINE  
BLISTER AND OTHER FUNGOUS OR INSECT PESTS**

(Chapter 187, Laws of 1917.)

**White Pine Blister declared a pest.**

Section 1. That the fungous disease, *croronartium ribicola*, commonly known as the white pine blister, is hereby declared to be a dangerous fungous pest in all its stages; and it shall

be the duty of the officials hereinafter named to prosecute the measures hereinafter specified for the control of this pest.

**Within designated areas the state forester may call upon every landowner to remove and destroy all currant and gooseberry plants and infected white pine trees.**

Sect. 2. The state forester, under the direction of the Forestry Commission, is hereby empowered and authorized to promulgate by letter, publishing, posting or other means, information concerning the white pine blister and to designate by the aforesaid means of promulgation areas within the state in which control measures are necessary or advisable. It shall be the duty of every landowner within such designated area to carry out such control measures as are ordered by the state forester, including the removal and destruction of any or all plants of the genus ribes, commonly known as currants and gooseberries, and any white pine tree or trees which are found to be infected with the blister. If such eradication is not begun forthwith by the property owner, the state forester or his authorized agents are hereby empowered to remove and destroy any or all currants and gooseberry bushes or diseased white pine trees from any public or private land within any such designated area; and within such area no person shall plant any currant or gooseberry bush or five needled pine tree without the permission of the state forester.

**Agents of state forester may enter upon private property.**

Sect. 3. The state forester or his authorized agents shall have the right to enter upon any public or private property to determine the presence or absence of the white pine blister in any of its stages, and to carry out the necessary eradication measures. The Forestry Commission and state forester may co-operate with departments of the federal government, the State Department of Agriculture, and the Agricultural Experiment Station for the control or eradication of said disease in the state generally, and for the carrying out of such investigations as are deemed advisable by the commission.

**Compensation to owners.**

Sect. 4. Any white pine trees or any currant or gooseberry bushes which are found to be infected with *cronartium ribicola* are hereby declared to be a public pest and any such

diseased trees or plants and any and all wild plants of the genus ribes may be destroyed by order of the state forester or his authorized agents. If within any designated area, as specified in section 2, currants and gooseberries or white pine trees which are not infected with cronartium ribicola, are designated by the state forester or his agents and destroyed by his or their specific order, the owner may be compensated therefor; the damages to be assessed by the state forester or his agents at not to exceed the actual value of the material destroyed, and paid to said owner by the state treasurer upon authorization of the Forestry Commission. In lieu of money damages for any trees or bushes destroyed under this act the state forester may offer and the owner may accept forest planting stock to be furnished from the state forest nursery.

#### **Authorization of State Nursery Inspector.**

Sect. 5. The state nursery inspector, under the direction of the commissioner of agriculture, is hereby authorized and empowered to enter upon any land contiguous to or within the vicinity of any nursery within the state, for the purpose of determining the presence or absence of cronartium ribicola in any of its stages or other threatening fungous disease or insect pest, and within such area he shall have the same power and duties for the control and eradication of the white pine blister or its hosts as is vested in the state forester under sections 2 and 3 of this act, and shall have the power to enforce and carry out necessary measures for the control or eradication of other threatening insect pests or fungous diseases.

#### **Importation of nursery regulated.**

Sect. 6. The state nursery inspector, or the deputy commissioner of agriculture in charge of insect suppression, under the direction of the commissioner of agriculture, is hereby empowered to prohibit and prevent or regulate the entry into the State of New Hampshire or the movement within the state from any part thereof to any other part of any living five-leaved pine trees or any plants of the genus ribes, or other nursery stock or plants, which in his judgment may cause the introduction or spread of a dangerous insect pest or plant disease. The said officials are hereby authorized to issue such orders, notifications and permits as may be necessary to carry out the provisions of this section; and any person violating

any of the provisions of sections 5 and 6 shall be subject to the same penalty as specified in section 7 of chapter 43, Laws of 1903. The expenses necessary for carrying out sections 5 and 6 of this act shall be paid from the appropriation for nursery inspection or other funds of the Department of Agriculture.

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**AN ACT IN AMENDMENT OF CHAPTER 85, LAWS OF 1895,  
RELATING TO THE PROTECTION AND PRESERVATION  
OF ORNAMENTAL AND SHADE TREES IN THE HIGH-  
WAYS.**

(Chapter 98, Laws of 1901; amended by Chapter 119, Laws of 1905; amended by Chapter 138, Laws of 1915; amended by Section 1, Chapter 62, Laws of 1917.)

**Towns and cities shall appoint tree wardens.**

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.

**Towns and cities to have control of roadside and street trees  
marked by tree wardens.**

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 centre 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 towards 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.

#### **Acquisition of roadside trees by municipality.**

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.

**Towns and cities may appropriate money for care of trees; Forestry Commission to furnish trees to towns for roadside planting; Highway Department to plant and care for trees along state roads.**

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.

**Removal of marked shade tree by hearing, or approval of tree warden.**

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.

**Unlawful to injure or deface a public shade tree.**

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 play-bill, 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.

**Clearing Brush along Highways. Duty of selectmen to cut and remove brush and bushes, leaving young trees for shade and ornament.**

Sect. 7. Mayors of cities, selectmen of towns, and county commissioners for unincorporated places shall annually during the months of August or September, and at other times when advisable, cause to be cut and disposed of from within the limits of the highway, all trees and bushes that cause damage to the highway, 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 anyone to deposit rubbish within the limits of the highways.

**Town or city may acquire roadside trees by planting, and by leaving young trees when bushes are cut.**

Any young shade or ornamental tree planted within the limits of a public highway by the tree warden, or by any other person or persons, with the approval of the selectmen or the mayor, shall forthwith become the property of the town or city. Any young seedling tree or sprout left within the limits of the highway as specified in this section and designated by the tree warden to be preserved for its future value as a shade tree shall become the property of the municipality; provided that the abutting landowner, having been notified of the intention of the town to take and preserve such young tree or trees, shall have made no written objection to the tree warden within thirty days from the date of such notification.

**Town or city may contract with abutting owners to cut bushes and improve roadside growth.**

The selectmen of a town or the highway department of a city may contract with any owner of land abutting a public highway to cut, trim and improve the roadside growth along said owner's property, and for all such work properly done in carrying out the provisions of this section and approved by the tree warden, may allow and cause to be paid to said owner such sums of moneys as in their judgment, with the advice of the tree warden, justly compensate the town or city in the improved condition of the roadside.

**State Highway Department has charge of brush cutting along state road; brush cut along all roads must be disposed of within 30 days; burning to be done with permission of forest fire warden.**

On all state roads and trunk-line highways 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 are disposed of by burning, the 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. All trees or brush thus cut from within the limits of the highway shall be disposed of within 30 days from the cutting thereof.

**Damages may be assessed to abutting owners for roadside growth on new highways and existing highways.**

When any highway shall be laid out, damages may be assessed to the abutting owners to provide for the maintenance or planting, from time to time, within the limits of such highway, of such shade and ornamental trees as may be necessary for the preservation and improvement of such highway. Damages may be assessed to abutting owners on any existing highway upon petition therefor, and such proceedings had as in the layout of highways to provide for the maintenance and planting from time to time, of such trees within the limits of such highways as may be necessary for the preservation



and improvements of the same. When such damage shall be assessed and paid, there shall be, in addition to the right of travel over such highway, a public easement to protect, preserve and renew the growth thereon for the purposes aforesaid. If any cut brush has been left within the limits of any public highway for a longer period than thirty days the state forester is hereby authorized to complete the removal or disposal of such brush and to assess the costs thereof against the person, firm, corporation or town authorizing or causing such brush. If the said costs are not paid within a reasonable time they may be recovered in a legal action brought by order of the attorney-general upon complaint of the state forester.

#### **Penalty for injuring a shade tree.**

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 persons 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.

### **AN ACT REGULATING CONSTRUCTION OF TELEPHONE LINES.**

(Chapter 81, Public Statutes.)

**Telephone companies may not cut trees along roads without owners' consent, except by applying to selectmen.**

Sect. 5. No person or corporation shall have a right to cut, mutilate or injure any shade or ornamental tree for the purpose of erecting or maintaining their line without consent of the owner of the land on which it grows; or, if his consent cannot be obtained, unless the selectmen, upon petition, after notice to and hearing the parties, decide that the cutting or mutilation is necessary, and assess the damages that will be occasioned to the owners thereby, nor until the damages are paid or tendered.

**AN ACT FOR THE REFORESTATION OF WASTE AND  
CUT-OVER LAND.**

(Chapter 163, Laws of 1915; amended by Chapter 148, Laws of 1917.)

**Forestry Commission may accept deeds of waste land; shall reforest and care for such land; donor may, within ten years, secure title to the planted land by paying cost of improvements and four per cent interest.**

Section 1. For the purpose of reforesting waste and cut-over land, the Forestry Commission is hereby instructed and authorized to promulgate throughout the state the offers made by section 2 of this act.

Sect. 2. Whenever any person or persons shall deed to the state any tract of land adapted for forest growth, so that no cost of purchase shall accrue to the state, the Forestry Commission is authorized to accept and hold such tracts in the name of the state, and to reforest, protect and manage them subject to the limitations of his section. The donors of such land, or their heirs and assigns, shall have the right, within ten years from the date of conveyance, to purchase it from the state at the cost of improvements with interest at four per cent per annum, and the secretary of state shall, upon the recommendation of the Forestry Commission, convey such land to said donor or donors, and said donor or donors shall have the benefit of any profit derived from the sale of forest products from any tract during said ten-year period. If the donor, or his heirs or assigns, shall not acquire the land within ten years from the date of conveyance, such land may be sold, or the wood and timber thereon may be sold, by the Forestry Commission, with the approval of the Governor and Council; provided, that such sale shall be advertised and awarded to the highest bidder, and the state may reject any such bids. The state shall not accept a deed for more than twenty-five acres from any person, firm or corporation under the provisions of this section, except that more than twenty-five acres may be taken if such taking simplifies the transfer, survey or establishment of boundaries. Any forest fire on such tracts shall be extinguished as provided in chapter 128, Laws of 1909, and amendments thereto. All revenue from the sale of such tracts, or of the wood and timber thereon, shall revert to the state treasury.

