

SECOND BIENNIAL REPORT

NEW HAMPSHIRE

FORESTRY COMMISSION

1897-1898

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OF THE

NEW HAMPSHIRE

FORESTRY COMMISSION

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REPORT.

To His Excellency the Governor and the Honorable Council:

The gratifying and stimulating increase of general interest in the subject of forest preservation in New Hampshire, which this board has had occasion to note each year, has continued since the date of the last report, and the indications point to still wider co-operation among the various parties in interest.

The present period in the forestry movement in the United States is one of primary education and agitation, with advance toward practical application of the underlying principles to be noted in a few localities, both by public and by private means. In New Hampshire, however, the movement is still in the educational stage, though with some enterprises to be noted later actually on foot to make actual tests of the value of a rational forest policy to the public and to the individual.

This commission, being wholly without authority to enforce the application of any of the principles which it deems necessary for the preservation and perpetuation of the forest cover in our state, has naturally turned its attention toward the creation of that underlying public sentiment which is a prerequisite to the enactment of all laws dealing with individual prerogative, and has devoted itself chiefly to enlarging the sum of public knowledge of forestry and its benefits. Through numerous contributions to newspapers and other periodicals, and by means of lectures and addresses dealing with the subject both generally and in a specific manner, the board has brought the subject of forestry to the attention of audiences in every county in the state. The greater part of this work has naturally fallen upon the secretary of the board, who has held himself in readiness to respond to all calls from interested organizations. The numerous subordinate and Pomona

granges of the order of Patrons of Husbandry have evinced a lively interest in the subject, and parts of many of their programs have been devoted to a consideration of forestry topics. The farmers' institutes, held in each county by the State Board of Agriculture, have also devoted considerable time to the subject. Perhaps the most active agency in the dissemination of forestry intelligence in New Hampshire at present is the State Federation of Women's Clubs, which maintains a standing committee in forestry, and is pledged to advance the interests of forest preservation so far as it may be able. This interest has extended to the clubs in all parts of the state, and some of the most intelligent and sympathetic audiences have been gathered under their auspices to discuss the fundamental principles of forestry.

LUMBERMEN'S INTEREST.

Under prevailing conditions, however, the lumbermen and owners of forest property are the only ones to whom the appeal for forest preservation can be made with any idea of securing a practical response. The state owns no timber land, and there is no legislation to restrain private owners from doing what they will with forest areas. At the beginning of the present board's term of office, they found among the lumbermen of the state a widespread and erroneous impression existing as to the purposes and methods of forestry. This obviously arose from too literal an application of the term "forest preservation," which does not mean that the forests should be left alone in their natural condition; that their timber should be left to decay and disintegrate, and that the productive capacity of nature's forces should go to waste; but that the reproductive and recuperative powers of the forest should be given direction by man to the end that the forest growth should perpetuate and reproduce itself in species of the most useful character, so that the forest would be made to produce not only an inexhaustible supply of wood material, but that of the most desirable commercial species. In other words, the object of forest preservation is not sentimental, but economic.

Even the most cursory examination of the forest resources of New Hampshire demonstrates that the spruce forests are the most valuable and desirable to preserve and perpetuate. Not only is that species of tree the one for which the most active demand exists, and in the utilization of which the greatest number of ingenious and useful products may be secured; but the spruce forests of New Hampshire are located, without exception, in those portions of the state where, for scenic and sentimental reasons as well as the economic, it is most desirable to secure their perpetuation.

An immediate and pressing reason, therefore, has existed from the first for securing a rational management of the spruce forests of the White Mountain region.

COMPARISONS INSTITUTED.

In co-operation with the division of forestry in the Department of Agriculture at Washington, a series of tests were instituted with a view to determining by actual measurements whether a system of lumbering under a restriction limiting the cutting to the larger trees would be as profitable as the method of indiscriminate cutting then in vogue. The results of their tests were summarized and published in the commission's second report, demonstrating the profitableness of the restricted system, not only for the future but at once. At that time few, if any, of the lumbermen then operating in New Hampshire were conducting their business with any view to an intelligent reproduction of the timber crop. Now, very nearly one half of all the spruce logs harvested in the state are taken out under wise regulations, looking toward the perpetuation of the species; and it is evident that the necessities of the business will soon compel all operators to conform to some system of restricting cutting, unless they wish to bar themselves from continuing in the lumber industry. In short, the prediction of this commission in one of its earliest reports has been so strikingly emphasized that its language is here recalled:

"With the lumbermen of the state the board has cultivated friendly relations. Many of them already perceive that their

interests and the forester's interests are identical, and we are not without hope that the others will soon come to realize that it pays best in the long run to treat our timbered areas so that they shall produce successive crops of value in the least possible time, and that then all the lumbermen will co-operate to establish and maintain a wise system of forestry in New Hampshire. Substantial basis for this hope is found in a study of the conditions of ownership which govern the wooded areas of the state. Apparently we have reached such a point in the distribution of titles to forest areas that we are not likely to see many more large transfers of timber land. This means that lumber operators must henceforth confine their cuttings to the holdings of land which they now possess. Therefore, it behooves them to treat their possessions so as to insure their perpetual use with profit. This can be done only through the application of forestry principles. There are not wanting instances in which such a course is already followed, and it is believed there will be more in the future."

And in this connection it is worthy to add that Mr. Austin Cary, then employed by the division of forestry, who made these first timber measurements in New Hampshire in 1894, is now employed by one of the largest landowners in the state as a consulting forester.

THE "PAPER TRUST."

The formation of the International Paper Company since the publication of our last report is a matter of interest in connection with the discussion of forest preservation in New Hampshire. This company, better known as the "Paper Trust," absorbed the greater number of pulp and paper mills in New York and New England, and thereby secured possession of large areas of forest lands in this state in fee, and of stumpage contracts covering certain other tracts of New Hampshire forest. In line with certain other projected economies in management and methods of manufacture, the managers of the company foresaw the future valuelessness of pulp mills without an adequate supply of pulp wood behind them. Ac-

cordingly they instituted measures for the rational handling of their original forests so as to insure an ever-reproducing supply of secondary growth of spruce; and to this end placed all their forest holdings under the direction of a head forester, Mr. E. M. Griffith, whose training in the service of the division of forestry at Washington, and his actual service in the woods, well fits him to put into practice the principles with which he is so familiar. The purpose of the International Paper Company is to permit the cutting of mature trees only; and the largest measure of credit for their wise conclusions, so sure to be of great benefit to the state at large, must be given to Mr. George T. Crawford, who has been for many years the forestry adviser of the Fall Mountain Paper Company, one of the constituent companies of the "Paper Trust."

GOVERNMENT CO-OPERATION.

If, for any reason, it should be found impracticable for forest owners, either corporate or individual, to provide themselves with the services of a private forester, the division of forestry at Washington offers its services in this capacity, as may be seen by the following Circular No. 21, recently issued by the division:

UNITED STATES DEPARTMENT OF AGRICULTURE.—DIVISION OF FORESTRY.

PRACTICAL ASSISTANCE TO FARMERS, LUMBERMEN, AND OTHERS IN HANDLING FOREST LANDS.

Why Private Forests Are Wrongly Handled.

The forest lands of the United States are owned in three separate ways: First, by the government of the United States, to which belong the reserved and unreserved forests of the public land states; second, by some of the states; and, third, by private owners, among whom are individual men, companies, and institutions.

The private forest lands exceed in area those of the states and the federal government combined, and their preservation in productive condition, as regards both timber and water-

supply, is of vast importance to the nation. As a rule, however, the treatment they receive is calculated to destroy their value rather than to sustain or increase it. The reason is evident and natural. These lands, like other private property, are held by their owners for the returns they yield, and the owners as yet have scarcely begun to understand that it pays better, as a rule, to protect a forest in harvesting the timber crop than to destroy it. A knowledge of how to bring about this desirable result is still more restricted, while trained men capable of advising forest owners in the matter are very few indeed.

Practical Examples of Improved Methods.

For these reasons the division of forestry has undertaken to provide a series of practical examples of improved treatment of private forest lands, in which the present interest of the owner and the protection and improvement of the forest shall have equal weight. The one is essential to the other, for the productive value of forest land is the only consideration that will lead to its preservation by the great majority of private owners. The object of the present undertaking is to show that improved ways of handling timber lands are best for the owner as well as for the forest, by assisting a few owners to make trial of them and then publishing the methods and results for the benefit of all.

Government Co-operation with Forest Owners.

Forest lands in private ownership are mainly of two kinds, small holdings, for the most part farmers' woodlots, and larger areas, chiefly valuable for lumber. This division is prepared, so far as its very inadequate appropriation will permit, to lend its aid to the owners of each kind, on receipt of applications stating the situation, area, and character of the forests for which working plans are desired.

Applications will be considered in the order in which they are received, but precedence may be given to the lands most likely to furnish useful examples. A working plan once pre-

pared will not be put in effect unless it is satisfactory to the division of forestry and to the owner.