State Forester may make planting plans and furnish trees free of charge to counties, cities, towns and public institutions.

Sect. 3. The state forester, under the direction of the commission, may execute free of charge to counties, municipalities and public institutions owning land suitable for reforestation, a planting plan for the reforestation of such land, and may furnish trees free of charge, arrange for and supervise the planting of such land and any other land suitable for reforestation owned or acquired by the state; provided that in the case of land owned by counties or municipalities the said counties or municipalities shall pay the cost of planting the trees furnished by the state, shall protect and care for them as recommended by the state forester, and, when required, shall furnish the state forester with information as to the condition and growth of the trees.

#### **AN ACT TO ENCOURAGE THE PLANTING AND PERPETUATION OF FORESTS.**

(Chapter 124, Laws of 1903.)

**Landowners may secure tax abatement on land planted to trees.**

Section 1. In consideration of the public benefit to be derived from the planting and cultivation of timber or forest trees, the owners of any and all land which shall be planted with timber or forest trees, not less than twelve hundred to the acre, shall be entitled, from and after the first day of April, 1903, to a rebate of the taxes assessed upon said land, as follows: For the first ten years after the land has been so planted, a rebate of ninety per cent of all the taxes assessed upon said land; for the second period of ten years after such planting, a rebate of eighty per cent of all taxes, and for the third and final period of rebate after such planting, a rebate of fifty per cent of all said taxes; said rebate to be allowed only on condition that said planted trees are kept in a sound condition. A return of such planting shall be made to the selectmen when taking the annual inventory, which return shall be verified by the selectmen and made the basis of such tax exemption. After said trees have been planted ten years it shall be lawful for the owners to thin out the same so that not less than six hundred trees shall be left to the acre; but no portion of said planted land shall be absolutely cleared of trees during the period for which said rebate may be allowed.

**AN ACT PROVIDING FOR THE EXAMINATION AND REGISTRATION OF ARBORISTS.**

(Chapter 50, Laws of 1917.)

Section 1. The state forester, with the approval of the Forestry Commission, may hold examination for arborists at such times as in his judgment seem advisable. The time and place of holding such examinations shall be set forth by posting, letter or newspaper notice at least thirty (30) days prior to the date thereof.

Sect. 2. The questions asked in such examination shall be such as aim to inform the state forester of the special knowledge and fitness for the planting, improvement and care of trees possessed by persons taking any such examination. In preparing such examinations the state forester may include questions on diseases and insect enemies of trees, and upon request the State Department of Agriculture or the Agricultural Experiment Station shall furnish information on which such questions may be based.

Sect. 3. No individual shall be eligible to take such examination unless such person has had special training or experience in the planting, improvement and care of trees and not until six months of actual experience in the practice of such work has been completed.

Sect. 4. Any person who passes such examination to the satisfaction of the state forester shall be furnished with a certificate signed by the state forester, stating that such person is a registered arborist, for such term or period as the state forester may determine. It shall be a misdemeanor punishable by a fine of not over fifty dollars for any other person to use the term registered arborist, as applying to his own name, in signatures or advertisements. Such certificates may be revoked by the state forester upon complaint and after a duly appointed hearing.

**AN ACT AUTHORIZING THE EMPLOYMENT OF PRISONERS ON STATE HIGHWAYS, PREPARATION OF ROAD MATERIALS, AND IN STATE FORESTRY.**

(Chapter 119, Laws of 1917.)

Sect. 7. The county commissioners of any county may make arrangements with the state highway commissioner or with officials of a city or town to work prisoners from the

jail or house of correction on the construction, improvement or maintenance of highways, preparation of road materials or with the state forester for the employment of such prisoners. Prisoners so worked who come from the county jail shall be in the custody of the sheriff of the county, and prisoners so worked from the house of correction shall be in the custody of the superintendent thereof.

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

(Chapter 27, Laws of 1913.)

Towns and cities may vote money to buy and manage forest land; such land to be managed by the state forester; net proceeds shall go to town treasury.

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.

## DISTRICT CHIEFS

### District Chiefs and Areas of Fire Districts.

#### NORTH DISTRICT.

**W. H. Morrison, District Chief, Gorham.**

Phone 45-14, Gorham Exchange.

The north district includes all of Coos County except Bean's Grant, Cutt's Grant, Sargent's Purchase and Thompson and Meserve Purchase.

#### EAST DISTRICT.

**F. P. Allard, District Chief, North Conway.**

Phone 24-4, North Conway Exchange.

The east district includes all of Carroll County; the town of Livermore in Grafton County; the towns of Middleton and Milton in Strafford County; and the above mentioned unincorporated places in Coos County.

#### WEST DISTRICT.

**W. H. Langmaid, District Chief, East Haverhill.**

Phone 29-4, Pike Exchange.

The west district includes all of Grafton County except the town of Livermore, the towns of Cornish and Plainfield in Sullivan County, and the towns of Center Harbor, Meredith and New Hampton in Belknap County.

#### SOUTH DISTRICT.

**William M. Falconer, District Chief, Concord.**

Phone 800.

The south district includes all of Cheshire, Hillsborough, Merrimack and Rockingham Counties; all of Belknap County except the towns of Center Harbor, Meredith and New Hampton; all of Sullivan County except the towns of Cornish and Plainfield; and all of Strafford County except Middleton and Milton.

## LIST OF FIRE WARDENS AND DEPUTIES

An Asterisk (\*) means forest fire warden; others are deputies.

## BELKNAP COUNTY.

Name.	P. O. Address.	Telephone.
<b>Alton.</b>		
Walter D. George*	Alton.	15-22
Arthur D. Rollins	West Alton.	572-25 Laconia
John W. Proctor	Alton.	3-24 No. Barnstead, U. L.
Frank H. Carpenter	Alton, R. 1.	224-2 Wolfeboro Ex.
Phillip L. Drew		
<b>Barnstead.</b>		
Charles E. Thyng*	R. 4, Pittsfield.	7-3 No. Barnstead
E. B. Drake	Barnstead	
H. C. French	So. Barnstead.	8009-11 Pittsfield
F. J. Holmes	R. D., Center Barnstead	2-13 No. Barnstead
<b>Belmont.</b>		
C. O. Judkins*	Belmont.	6-12 Citizens
Edwin W. Blaisdell	R. D., Laconia.	327-31 Citizens
John Bryant	Belmont.	19-1/2
R. H. Hoadley	R. 3, Laconia.	523-21 N. E.
Luke H. Bickert	R. 1, Laconia.	247-4 Citizens
Wm. S. Wallace	R. 2, Laconia.	520-2 N. E.
<b>Center Harbor.</b>		
James R. Lovett*	Meredith	
Guy E. Cram	R. 1, Center Harbor.	12-11
Orville P. Smith	R. D. Ashland.	102-5 White Mountain
<b>Gilford.</b>		
Charles H. Gove*	R. 4, Laconia.	574-2 Win'pesaukee T. Co.
Frank Grant	R. 5, Lakeport.	562-8
Fred J. Potter	R. 4, Laconia.	573-14
<b>Gilmanton.</b>		
Wm. S. P. Sanderson*	Gilmanton.	24-21 Belmont
Charles A. Price	Gilmanton Iron Works.	16-4
Charles G. Kelley	R. 4, Pittsfield.	31-21 Pittsfield
Samuel H. Billings	Gilmanton.	24-4
<b>Laconia.</b>		
Arthur W. Spring*	Laconia.	336-2 N. E.
Caleb J. Avery	The Weirs.	123-4 Citizens
W. H. Rand	78 Oak St., Laconia	
<b>Meredith.</b>		
Charles N. Roberts*	Meredith.	43
F. A. Mead	Meredith.	16-14 Laconia Citizens
Lewis A. Higgins	R. D., Laconia	
Frank P. Corliss	R. 2, Box 68, Meredith.	325-2 Citizens
<b>New Hampton.</b>		
F. Maurice Morrill*	New Hampton.	8002-2 Bristol
F. A. Emerson	Bristol	
Victor L. Huckins	R. D., Ashland.	111-11 Citizens
Thomas J. Haynes	Wionna.	12-2 Citizens

Name.	P. O. Address.	Telephone.
<b>Sanbornton.</b>		
F. H. Hunkins*.....	R. 1, Laconia.....	233-2½ Citizens
F. J. Thomas.....	R. 1, Tilton, Box 41.....	130-21 Citizens
Charles H. Odell.....	R. 1, Laconia.....	234-3½ Citizens
Edwin W. Lane.....	Hill.....	78-2 Citizens, Franklin Ex
J. M. Hunt.....	Tilton.....	120-13 Citizens
<b>Tilton.</b>		
Joseph F. Leary*.....	Tilton, Box 1.....	21-2
J. M. Hunt.....	Tilton.....	120-13 Citizens
H. C. Wyatt.....	R. 1, Tilton.....	109-1½ Citizens
Alberic Robida.....	Tilton.....	138
W. H. Bosworth.....	Tilton.....	6-7
<b>CARROLL COUNTY.</b>		
<b>Albany.</b>		
Ichabod Hammond*.....	Pequaket.....	4-8 Madson [W. Conway
A. P. Irish.....	R. D., North Conway.....	Nearest—Fred Hale in
<b>Bartlett.</b>		
W. S. George*.....	Bartlett.....	[ Pub. Phone, Garland Bros.
Harry Kilttridge.....	Glen.....	1820-2 Town Clerk
Myron L. Eastman.....	Intervale.....	11-2 Intervale
<b>Brookfield.</b>		
Wallace F. Lang*.....	R. 1, Sanbornville.....	6-14 Wakefield
F. J. Woodus.....	Sanbornville	
<b>Chatham.</b>		
Harry M. Chandler*.....	North Chatham.....	12-21 Lovell
Preston Chandler.....	North Chatham.....	Fryeburg, Me.
Leon T. Hill.....	So. Chatham	
<b>Conway.</b>		
Fred T. Hale*.....	Conway.....	11-2
Chester Potter.....	Conway Center.....	Garland's Store, Center
M. A. Heath.....	Fryeburg, Me.....	11-23 Fin's L.
J. H. Woodward.....	Fryeburg, Me.....	
John H. Smith.....	North Conway.....	3-11 No. Conway
Ivory Mason.....	Redstone	
Carl O. Randall.....	North Conway.....	22-2
<b>Eaton.</b>		
John H. Bryant*.....	Snowville.....	21-12 Conway
Geo. M. Perkins.....	Eaton Center, Box 113....	9021-4 Conway
Harry P. Dewitt.....	R. D., Freedom	
<b>Effingham.</b>		
Richard Dearborn*.....	Effingham.....	31, Pine River Line - Mountainview Pay S.
Eugene S. Tewksbury... ..	Mountainview.....	16-22 Mountainview
John L. Marston.....	R. 1, Mountainview.. ..	Pine River Line (6 Mountainview)
<b>Freedom.</b>		
John E. Perkins*.....	Freedom.....	16-31 Ossipee Valley
L. G. Burnham.....	Freedom.....	16
G. F. Huckins.....	Freedom	
Jesse I. Drew.....	Freedom.....	32 Town Line
<b>Hart's Location.</b>		
C. H. Morey*.....	Bemis.....	9602-4 No. Conway
H. T. Hartshorn.....	Bemis.....	
George Howland.....	Crawford's.....	9017-2



Name.	P. O. Address.	Telephone.
<b>Jackson.</b>		
D. W. Davis*.....	R. D., Intervale.....	
Jonathan Meserve.....	Jackson, Box 43.....	7-3 No. Conway
<b>Madison.</b>		
C. Ralph Kennett *.....	Silver Lake.....	3-11 Madison
W. Victor Staples.....	Conway.....	Conway (nearest)
H. E. Chick.....	Madison.....	3-14
Walter Kennett.....	Silver Lake.....	3-11 Madison
<b>Moultonborough.</b>		
Ernest Davis*.....	Moultonborough.....	8-31
George A. Blanchard.....	Moultonborough.....	4-4 Center Sandwich
Lynde E. Davis.....	Center Harbor.....	15-12
<b>Ossipee.</b>		
Walter Scott Welch *.....	Mountainview.....	
W. H. Lord.....	Mountainview.....	Mountainview Ex.
Albert O. Huckins.....	Mountainview.....	18-2 Mountainview
J. E. Hodgdon.....	Ossipee.....	
Isaac Buswell.....	R. D., Ossipee.....	
Mark H. Winkley.....	Ossipee.....	19-34 Mountainview
Charles A. Wiggin.....	Ossipee.....	19-31
<b>Sandwich.</b>		
Daniel S. Watson*.....	Whiteface.....	11-22 Sandwich
Frank W. Morrill.....	Center Sandwich.....	13-4 Centre Sandwich
J. A. Hansan.....	Whiteface.....	11-13 Center Sandwich
Walter H. Avery.....	R. D., Center Sandwich..	13-14
Abraham Boyle.....	Beebe River.....	3 Plymouth
<b>Tamworth.</b>		
Samuel A. Hidden*.....	Tamworth.....	12-5
Thomas Boyd.....	South Tamworth.....	
John F. Sanborn.....	Chocorua.....	
S. Harold Hidden.....	Tamworth.....	12-5
M. W. Chamberlin.....	Chocorua.....	
<b>Tuftenboro.</b>		
Edwin B. Edgerly*.....	Mirror Lake.....	157-24 Wolfeboro
Ernest M. Hunter.....	Melvin Village.....	G. S. Homer, Melvin Vill.
<b>Wakefield.</b>		
Nathan O. Weeks*.....	E. Wakefield.....	5-3 Wakefield
I. L. Lord.....	Union.....	6-21 Milton Mills
R. B. Buzzell.....	Horns Mills.....	7-25 Milton Mills
Harry Lane.....	Sanbornville.....	
<b>Wolfeboro.</b>		
John D. McHugh*.....	Wolfeboro.....	65
Frank J. Lucas.....	So. Wolfeboro.....	
C. Henry Nute.....	East Wolfeboro.....	142-11 Wolfeboro

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**CHESHIRE COUNTY.**
**Alstead.**

C. J. Newell*.....	Alstead.....	7-13
Willis E. Crabtree.....	Alstead Center.....	31-21 Alstead
W. O. Blake.....	Surry.....	
John P. Kemp.....	East Alstead.....	
Albert A. Clark.....	Alstead.....	36-5

Name.	P. O. Address.	Telephone.
<b>Chesterfield.</b>		
A. H. Post* .....	Spoofford.....	8770 Keene Ex., 9405 Brattleboro, Vt., Ex.
George F. Amdon.....	W. Chesterfield.....	76-11 Brattleboro, Vt.
Chesley Cripps.....	Chesterfield	
John A. Joslin.....	Spoofford	
Louis D. Herrick.....	Brattleboro, Vt., Box 600	74-4 Brattleboro Ex.
<b>Dublin.</b>		
A. H. Childs* .....	Dublin.....	17
J. A. Gran .....	Monadnock.....	18-12
F. A. Adams.....	Dublin.....	43-11
Thomas S. Lynch.....	Dublin	
C. D. Scribner.....	Dublin	
<b>Fitzwilliam.</b>		
Clarence Damon*.....	State Line, N. H.....	68-3 Winchendon Mass.
Arthur T. Byam.....	Fitzwilliam.....	26-5
Wm. E. Dean .....	Fitzwilliam	
Arthur L. Whipple.....	R. D., Fitzwilliam Depot	21-11 Fitzwilliam
Wm. Naromore .....	R. D., Fitzwilliam Depot	17-5 Fitzwilliam
Edwin H. Derby.....	R. D., Fitzwilliam Depot	
William E. Barrus.....	Fitzwilliam, Box 114.....	6-4
<b>Gilsum.</b>		
John B. Laing*.....	Gilsum.....	645-3Keene
Andrew J. Baker.....	Gilsum	
George H. Howard.....	R. D., Surry	
<b>Harrisville.</b>		
Bernard F. Bemls*.....	Chesham.....	£017-2 Harrisville
George G. Mason.....	Chesham	
Charles A. Gilchrest.....	R. D., Peterboro	
Fred Trudel.....	Monadnock.....	1-4 Monadnock
<b>Hinsdale.</b>		
Clarence D. Fay*.....	Hinsdale.....	Fl e Dept. 36-2(Father's)
Elbert H. Dodge.....	Hinsdale.....	24-2
Sidney Stearns.....	Hinsdale	
<b>Jaffrey.</b>		
Edward L. i eighton*.....	East Jaffrey.....	62- 11 Jaffrey
William C. Royce.....	East Jaffrey.....	17-2
Percy Cutter.....	Jaffrey	
P. N. Proctor.....	East Jaffrey, R. D.....	11-8 Keene-Peterboro
<b>Keene.</b>		
Louis A. Nims*.....	Keene.....	139
George W. Matthews.....	R. 2, Keene.....	345-M
Herbert A. Davis.....	Keene.....	343-11
Robert F. Faulkner.....	Keene.....	158-W
Adin H. Hall.....	34 Arch St., Keene.....	12-W
Walter L. Moore.....	Keene.....	351-22
Henry W. Nims.....	Keene.....	351-11
Horace Robbins.....	Keene	
Herbert Blauchon.....	Keene	
<b>Marlboro.</b>		
Cyrus H. Kinsman*.....	Marlboro.....	6-14
A. A. Wallace.....	Marlboro.....	6-13
Norman N. Collins.....	Marlboro.....	4-4
Lewis A. Higgins.....	Marlboro	
<b>Marlow.</b>		
W. W. Howe*.....	Marlow.....	5944-12 Keene
Karl F. Huntley.....	Marlow	
Henry C. Mosher.....	Marlow	

Name.	P. O. Address.	Telephone.
<b>Nelson.</b>		
Clarence E. Guillow*.....	Munsonville.....	Sullivan Pay Station
W. P. Tolman.....	Chesham.....	8-4 Harrisville
Albert Cram.....	Munsonville	
<b>Richmond.</b>		
S. A. Bullock*.....	R. 4, Winchester.....	2-14 Richmond
Albert B. Conway.....	R. 3, Winchester	
Silas Martin.....	R. 3, Winchester.....	21-14 Fitzwilliam
<b>Rindge.</b>		
Albert L. Hale*.....	Rindge.....	9-22
George C. Todd.....	RindgeCenter.....	2-13
Wm. S. Cleaves.....	West Rindge	
<b>Roxbury.</b>		
Lorenzo W. Davis*.....	R. 2, Keene.....	343-6 Keene
Chas. A. N. Nye.....	Marlboro	
<b>Stoddard.</b>		
C. B. McClure*.....	Munsonville.....	H. R. Green's Store
Henry E. Spaulding.....	Stoddard.....	23-11 Hancock
John T. McCoy.....	Hancock.....	28-8 Hancock
<b>Sullivan.</b>		
T. A. Hastings*.....	E. Sullivan.....	8010 or 6-2
E. F. Nims.....	Sullivan Center.....	1-11 East Sullivan
Winfred J. White.....	Sullivan.....	5-11
<b>Surry.</b>		
Sidney Wilder*.....	Surry	
Frank E. Ells.....	R. 1, Keene.....	352-12 Keene
Leon A. Hodgkins.....	Surry	
Leon I. Curtis.....	Keene	
<b>Swanzey.</b>		
Geo. A. Seaver*.....	West Swanzey, Box 5....	554-5 or 555-13
Amasa A. Marsh.....	Westport	
Mark H. Carlton.....	Swanzey	
<b>Troy.</b>		
Asa C. Dort*.....	Troy.....	1-4 Keene Dist-Peterboro
Oliver P. Whitcomb.....	Troy.....	561-2
<b>Walpole.</b>		
W. D. Knowlton*.....	Walpole.....	10-12
John Duffley.....	14 West St., No. Walpole	
<b>Westmoreland.</b>		
George A. Capron*.....	East Westmoreland.....	Pay Station
Herbert S. Hall.....	Westmoreland	(E. Westmoreland
A. S. Chickering.....	Westmoreland Depot....	76-4 Brattleboro, Vt.
Edward C. Greene.....	Westmoreland	
<b>Winchester.</b>		
Orvel B. Pierce*.....	Winchester.....	62-14 or 15-2
Alexander Pierce.....	Winchester.....	8-3 or 87-3
Paul Tacy.....	Ashuelot, Box 105	
Guy C. Hawkins.....	Winchester.....	95-3 377
Arthur P. Read.....	R. 1, Winchester.....	785-12 Keene
Ralph W. Johnson.....	Winchester.....	54-4
Frank H. Lombard.....	Winchester.....	8-5
A. S. Willard.....	Winchester.....	47-2