The conditions upon which the division will undertake necessary investigations and give assistance are stated in the two agreements on following pages.

Tracts of any size from five acres up are eligible. The only distinction made is that the owners of large tracts, which may present more difficult questions, will be required to share in the expense of solving them, while owners of small tracts will receive assistance from the division without bearing any part of the cost.

Woodlots.

Throughout a very large portion of the United States every farm has a certain part of its area under wood, either planted, as in regions otherwise treeless, or of natural growth. The value of this wooded portion, besides affording protection from the wind, is chiefly for fuel, fencing, and railroad ties, with some building material and the wood needed for special uses about the farm. Without the woodlot a farm very often would be an unprofitable investment, because the farmer could not afford to buy the wood which now costs him very little except the labor of cutting and moving it. Indeed, in very many cases the woodlot keeps the farmer going. His labor there during the winter, when otherwise he would be idle, makes up for any deficit in the cultivated land, and the ready money he receives from the sale of fuel, ties, or other material, is indispensable to his comfort and prosperity.

In two directions, then, material and money, the product of his woodlot is of high importance to the farmer. But in the majority of cases this part of the farm is far less useful than it might easily be made. This is true because the farmer does not study its productive capacity as he does that of his fields and pastures, and hence does not make it yield as freely as he might, with little or no additional labor, if he went about it in the right way.

The following specimen memorandum agreement gives the terms on which the owners of small tracts of forest may cooperate with the division:

Woodlot Agreement.

WASHINGTON, D. C., September 1, 1898.

The Department of Agriculture of the United States and John Doe of Doeville, county of Bell, state of Pennsylvania, mutually agree together as follows:

1. The Department of Agriculture, in pursuance of investigations in forestry, and in order to disseminate a knowledge of improved ways of handling forest lands, shall, after personal study on the ground by its agent or agents, prepare a plan of harvesting the forest crop and reproducing the forest on the land of the said John Doe, situated and described as follows: One hundred acres, more or less, of second-growth hard-wood forest land, in the town of Doeville, county of Pike, state of Pennsylvania, on the farm known commonly as the Old Doe place, and in the northwest portion of the same.

2. The said plan shall be prepared for the purpose of promoting and increasing the present value and usefulness of the said land to its owner and to perpetuate and improve the forest upon it.

3. Upon the completion of the said plan, and its acceptance by the said John Doe, the Department of Agriculture shall supervise the execution thereof so far as may be necessary.

4. The Department of Agriculture shall render all services under this agreement wholly without charge to the said John Doe, nor shall it participate in any degree in the receipts and expenses arising from the said land, except to defray the pay and expenses of its agent or agents.

5. The Department of Agriculture shall have the right to publish and distribute the said plan and its results for the information of farmers and others whom it may concern.

6. This agreement may be dissolved by either party upon ten days' notice given to the other.

(Signed)

(Signed)

WASHINGTON, D. C., October 1, 1898.

The working plan above mentioned being now completed

is accepted, and will be carried out under the conditions and during the validity of the above agreement.

(Signed)

Timber Lands.

Large bodies of forest land in almost every wooded portion of this country have come into the hands of private owners, and are held by them chiefly for their value as sources of timber. Much of this land, probably the greater part of it, is in hilly or mountainous regions where the preservation of the forest is of importance for both wood and water, while the destruction of the lowland forests, except when they give way to agriculture, would bring with it the loss of a plentiful spring of national wealth.

The harvest of the timber crop on these private timber lands is commonly accompanied, under the usual methods of lumbering, by the destruction of the forest when merchantable trees predominate, and in any case by severe and needless injury. Fire follows the lumberman, in spite of the precautions he very often takes, until in many places it is thought to be inevitable. These are misfortunes from which the owners of the forest lands are the first but not the only losers, for in the aggregate the loss is of immense public concern. It is to prevent these public and private losses that the division offers its assistance, realizing fully that they must continue until the success of some of their number proves to the great mass of timber landowners that improved and conservative methods of lumbering will pay.

A specimen memorandum agreement, such as this division, through the Department of Agriculture, is prepared to make with owners of timber land, so far as its resources will permit, is appended. Second growth and partly devastated lands will be considered as well as virgin forest.

Timber Land Agreement.

WASHINGTON, D. C., August 5, 1898.