## COOS COUNTY.

Name.	P. O. Address.	Telephone.
<b>Berlin.</b>		
James P. Hinchey*.....	Oak St., Berlin.....	311-13
Joseph Durant.....	Berlin.....	
Harry L. Marston.....	Berlin.....	163-3
R. H. Nicholson.....	Maynesboro Stock Farm Berlin	57-3 M. Farm 129-5 Berlin
Willis D. Goodwin.....	Cascades .....	
<b>Carroll.</b>		
John Paige*.....	Twin Mountain.....	5-1-5 Whitefield
Manson G. Hunt.....	Whitefield.....	
George Howland.....	Crawford's.....	9017-2
<b>Clarksville.</b>		
W. W. Young*.....	Beecher Falls, Vt.....	64-5
Roy J. Young.....	Clarksville, Box 17.....	55-11
Fred Hall.....	Pittsburg.....	59-5 W. Stewartstown
<b>Colebrook.</b>		
Louis Ramsay*.....	Colebrook	
<b>Columbia.</b>		
Eugene Jordan*.....	R. 2, Box 5, N. Stratford	
Andrew Jackson.....	R. D., Colebrook	
Seth Bunnell.....	R. D., Colebrook	
<b>Dalton.</b>		
W. B. Aldrich*.....	R. 2, Lancaster.....	55-2 Whitefield
F. B. Tillotson.....	R. 2, Whitefield.....	54-4 Whitefield
J. M. Atkins.....	Whitefield.....	54-2 Whitefield
William J. Morse.....	Littleton.....	115-23 Littleton
<b>Dummer.</b>		
Fred U. Woodward*.....	Dummer	
H. S. Lockhart.....	West Milan.....	16-24 Groveton
<b>Errol.</b>		
F. B. Brooks*.....	Errol.....	E. H. Lane's Store
Dwight C. Thurston.....	Errol.....	Farmers 20
James Bunnell.....	Errol	
<b>Gorham.</b>		
W. J. Perkins*.....	Box 230, Gorham.....	36-23
Eugene Beaudette.....	Gorham.....	55-2
Willis D. Goodwin.....	Cascades .....	129-5 Berlin
<b>Jefferson.</b>		
W. P. Paschal*.....	Bennett's Landing.....	9-13 Jefferson
Herbert Ingerson.....	Starrking.....	3-22
C. R. Dickinson.....	R. 1, Whitefield	
<b>Lancaster.</b>		
Orrin E. Wentworth*.....	Lancaster .....	112-12
J. E. McIntire.....	Lancaster .....	77-3
Fred J. Williams.....	Lancaster	
N. P. Coe.....	33 Main St., Lancaster	
<b>Milan.</b>		
John T. Conners*.....	Milan	
L. A. Bickford.....	Milan.....	10-12
H. S. Lockhart.....	W. Milan.....	16-24 Groveton

Name.	P. O. Address.	Telephone.
<b>Northumberland.</b>		
D. O. Ellingwood*.....	Groveton	
Herbert P. Locke.....	Northumberland.....	10-22 Groveton Ex.
Geo. A. Cummings.....	R. 1, Lancaster	
<b>Pittsburg.</b>		
W. N. Judd*.....	Pittsburg .....	21
Allen Farnham.....	Pittsburg.....	57-12 W. Stewartstown
Horace Wright.....	Pittsburg.....	52-15 W. Stewartstown
John Delaney.....	Berlin	
Lawrence Blais.....	Care Conn. Lumber Co. Pittsburg	
<b>Randolph.</b>		
F. C. Wood*.....	Randolph.....	R. R. Station 16-2
T. S. Lowe.....	Randolph.....	16-2 Gorham
<b>Shelburne.</b>		
James Simpson*.....	Shelburne .....	49-14 Gorham
Seymour C. McAllister..	Shelburne .....	49-11 Gorham
C. D. Peabody .....	Shelburne .....	48-2 Gorham
H. C. McKeen.....	Shelburne .....	49-14 Gorham
Neil McLain.....	Shelburne .....	49-13 Gorham
<b>Stark.</b>		
J. W. Emery* .....	Stark.....	16-23
Albert M. Emery.....	Box 56, Groveton.....	32-3
L. A. Jackson.....	Crystal.....	16-43 Groveton
<b>Stewartstown.</b>		
Geo. H. Carr*.....	R. 3, Colebrook.....	16-12
Wm. Hall .....	Colebrook, R. 4 .....	54-5
H. S. Little.....	Colebrook .....	37-221
Israel A. Dearth.....	Beecher Falls, Vt.....	64-12
Claude D. Knights.....	Colebrook .....	19-3 Colebrook
E. A. Lyford.....	Beecher Falls, Vt.	
<b>Stratford.</b>		
Bert Stinson*.....	Stratford .....	Brown's Store, 25-3
Wm. Haggood.....	N. Stratford .....	24-11 N. Stratford
Hugh H. Johnson.....	R. 1 N. Stratford	
<b>Wentworth's Location.</b>		
J. R. Turner*.....	Wentworth's Location...	9011-15
<b>Whitefield.</b>		
C. N. Canton*.....	Whitefield.....	28-3
Vernon E. Sampson.....	Whitefield.....	59-8
B. C. Goodwin.....	Whitefield .....	58-6

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**GRAFTON COUNTY.**
**Alexandria.**

H. L. Phillips*.....	R. D., Bristol.....	11-11
John H. Austin .....	R. D., Bristol	
Alvah E. McMurphy.....	R. 1, Bristol .....	79-21

**Ashland.**

L. G. Fifield* .....	Ashland .....	133-2
Wm. F. Timlin.....	Ashland .....	20-4

Name.	P. O. Address.	Telephone.
<b>Bath.</b>		
Edwin I. Oakes*.....	Bath.....	101-22 Lisbon
Stephen J. Burton.....	Woodsville.....	112-24 Woodsville
Glenn H. Thayer.....	R. 2., Woodsville.....	83-4 Woodsville
<b>Benton.</b>		
L. H. Parker*.....	R. 2, Woodsville.....	W.W. Eastman, Pike Line
E. A. Marden.....	Benton.....	
Geo. Fillian.....	E. Haverhill.....	7-13 Pike
W. W. Eastman.....	R. 2, Woodsville.....	16-4 Pike
<b>Bethlehem.</b>		
W. S. Phillips*.....	R. D. Littleton.....	10-2 Bethlehem Ex.
William A. Green.....	Box 65, Bethlehem.....	43-4
C. E. Wilson.....	Bethlehem.....	
<b>Bridgewater.</b>		
S. S. Fletcher*.....	R. 2, Plymouth.....	157-31 Ashland
W. W. Gilpatrick.....	Bristol, R. 2.....	
J. H. Morrison.....	R. 2, Plymouth, Box 23.....	152-21 Ashland
Harris W. Hammond.....	Bridgewater.....	
Francis W. Clement.....	Bridgewater.....	
<b>Bristol.</b>		
Clarence N. Merrill*.....	Bristol.....	Office, 9-11; house, 9-21
Clarence A. Smith.....	Bristol.....	3-4 (work), 15-21 (ho use)
<b>Campton.</b>		
Lewis F. Avery*.....	West Campton.....	
Fred E. Pulsifer.....	R. 5, Plymouth.....	158-23
L. W. Palmer.....	Plymouth.....	159-14
John W. Thompson.....	R. 11, Plymouth.....	159-23
Abraham Boyle.....	Beebe River.....	3 Plymouth
<b>Canaan.</b>		
Horace G. Robie*.....	Canaan.....	18-4
Ralph D. Dodge.....	Canaan.....	
Eugene A. Shepard.....	Canaan Center.....	
Ira B. Stevens.....	Canaan.....	16-11
Fred R. Hutchinson.....	Canaan.....	23-3
Henry Briggs.....	W. Canaan.....	16-4 Enfield
<b>Dorchester.</b>		
Geo. W. Rowen*.....	Cheever.....	
Herbert N. Ashley.....	Cheever.....	Call Scott D. Burley, Cheever
Geo. N. Burnham.....	No. Dorchester.....	Call Isaac Matava Wentworth
Wilbur Merrill.....	Canaan.....	Canaan Ex.
<b>Easton.</b>		
C. N. Young*.....	Faston.....	12-22 Franconia
Albert P. Lane.....	Easton.....	
<b>Ellsworth.</b>		
L. H. Avery*.....	Plymouth, R. 5.....	Frank A. Avery, Camptor.

Name.	P. O. Address.	Telephone.
<b>Enfield.</b>		
Joseph P. Pillsbury*.....	Enfield.....	17-11
I. D. Fogg.....	Mascoma.....	54-4
A. B. Gordon.....	Enfield Center.....	15-4 Carrier's Store
<b>Franconia.</b>		
E. B. Parker*.....	Franconia.....	28-4
W. P. Wakelied.....	Profile House.....	Profile House
A. Raymond Bowles.....	Franconia.....	125-4
<b>Grafton.</b>		
Fred Gage*.....	Grafton.....	8057-13 Canaan Ex.
Geo. S. Barney.....	R. 2, Canaan.....	
Frank Sargent.....	Canaan.....	32-31
Henry Otis.....	R. 1, Grafton.....	
<b>Groton.</b>		
C. D. Jewell*.....	Groton.....	Hebron Ex.
Fred Kidder.....	No. Groton.....	
<b>Hanover.</b>		
H. W. Barnes*.....	East Lyme.....	
H. B. Fullington.....	Hanover.....	38-Y
A. D. Storrs.....	Hanover.....	
<b>Haverhill.</b>		
George A. Wells*.....	Haverhill.....	108-22 Pike
Clarence L. Willis.....	No. Haverhill.....	Tel. 111-3 Woodsville
Harry A. Clark.....	Haverhill.....	
<b>Hebron.</b>		
Harry S. Morgan*.....	Hebron.....	
Walter E. Merrill.....	N. Hebron.....	G. S. Smith, Hillside Inn
Oscar Roby.....	Hebron.....	
<b>Holderness.</b>		
Charles A. Haskell*.....	Holderness.....	13-11 Ashland
O. M. Pratt.....	R. 4, Plymouth.....	54-21 Plymouth
John H. Evans.....	R. 4, Plymouth.....	54-4 Plymouth
Frank L. Piper.....	R. 7, Ashland.....	150--11 Ashland
<b>Landaff.</b>		
C. M. Gale*.....	R. 2, Lisbon.....	42-3 Lisbon
Austin J. Hall.....	R. 2, Woodsville.....	
<b>Lebanon.</b>		
Harry J. Taylor*.....	Lebanon.....	11-18
Israel D. Fogg.....	Mascoma.....	54-4
Thos. J. McNamara.....	W. Lebanon.....	65-3
Otis W. Williams.....	Lebanon (Fire Station).....	178-3
<b>Lincoln.</b>		
Willard C. Fogg*.....	Lincoln.....	16-3 No. Woodstock
Wm. P. Boyle.....	Lincoln.....	16-3 No. Woodstock
<b>Lisbon.</b>		
D. C. Dexter*.....	Sugar Hill.....	114-3 Lisbon
Walter Jesseman.....	Lisbon.....	49-5
Harry H. Young.....	Franconia.....	15-4 Franconia
J. M. Moulton.....	Lisbon.....	

Name.	P. O. Address.	Telephone.
<b>Littleton.</b>		
H. H. Samson*.....	Littleton	
Frank Weller.....	Littleton.....	161-3
G. O. Carpenter.....	No. Littleton.....	168-13 Littleton
Joseph N. Morse.....	R. 1. Littleton.....	114-15
James Harwell.....	Littleton.....	125-13
Fred A. Williams.....	R. D. Littleton.....	101-2
<b>Livermore.</b>		
James C. Donahue*.....	Livermore.....	16
<b>Lyman.</b>		
E. J. Blake*.....	Lyman	
C. E. Mason.....	R. 1, Lisbon	
<b>Lyme.</b>		
George A. Pushee*.....	Lyme Ctr.....	5-5 Lyme
Arthur E. Derby.....	Lyme Ctr.....	Peoples
Henry S. Pushee.....	Lyme.....	73-10
<b>Monroe.</b>		
Oscar Frazer*.....	Monroe.....	36-11 Barnet Vt.
Hugh Nelson.....	Monroe.....	7-12 Barnet, Vt.
<b>Orange.</b>		
Charles H. Ford*.....	R. 2. Canaan.....	Mrs. C. A. Huse
John Peterson.....	Grafton.....	8-11 Canaan
<b>Orford.</b>		
Charles L. Cushman* ...	Orfordville.....	18-4 Fairlee Ex.
Warren Chase.....	R. 1 Pike	
John G. Stickney.....	Piermont.....	4-4 Piermont
<b>Piermont.</b>		
George L. Webster*.....	Piermont.....	4-13
Fay S. Emery.....	Piermont.....	4-110
Gideon Lamontague.....	Piermont.....	4-310
George A. Maker.....	Pike.....	20-2 Pike
<b>Plymouth.</b>		
L. D. Fogg*.....	Plymouth.....	209-12
<b>Rumney.</b>		
W. W. Downing*.....	Rumney.....	29-21
Arthur G. Wright.....	Quincy.....	5-14 Rumney
W. C. Wilson.....	Rumney.....	28-11
<b>Thornton.</b>		
William Lyford*.....	R. D. Campton.....	25-4 Campton
L. W. Bradley.....	Woodstock.....	32-22 No. Woodstock
Truman A. Heath.....	Compton	
<b>Warren.</b>		
Frank B. Little*.....	Warren	
Harry A. Fifield.....	Warren	
B. F. Whitney.....	Warren.....	5-4
<b>Waterville.</b>		
Joseph L. Tuttle*.....	Waterville.....	22-3 Campton
Geo. H. Green.....	Beebe River.....	3 and 151-14 Plymouth



Name.	P. O. Address.	Telephone.
<b>Wentworth.</b>		
Freeman E. Ellsworth*..	Wentworth.....	Davis' Store
Lester C. Hutchins.....	West Rumney.....	18-19 Rumney Ex.
<b>Woodstock.</b>		
E. E. Woodbury*.....	Woodstock.....	14-2 No. Woodstock
Geo. F. Gordon.....	No. Woodstock.....	8-22 No. Woodstock
Jesse A. Kendall.....	West Thornton.....	24-11 Camptou

### HILLSBOROUGH COUNTY.

<b>Amherst.</b>		
W. W. Sloan*.....	Amherst.....	44-3 Milford
<b>Antrim.</b>		
Charles D. White*.....	Antrim.....	12-13
Morris Burnham.....	Antrim.....	3-3
<b>Bedford.</b>		
Arthur N. Hodgman*....	R. 2, Manchester.....	4-6 Bedford
Ira Barr.....	R. 2, Manchester.....	4-4 Bedford
John M. Sargent.....	R. 3, Bedford.....	3-31
Albert C. Hodgman.....	R. 2, Manchester.....	4-6 Bedford
Harry D. Helchey.....	R. 1, Manchester.....	656-W Manchester
<b>Bennington.</b>		
Henry W. Wilson*.....	Bennington.....	16-13 Antrim
J. H. Balch.....	Antrim.....	17-11 Antrim;
Herbert A. Curils.....	R. 2, Antrim.....	
Henry A. George.....	Bennington.....	
Geo. B. Griswold.....	Bennington.....	
Geo. E. Duncklee.....	Bennington.....	16-23 and 16-4 Antrim
<b>Brookline.</b>		
Harry Marshall*.....	R. 1, Brookline.....	14-35 Townsend, Mass.
O. D. Fessenden.....	Brookline.....	35-2 Townsend, Mass.
<b>Deering.</b>		
Arthur O. Ellsworth*....	Deering Center.....	
John F. Loverin.....	North Weare.....	12-23 North Weare
Edward W. Colburn.....	West Deering.....	
<b>Francestown.</b>		
George R. Smith*.....	Francestown.....	29-13
Fred H. Epps.....	Francestown.....	16-6 New Boston
Fred A. Peetee.....	Francestown.....	29-14 New Boston
Fred W. Perham.....	Francestown.....	29-22 New Boston
Leon E. Hoyt.....	Francestown.....	19-24 New Boston
<b>Goffstown.</b>		
George L. Eaton*.....	Grasmere.....	14-25
<b>Greenfield.</b>		
Fred J. Aiken*.....	Greenfield.....	13-3,
George Blanchard.....	R. D., Lyndeboro.....	
Daniel O. Flynn.....	Greenfield.....	7-13
Edward F. Trufaut.....	R. 2, S. Lyndeboro.....	5-15 1/2 Greenfield
Page A. Lowe.....	South Lyndeboro.....	

Name.	P. O. Address.	Telephone.
<b>Greenville.</b>		
Victor L. Parker*.....	Greenville.....	20
Wm. H. Doonan.....	Greenville.....	8-12
<b>Hancock.</b>		
Ernest L. Adams*.....	Hancock.....	34-3
Charles A. Sheldon.....	R. D., Hancock.....	9-2
Alvah M. Wood.....	Hancock.....	3-2
<b>Hillsboro.</b>		
Dana R. Bruce.....	Hillsboro Lower Village	4-31 Hillsboro Upper VII.
Fred B. Monroe.....	Hillsboro.....	47-13 Conn. Valley
Albert J. Burnham.....	Hillsboro Upper Village	5-12
Thomas Devoy.....	Box 461, Hillsboro	
<b>Hollis.</b>		
Lester J. Hayden*.....	R. D. Brookline.....	4-23*Hollis
R. W. Leslie.....	E. Pepperell, Mass.....	7-2 Hollis
George F. Hills.....	Hollis.....	11-12
W. N. Hayden.....	R. D., Nashua.....	567-21 Nashua Ex.
<b>Hudson.</b>		
James E. Merrill*.....	Hudson.....	333-W Nashua
Phillip J. Connell.....	Hudson.....	1576-X Nashua
<b>Litchfield.</b>		
I. N. Center*.....	R. D., Hudson.....	12-3 Merrimack
Walter A. Crowell.....	R. 3, Manchester.....	12-2 Merrimack
Fred McQuesten.....	R. 1, Hudson.....	551-24 Nashua
Robert L. Barnes.....	R. 1, Hudson.....	F. L. Carter's
John A. Reid.....	R. 5, Manchester.....	92-3 Merrimack
Herbert C. Leach.....	R. 1, Hudson.....	12-21 Merrimack
<b>Lyndeboro.</b>		
E. K. Warren*.....	Lyndeboro.....	16-2 Wilton
Chas. L. Perham.....	R. D., So. Lyndeboro....	18-3 Wilton
<b>Manchester.</b>		
Carl B. Thurber*.....	Cor. Manchester & Chestnut Sts., Manchester	Office, 2220; house, No. 5 Hose Co.
John W. Gott.....	95 Douglas St., W. Manchester	3000
Albert L. Worthen.....	1005 Cilley rd., Manchester	373
John H. Hamer.....	Vol. Fire Co., Amoskeag.	838-W
Harvey Stowe.....	Auburn.....	2150
Charles E. Longa.....	10 No. Adams St., Manchester	2684-J
<b>Mason.</b>		
John T. Smith*.....	Mason.....	25-7 Greenville Ex.
James O. Reed.....	Mason.....	24-5 Greenville Ex.
George C. Arnold.....	Greenville.....	61-3 Greenville Ex.
Stanley A. Flagg.....	Mason.....	13-31 Greenville Ex.
<b>Merrimack.</b>		
Arthur G. Gordon*...	Reed's Ferry.....	Mill 16-2, home 8-14
Charles H. Fields.....	R. 2, Reed's Ferry...	13-3
George W. Carroll.....	Reed's Ferry.....	8-2
Charles F. Young.....	R. D., Reed's Ferry...	399-4 Nashua
Osgood F. Upham.....	Merrimack.....	25
Alden V. Wright.....	Kaolin Farm, R. D., Nashua.....	338-Y Nashua, 3-5 Merrimack

Name.	P. O. Address.	Telephone.
<b>Milford.</b>		
J. J. Casey*.....	31 Oak St.....	73-11
Fred A. Conrey.....	Milford.....	32-11
Fred Jones.....	R. 1, Wilton.....	35-24
Harry H. Thorp.....	Milford.....	52-4
W. Wilkins.....	Milford.....	185
John Pirovino.....	Milford.....	225-8
Thomas Mullen.....	Milford.....	32-21
Willis Jewett.....	Milford.....	43-12
<b>Mont Vernon.</b>		
Charles H. Raymond*..	R. D., Milford.....	113-4 Nashua
W. L. Robinson.....	Mont Vernon.....	37-21 Milford
Joseph H. Blood.....	Mont Vernon.....	156-5 Milford
<b>Nashua.</b>		
James Smith*.....	Nashua.....	Fire Station
Luther Robbins.....	Hollis Depot.....	555-7
<b>New Boston.</b>		
A. P. Smith*.....	New Boston.....	21-2
Perley A. Todd.....	New Boston.....	33-3
Fred C. Brown.....	New Boston.....	17-7
Arthur C. Wilson.....	R. D., New Boston...	21-4
Perley D. Morris.....	New Boston.....	14-3
<b>New Ipswich.</b>		
A. E. Chase*.....	New Ipswich.....	Appleton Inn
J. M. Burton.....	Temple.....	
Fred L. Mansfield....	R. D., New Ipswich...	18-24 Greenville
<b>Pelham.</b>		
Harry H. Atwood*...	Pelham	
F. M. Woodbury.....	Pelham	
<b>Peterboro.</b>		
T. E. Driscoll*.....	Peterboro.....	101-2
Fred S. Gilchrist.....	Peterboro.....	122-13
Edward P. Vose.....	Peterboro.....	125-8
William H. Robinson..	Peterboro.....	52-4
<b>Sharon.</b>		
Alpha Wilson*.....	Peterboro	
<b>Temple.</b>		
George H. Fish*.....	Temple.....	19-25 Greenville
W. H. Davidson.....	Temple.....	21-4 Greenville
George H. Wheeler....	R. 2, Wilton.....	121-21 Peterboro
<b>Weare.</b>		
F. E. Cutting*.....	East Weare.....	20-31
Edwin Barnard.....	Riverdale.....	4-21
C. E. Eastman.....	South Weare.....	5-31
Edwin M. Smith.....	East Weare.....	20-32 or 10-11
S. W. George.....	East Weare.....	21-13
George H. Nichols....	North Weare.....	12-13

Name.	P. O. Address.	Telephone.
<b>Wilton.</b>		
Frank L. Proctor*....	Wilton .....	12-6
George W. Perham....	Wilton .....	7-15
Orville H. Frye.....	Wilton .....	1-18
Frank N. Gray.....	Wilton .....	10-12
W. A. Burton.....	Wilton .....	9-10
Stanley H. Abbott....	R. D., Wilton.....	2-2

**Windsor.**

J. R. Nelson\*..... Hillsboro Upper Vil... 9-24 H. U. V.

**MERRIMACK COUNTY.****Allenstown.**

Alfred W. Gilbert\*... Suncook ..... 63-12  
 George Dowst ..... Suncook ..... 9-13 Chichester  
 Henry W. Billings.... Suncook ..... 33-21 Suncook

**Andover.**

Dennis E. Fenton\*... Andover ..... 19-3  
 Ara M. Lovering.... East Andover  
 Eli D. Messer..... Potter Place

**Boscawen.**

George H. Fairbanks\*. Boscawen  
 Walter H. Eastman... R. 13, Penacook.... 10-6 Salisbury  
 Ervin A. Griffin..... Boscawen ..... 12-11 Salisbury Ex.  
 Frank B. Folsom.... Boscawen  
 Nathaniel M. Flagg... Penacook ..... 18-13 Salisbury Ex.

**Bow.**

Frank D. Clough\*... R. 3, Concord ..... 785-2  
 Harry Clough ..... R. 3, Concord ..... 8-15 Dunbarton  
 Frank E. Woodbury.. R. 4, Manchester

**Bradford.**

F. H. Gillingham\*... Bradford  
 Moody Gillingham ... Bradford ..... 6-4  
 Albert J. Ansart.... Bradford  
 Fred Smith ..... Bradford  
 George W. Coffrin... Bradford ..... Wm. M. Carr Store

**Canterbury.**

Lowell T. Mason\*... Canterbury ..... 5-3 Canterb'y & Bosc'n  
 Alvah H. Blake..... R. 11, Penacook  
 Leroy A. Glines..... Canterbury Depot ... 16-21 C. & B. Tel. Co.  
 William H. Muzzey... R. 10, Canterbury... 3-14 Belmont  
 Harry H. Howser.... Canterbury ..... Canterbury Central

**Chichester.**

W. S. Langmaid\*.... North Chichester ... 16-4  
 Abraham L. West.... R. 7, Concord..... 18-11  
 Frank L. Winslow... North Chichester ... 15-6

**Concord.**

William C. Green\*... Warren St., Concord.. Central Fire Station 145  
 David J. Adams..... Concord ..... 144-M

Name.	P. O. Address.	Telephone.
<b>West Concord . . . . 407-W</b>		
Levin J. Chase.....	30 Sewall's Falls Rd.,	
Fred N. Dodge.....	Penacook	
Elbridge Emery . . . .	East Concord . . . . .	687-5
William H. Gay.....	Concord	
George A. Hill.....	R. 2, Concord.....	76-W
<b>Danbury.</b>		
E. A. Farnum*.....	R. 7, Danbury.....	3-6
Warren A. Powers....	R. D., South Danbury.	5-16
Willis W. Walker....	South Danbury . . . . .	8-34
<b>Dunbarton.</b>		
A. L. Burnham*.....	Goffstown . . . . .	5-23 Dunbarton
Walter C. Walker....	R. 2, Concord.....	3-14 Dunbarton
J. Charles Weatherbee	R. 2, Concord.....	2-14
Philip H. Burnham...	R. 1, Goffstown.....	5-15
<b>Epsom.</b>		
George H. Yeaton*...	Epsom . . . . .	12-3 Chichester
Albert Sherbourne . . .	Epsom	
Harold S. Bickford...	Gossville	
Clarence O. Wells....	Short Falls . . . . .	9-31 Chichester
<b>Franklin.</b>		
James W. Huntoon*..	Franklin . . . . .	269 N. Eng.
Harry E. Colby.....	215 South Main. St.,	
	Franklin . . . . .	373-22 Franklin & 174-3
John E. Cunningham..	Franklin	
<b>Henniker.</b>		
H. A. Tucker*.....	Henniker . . . . .	8001
W. C. Goss.....	Henniker . . . . .	14-3
H. A. Cummings.....	R. 1, Henniker.....	14-21
Arthur W. Dow.....	Henniker	
<b>Hill.</b>		
Clyde A. Blake*.....	Hill . . . . .	341-4 Franklin
Frank R. Woodward..	Hill . . . . .	341-6 N. E., Franklin
Walter C. Dickinson..	R. 1, Danbury.....	79-32 Bristol
Alson F. Foster.....	Hill . . . . .	341-12
<b>Hooksett.</b>		
Edwin A. Tyrrell*...	Hooksett . . . . .	32-3 Suncook
Orin J. Cate.....	Hooksett	
Lucius B. Morrill....	R. 1, Manchester....	Jos. Samson
<b>Hopkinton.</b>		
W. H. Milton*.....	Contoocook . . . . .	27-31
James G. Rice.....	Contoocook . . . . .	7-21
George E. Patch.....	R. 1, Concord . . . . .	691-24
Joseph E. Derry....	Hopkinton . . . . .	22-14 Contoocook
Marl D. Chase.....	R. 1, Concord . . . . .	689-25
Arthur J. Boutwell..	R. D., Concord.....	688-2
<b>London.</b>		
Arthur K. Marston*..	London . . . . .	12-5 Citizens
Edward H. Sleeper...	London . . . . .	18-5 Belmont Ex.
Everett P. Jenkins...	R. 8, Concord.....	17-1½ Canterbury

Name.	P. O. Address.	Telephone.
<b>Newbury.</b>		
Moody Gillingham* ..	Bradford .....	6-4 Bradford
Chester A. Gove.....	Mount Sunapee .....	9-14 Sunapee
George J. Messer.....	Newbury .....	5-3 Sunapee
Archie O. Gove.....	Mt. Sunapee .....	9-12 Sunapee
<b>New London.</b>		
Ira S. Littlefield*....	New London .....	4-23
Roy E. Emery.....	Elkins .....	8-5
William M. Kidder....	New London .....	6-3
H. C. Hoyt.....	New London .....	10-4
Austin W. Russell....	New London	
<b>Northfield.</b>		
Joseph F. Leary*....	Box 1, Tilton.....	21-2 Tilton
W. H. Bosworth.....	Tilton .....	5-7
Walter B. Hill.....	Tilton .....	28-2
Everett L. Sanderson..	R. 2, Tilton.....	110-2½ Tilton-Citizens
Alberic Robida .....	Tilton .....	138
<b>Pembroke.</b>		
Fred M. Pettingill*... R. 1, Suncook.....		34-12 Suncook
A. E. Strand.....	R. 14, Concord.....	31-12 Suncook
<b>Pittsfield.</b>		
John H. Jenness*....	Pittsfield	
Roy Watson .....	Pittsfield	
<b>Salisbury.</b>		
Berton F. Sanborn*... R. 1, Andover.....		13-15
Herbert E. Webster... Salisbury		
John Shaw .....	West Salisbury.....	2-5
<b>Sutton.</b>		
H. L. Pillsbury*....	North Sutton .....	7-2
F. B. Johnson.....	South Sutton .....	1-6
Fred A. Sawyer.....	Warner .....	18-4 Warner
<b>Warner.</b>		
Jesse M. Downes*....	Warner .....	Warner Central
<b>Webster.</b>		
James L. Colby*....	Webster .....	29-13 Salisbury
A. E. French.....	Webster .....	20-3 Salisbury
M. J. Walker.....	Contoocook	
Joseph G. Colby.....	R. 16, Penacook.....	29-13 Salisbury
George Keneval .....	Contoocook	
<b>Wilmot.</b>		
F. E. Goodhue*....	Wilmot .....	9101-3 Franklin
C. T. Atwood.....	South Danbury	
Walter H. Morgan....	Wilmot Flat	

## ROCKINGHAM COUNTY.

**Atkinson.**

John H. Smith*.....	Atkinson Depot .....	596-W Haverhill, Mass.
Elmer E. Conley.....	R. D., Westville.....	41-3 Salem
C. P. Stowell.....	Westville .....	5-14 Plaistow

Name.	P. O. Address.	Telephone.
<b>Auburn.</b>		
Fred H. Hall*.....	Auburn .....	10-21 Candia
George A. Palmer.....	R. 1, Manchester.....	11-11 Candia
Harry Stowe .....	Massabesic, Manchester	
<b>Brentwood.</b>		
John E. Tuck*.....	R. D., Exeter.....	21-3 Epping
Fred Rand .....	R. 1, Epping	
James L. Stevens.....	Exeter	
<b>Candia.</b>		
Charles P. Robie*....	R. 1, Manchester.....	21-12 Candia
John D. Underhill....	Candia .....	25-4 Candia
George V. Gage.....	East Candia	
<b>Chester.</b>		
Walter I. Martin*....	Chester .....	3-6
James W. Towle.....	Chester .....	2-5 or 2-2
William B. Underhill..	Chester .....	8004-8
Walter P. Tenney....	Chester .....	3-30
William T. Owen.....	R. 1, Chester.....	14-13 Candia
James E. McCannon..	Chester	
<b>Danville.</b>		
Dana Lessard* .....	Box 19, No. Danville.	8011-2
Lewis H. George.....	Danville	
<b>Deerfield.</b>		
Howard P. King*....	R. D., Raymond.....	3-13
Chester E. Maynard..	R. 1, Raymond.....	26-14
Otis A. Meloon.....	South Deerfield .....	8005-3
<b>Derry.</b>		
William F. Eaton*....	17 Birch St., Derry...	84-12
Arthur G. Low.....	R. 2, Derry.....	149-3
Arthur C. Sargent....	Derry Village .....	68-3
Herbert H. Kimball..	R. 3, Derry	
John F. Coyne.....	R. 3, Derry Village	
William Bennett .....	43 So. Avenue, Derry	
Harry Whitcomb .....	Derry .....	135-2
J. D. S. Pingree.....	Derry Village .....	37-3 Manchester
<b>East Kingston.</b>		
D. M. Evans*.....	East Kingston	
Leslie Webster .....	East Kingston .....	5-2
<b>Epping.</b>		
James D. Whittemore*	Epping .....	14-4
<b>Exeter.</b>		
George H. Carter*....	Exeter .....	2-8
G. F. Adams.....	34 Auburn St., Exeter	
William E. Peters....	39 Water St., Exeter.	500
<b>Fremont.</b>		
Melzer I. Stevanson*.	Fremont	
Alden F. Sanborn....	Fremont .....	7-12 Raymond
Frank H. Lyford.....	Epping .....	29-2 Epping
<b>Greenland.</b>		
Charles F. Marden*..	Greenland	
Thornton N. Weeks...	Greenland .....	1079-X

Name.	P. O. Address.	Telephone.
<b>Hampstead.</b>		
John S. Corson*.....	Hampstead .....	1-2
Benjamin H. Clow...	East Hampstead.....	3822-W Haverhill, Mass.
<b>Hampton.</b>		
Howell M. Lamprey*..	Hampton .....	73-11
George M. Dearborn..	Hampton	
<b>Hampton Falls.</b>		
F. Henry Fogg*.....	Hampton Falls .....	44-3 Hampton
S. O. Hawes.....	R. 1, Hampton Falls..	249-M Exeter
William A. Janvrin...	Hampton Falls	
<b>Kensington.</b>		
George A. Prescott*..	Kensington .....	69-11 Exeter
Ralph B. Fish.....	East Kingston .....	185-5 Amesbury, Mass.
C. Sumner Card.....	East Kingston .....	189-7 Amesbury, Mass.
<b>Kingston.</b>		
James A. Lyford*....	Box 22, Kingston....	32-5
Albion W. Nason....	Kingston	
Edward Kimball .....	Kingston	
Daniel W. Swett.....	Kingston .....	8-4
Freeman L. Nason....	R. 1, Newton	
Frank Cavaric .....	Kingston	
William M. Carleton..	Box 62, Newton Jct..	8104-3
<b>Londonderry.</b>		
J. E. Ray*.....	Londonderry .....	89-5 Derry
Frank E. Avery.....	Hudson .....	382-5 Nashua
Nathan P. Watts.....	R. 1, Derry.....	86-24
<b>Newcastle.</b>		
Henry E. Campbell*..	Newcastle .....	566-M Portsmouth
<b>Newfields.</b>		
Alfred Conners* .....	Newfields .....	209-M Exeter
Harry G. Atwood.....	Newfields .....	54-15
William Pease .....	Newfields	
<b>Newington.</b>		
Louis C. Bean*.....	Newington	
Fred H. Winn.....	Newington .....	303-32
<b>Newmarket.</b>		
Matthew T. Kennedy*..	Newmarket .....	86-4
Fred A. Langley.....	Newmarket .....	82-12
<b>Newton.</b>		
George S. Rowe*.....	Newton	
Lewis E. Bailey.....	R. 1, Newton.....	10-31 Plaistow
<b>North Hampton.</b>		
Otis S. Brown*.....	Little Boar's Head... 35-3	Rye Beach
J. Russell Dow.....	North Hampton .....	8021-2 Rye Beach
George G. Carter.....	North Hampton .....	8021-2 Rye Beach
<b>Northwood.</b>		
Charles C. Holmes*... 5-21	Northwood .....	
George B. Small..... 5-21	Northwood Ctr. ....	Northwood Ctr.
George M. Bartlett... 2-2	Northwood Narrows... 2-2	Northwood Ctr.



Name.	P. O. Address.	Telephone.
<b>Nottingham.</b>		
P. B. Batchelder*....	South Lee	
A. H. Cooper.....	Northwood .....	6-11 Northwood Ctr.
F. L. Gove.....	R. D., Raymond.....	6-22 Raymond
A. W. McDaniel.....	Barrington	
T. M. Rollins.....	R. D., Raymond.....	H'se 7008-3, st'n 8008-2

**Plaistow.**

Fred P. Hill*.....	Plaistow	
Elden C. Smart.....	R. D., Haverhill, Mass.	206-J
Theodore Fecteau ....	Westville .....	817-M Haverhill, Mass.

**Portsmouth.**

William F. Woods*... .	Portsmouth .....	House 230, work 122
Willis P. Gray.....	339 Wibird St., Ports- mouth	
Michael J. Lynch.....	Hanover St., Portsmouth	

**Raymond.**

George E. McClure*... .	R. 2, Raymond.....	34-14
Joseph A. Blake.....	Raymond .....	27-2

**Rye.**

C. D. Locke*.....	Rye	
Ernest A. Tucker....	Portsmouth	

**Salem.**

F. N. Emerson*.....	Salem Center .....	35-6
Clarence W. Merrill..	Salem Depot .....	Home 47-12, Gar'ge 86-5
John E. King.....	North Salem	

**Sandown.**

James F. Sargent*....	R. 3, Chester.....	2-31
Clarence I. Drowns... .	R. 3, Chester.....	2-32

**Seabrook.**

Frank W. Chase*.....	Seabrook	
Robert McQuilkin ....	R. 9, Hampton Falls	
Jacob F. Dow.....	Seabrook	

**South Hampton.**

C. M. Evans*.....	South Hampton .....	139-3
Edgar W. Wyman....	R. 1, Amesbury, Mass.	138-6 Amesbury

**Stratham.**

John F. Emery*.....	Stratham .....	576-Y or W
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**Windham.**

J. W. M. Worledge*... .	Windham Center ....	178-31 Derry
Charles O. Parker....	Windham Depot	
Albert W. Farmer....	West Windham .....	992-23 Nashua

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**STRAFFORD COUNTY.****Barrington.**

Walter Buzzell* ....	Barrington .....	12-4
William H. Felker....	R. 1, Rochester.....	2-5
Frank H. Clark.....	East Barrington	

Name.	P. O. Address.	Telephone.
<b>Dover.</b>		
James Smith* .....	Dover .....	186-R
E. B. Folsom .....	R. 3, Dover .....	251-4
John H. Wesley .....	1 School St., Dover...	174-W
L. I. Jenness .....	R. 3, Dover .....	251-22
Irving F. Wentworth..	Dover .....	576-W
Charles W. Rollins...	Dover .....	551-M
<b>Durham.</b>		
Karl W. Woodward*..	Durham .....	5
Fred Langley .....	Durham .....	59-13 Newmarket
<b>Farmington.</b>		
Frank A. Adams*....	Farmington .....	23-21
Arthur G. Scruton...	R. 2, Rochester	
William V. Ware.....	Farmington .....	179-14 Rochester
James W. Foss.....	Rochester .....	223-12 Rochester
<b>Lee.</b>		
Benton E. Layne*....	Dover .....	273-16 Dover
Ben Lang .....	Lee	
<b>Madbury.</b>		
William H. Knox*....	R. D., Dover .....	259-14 Dover
Arthur W. Simpson...	R. 6, Dover.....	258-12
<b>Middleton.</b>		
A. B. Kelley*.....	Union .....	6-6 Milton Mills
Charles Knowles .....	Union .....	6-2
Samuel A. Lawrence..	Union .....	6-11 Milton Mills
<b>Milton.</b>		
Fred P. Jones*.....	R. D., Union.....	41-15
Fred B. Roberts.....	Milton .....	22-2
H. R. Jewett.....	Sanbornville .....	9-4 Milton Mills
Isaac L. Lord.....	Union .....	6-21 Milton Mills
F. Leroy Tripp.....	R. 1, Farmington.....	42-15
<b>New Durham.</b>		
George D. Lambertson*	New Durham .....	13-24 North Barnstead
F. J. Lucas .....	South Wolfeboro	
George W. Bennett...	New Durham .....	18-42
<b>Rochester.</b>		
John F. Nute*.....	Chestnut St., Rochester	8-9 F. D., house 251-11
Wilbur E. Horne.....	47 Chestnut, Rochester	278-2
Peter McShane .....	20 Common, Rochester	
John A. Allen .....	Rochester .....	159-12
Charles S. Clark.....	Rochester	
<b>Rollinsford.</b>		
Charles E. Lord*....	Salmon Falls .....	593-M
Charles Plumer .....	R. 2, Dover .....	252-25
Lorenzo E. Baer.....	Dover .....	587-M
<b>Somersworth.</b>		
E. H. Farley*.....	Somersworth	

## REPORT OF FORESTRY COMMISSION.

Name.	P. O. Address.	Telephone.
<b>Strafford.</b>		
George P. Foss*.....	Strafford Center .....	13-14 Barrington
Martin S. Brock.....	Rochester .....	152-11 Rochester
J. H. Perkins.....	Center Strafford .....	9-7
Albert M. Leighton...	Strafford .....	15-6 Barrington
<b>SULLIVAN COUNTY.</b>		
<b>Acworth.</b>		
Weston O. Kemp*....	East Acworth .....	3-11 Lancaster
Guy S. Neal.....	Acworth .....	26-3 Alstead
Albert A. Clark.....	Alstead .....	36-5 Alstead
<b>Charlestown.</b>		
James W. Davidson*..	Charlestown	
<b>Claremont.</b>		
P. J. Sheridan*.....	77 Central, Claremont.	367-W
Martin Pederson .....	Claremont Jct. ....	76-5
Alfred Pierce .....	Claremont .....	271-Y
Arthur L. Fitch.....	Claremont .....	87-M
<b>Cornish.</b>		
James B. Chadbourne*	R. 4, Windsor, Vt....	76-11 Windsor, Vt.
Elwin W. Quimby....	R. 3, Windsor, Vt....	37-11 Windsor, Vt.
Fenno B. Comings....	R. 4, Windsor, Vt....	45-12 Windsor, Vt.
George C. Huggins....	Cornish Flat .....	274-24 Claremont
E. J. Hurley.....	Newport .....	16-5 Newport
<b>Croydon.</b>		
F. W. Putnam*.....	Croydon .....	9-21 Sugar River Valley
E. J. Hurley.....	Newport .....	16-5 Newport
<b>Goshen.</b>		
George F. Crane*....	Goshen .....	2-11
Archie O. Gove.....	Mt. Sunapee .....	9-12 Sunapee
<b>Grantham.</b>		
Perley Walker* .....	Grantham .....	9-5 Croydon
E. J. Hurley.....	Newport .....	16-5 Newport
Jerome J. Gault.....	Grantham .....	3-21
<b>Langdon.</b>		
George H. Royce*....	Charlestown .....	33-5 Alstead
M. F. Bragg.....	Alstead .....	26-3
William Roberts .....	Charlestown .....	28-2 Alstead
Charles A. Jeffs.....	Langdon	
<b>Lempster.</b>		
F. A. Barton*.....	Lempster .....	1-2
E. E. Hurd.....	Lempster .....	5-4
A. K. Hodgman.....	East Lempster .....	5-2
<b>Newport.</b>		
George E. Lewis*....	Newport .....	203
<b>Plainfield.</b>		
Louis E. Shipman*....	Cornish .....	156-11 Windsor, Vt.
E. J. Hurley.....	Newport .....	16-5 Newport
R. K. Jordan.....	Plainfield .....	47-21 Windsor, Vt.
Herbert Williams .....	Meriden .....	6-5 Meriden
Fred Smith .....	R. 1, West Lebanon..	37-11 W. Riv. Jct., Vt.
Palmer Read .....	Plainfield	

Name.	P. O. Address.	Telephone.
<b>Springfield.</b>		
Charles H. Brooks*....	R. 8, Canaan.....	12-28 Sunapee
H. C. Hoyt.....	New London .....	10-4 New London
Henry Patten .....	West Springfield .....	8-8
<b>Sunapee.</b>		
F. M. Sargent*.....	Sunapee .....	22-14
John H. Rowell.....	Sunapee .....	18-18
Austin W. Russell....	George's Mills .....	9021-12
<b>Unity.</b>		
Orin J. Bailey*.....	Quaker City .....	61-12 Claremont
Ira J. Elliot.....	Unity .....	72-28
H. F. Wright.....	Newport .....	2-28 Lempster
<b>Washington.</b>		
J. W. Wood*.....	Box 54, Washington..	9-22 Hillsboro Ex.
W. E. Farnsworth....	Washington .....	12-12 Wash. & C. Vall.

## CARROLL COUNTY.

## Hale's Location.

John H. Smith\*..... North Conway .....

## COOS COUNTY.

## Cambridge.

Ira C. Beecher\*..... Box 48, Errol..... 9011-12

## Crawford Purchase.

P. J. Martin\*..... Bretton Woods .....

George Miglierini .... Bretton Woods .....

## Dartmouth College Grant.

D. T. Wentworth\*.... Gorham .....

James Cilley .....

## Dix's Grant (Dixville).

A. D. Kier\*..... Dixville

## Hadley's Purchase.

F. P. Allard\*..... North Conway

George S. Chesley.... Bartlett .....

## Kilkenny.

George A. Webster\*.. Lancaster .....

## Millsfield.

Burl S. Raymond\*.... Errol

## Odell.

M. J. Hayes\*..... Groveton

## Success.

E. A. Holt\*..... Milan

Joseph Durant .....

Walter Treamer .....

Daniel Sperrin .....

**LOOKOUT STATIONS AND WATCHMEN.**

Name.	P. O. Address.	Telephone.
Agassiz .....	W. S. Phillips, R. 2, Littleton.....	16-2 Bethlehem
Belknap .....	Leon Morrill.	
Black (Benton) .....	R. D., Laconia.....	578-22
Black (Cambridge) ..	Frank B. St. Clair, East Haverhill .....	8038-25 Pike
Blue Job .....	Ralph W. Knox, Milan	7-3
Cabot .....	John Felker, R. 1, Rochester.....	9531-11
Carrigan .....	F. C. Leavitt, R. 1, Lancaster....	112-14
Carter Dome .....	George Sanborn, Livermore	
Chocorua .....	Bertram E. Neels, Glen House, Gorham	47-12
Croydon .....	S. H. Hidden, Tamworth .....	9006-11
Deer .....	Frank Whitney, Croydon Flat .....	9138-13 Croydon
Israel .....	E. C. Nash, Pittsburg.	C.V.L. Co., 4-2 Pittsb'g
Kearsarge (North)...	Clarence R. Brown, North Sandwich....	5-15 Center Sandwich
Kearsarge (South)....	W. H. Seavey, Kearsarge .....	12-31 North Conway
Magalloway .....	D. Bralley, Wilmot Flat	26-6 Potter Place
Monadnock .....	Herbert Higgins, Pittsburg .....	52-3 Pittsburg
Osceola .....	Ralph Weldon, Charles O. Brewster, Waterville .....	8022-5 Campton
Pawtuckaway .....	True Rollins, Raymond	8008-2 Deerfield
Pine .....	Victor Leavitt, Box 255, Gorham...	16-41
Pitcher .....	Fred Jennings, Stoddard .....	28-13 Hancock
Rosebrook .....	Porter R. Hardy, Fabyans	
Shaw .....	A. C. Brownlie, Moultonboro .....	26-21 Sandwich
Signal .....	F. G. Jipson, Errol...	34-7 Colebrook
Smart's .....	William P. Welch, Lyme Center .....	5-12 Lyme
Stinson .....	Fred R. Ford, Rumney	8007-2
Sugar Loaf .....	John Ryan, care Odell Mfg. Co., Groveton..	Odell Office, 15 Groveton
Uncanoonuc .....	George Flanders, Goffstown .....	8005-5

REPORT OF FORESTRY COMMISSION

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FINANCIAL STATEMENT.

Year Ending August 31, 1917.

	Appro-	Expended.	Balance
	priations.		Unexpended.
Salary of Forester.....	\$2,500.00	\$2,083.30	\$416.70
Field assistance .....	1,800.00	1,799.13	.87
Clerical expense .....	1,800.00	1,800.00	.....
Traveling expense .....	1,000.00	991.01	8.99
Incidentals .....	1,500.00	1,490.17	9.83
Printing blanks .....	800.00	800.00	.....
Printing report .....	500.00	500.00	.....
District chiefs .....	3,900.00	3,900.00	.....
Lookout stations .....	6,500.00	6,488.76	11.24
Fire wardens' conferences...	1,000.00	877.03	122.97
Prevention of fires.....	2,500.00	2,495.43	4.57
Nursery .....	\$1,000.00 }		
From sale of stock, 1,272.61 }	2,272.61	2,270.20	2.41
Care and acquisition of state lands .....	5,000.00 }		
Refund .....	6.00 }	5,002.38	3.62
Fire bills to towns.....	7,500.00	2,114.16	5,385.84
Reforestation .....	2,500.00	2,500.00	.....
White pine blister rust.....	8,000.00	7,975.35	24.65
Chapter 272, Laws of 1917...	313.47	309.88	3.59
	<u>\$49,392.08</u>	<u>\$43,396.80</u>	<u>\$5,995.28</u>

Year Ending August 31, 1918.

	Appro-	Expended.	Balance
	priations.		Unexpended.
Salary of Forester.....	\$3,000.00	\$1,800.00	\$1,200.00
Field assistance .....	2,000.00	1,309.83	690.17
Clerical expense .....	2,000.00	1,999.90	.10
Traveling expense .....	1,000.00	999.86	.14
Incidentals .....	1,500.00	1,494.89	5.11
Printing blanks .....	700.00	700.00	.....
District chiefs .....	4,800.00	4,787.24	12.76
Lookout stations .....	6,700.00	6,642.39	57.61
Fire wardens' conferences...	800.00	302.58	497.42
Prevention of fires.....	2,700.00	2,700.00	.....
Nursery .....	\$2,000.00 }		
From sale of stock 754.49 }	2,754.49	2,754.49	.....
Care and acquisition of state lands .....	5,000.00	4,868.47	131.53
Forest fire bills to towns.....	7,500.00	5,155.07	2,344.93
Reforestation .....	2,500.00	2,120.95	379.05
White pine blister rust.....	10,000.00	9,999.58	.42
Fuel wood, operation from Emergency Fund .....	1,178.90	1,178.90	.....
Deficiency appropriation, Chap. 184, Laws 1915.....	3.59	.....	3.59
	<u>\$54,136.98</u>	<u>\$48,814.15</u>	<u>\$5,322.83</u>