The Department of Agriculture of the United States and Richard Roe of Roetown, county of Freedom, state of Pennsylvania, mutually agree together as follows:

1. The Department of Agriculture, in pursuance of investigations in forestry, and in order to disseminate a knowledge of improved ways of handling forest lands, shall, after personal study on the ground by its agent or agents, prepare a plan for harvesting the forest crop and reproducing the forest on the land of the said Richard Roe, situated and described as follows: Ten thousand acres, more or less, of virgin and second-growth forest land in the towns of Brownsville, Elizabeth, and North Morris, counties of Freedom and Tucker, state of Pennsylvania, in the northern portion of the tract commonly known as the Jackson Purchase.

2. The said plan shall be prepared for the purpose of promoting and increasing the present value and usefulness of the said land to its owner, and to perpetuate and improve the forest upon it.

3. Upon the completion of the said plan and its acceptance by the said Richard Roe, the Department of Agriculture shall supervise the execution thereof so far as may be necessary.

4. The cost of executing the provisions of this agreement shall be paid as follows:

(a) The salaries of all the employees of the Department of Agriculture engaged in fulfilling this agreement shall be paid by the department.

(b) A preliminary visit of inspection, if required, shall be wholly at the charge of the department.

(c) Actual and necessary expenses for traveling and subsistence of the agent or agents of the department working under this agreement, except as provided in the foregoing paragraph (b), shall be paid by the said Richard Roe. What are "actual and necessary expenses" shall be determined by the printed regulations of the department. Expenses under this paragraph (c), are estimated, for the preparation of this working plan, at seventy-five dollars.

(d) Necessary assistants shall be furnished by the said Richard Roe without cost to the department. It is estimated that two such assistants will be required for five weeks to prepare this working plan.

(e) The department shall not participate in any degree in the receipts and expenses arising from said land, except as above provided.

5. The Department of Agriculture shall have the right to publish and distribute the said plan and its results for the information of lumbermen, forest owners, and others whom it may concern.

6. This agreement may be dissolved by either party upon ten days' notice given to the other.

(Signed)

(Signed)

WASHINGTON, D. C., October 1, 1898.

The working plan above mentioned being now completed is accepted, and will be carried out under the conditions and during the validity of the above agreement.

(Signed)

Applications.

Applications for working plans should state which agreement, woodlot or timber land, they have in mind. They are particularly requested to specify the acreage and situation of their land, the latter by state, county, and township, or by public surveys. Full details as to the character of the forest are especially desired, in order to avoid delay.

Applications may be made at any time to Gifford Pinchot, Forester, Department of Agriculture, Washington, D. C., and it is to be hoped that New Hampshire landowners will avail themselves of the opportunity this presents.

Practical Assistance to Tree-Planters.

The Division of Forestry is prepared also, so far as its very limited appropriation will permit, to render practical and personal assistance to farmers and others by co-operating with them to establish forest plantations, woodlots, shelter-belts, and windbreaks. A section of the division has recently been organized and placed in charge of an expert tree-planter,

assisted by a number of collaborators and assistants residing in the different states, who are thoroughly familiar with their local conditions. This section will devote itself entirely to investigations in tree-planting and to the assistance of those who may avail themselves of the co-operative plan outlined in this circular. Applications for such assistance will be considered in the order of their receipt, but the division reserves the right to give preference to those likely to furnish the most useful object lessons. After an application has been made and accepted, the superintendent of tree-planting, or one of his collaborators or assistants, will visit the land of the applicant, and, after adequate study on the ground, will make a working plan suited to its particular conditions. The purpose of this plan is to give help in the selection of trees, information in regard to planting, and instruction in handling forest trees after they are planted.

Briefly stated, the division proposes to give such aid to tree-planters that woodlots, shelter-belts, windbreaks, and all other economic plantations of forest trees may be so well established and cared for as to attain the greatest usefulness and most permanent value to their owners.

Origin of the Plan.

The co-operative plan announced in Circular No. 21, as above, by which farmers, lumbermen, and others are assisted in handling forest lands, has been so well received, that the division offers a similar co-operative plan to aid farmers and other landowners in the treeless regions of the the West, and wherever it is desirable to establish forest plantations. Under the provisions of Circular No. 21, issued in October, 1898, about 400,000 acres of woodland have already received attention. Applications have been received for assistance in the management of about 1,500,000 acres, and attention is being given to them as rapidly as the resources of the division will permit.

Public recognition of the success of better methods applied to the management of timber lands is rapidly increasing. Equal success must follow the application of such methods

to the developing of forest plantations, woodlots, and even shelter-belts and windbreaks. Upon that fact the co-operative plan set forth in this circular is based.

Tree-Planting in the Past.

Forest tree-planting has been in progress in the West for many years. Although reasonable success has usually followed skillful planting and close attention to the selection of species and to their subsequent care, many of the tree claims of that region are failures. This condition has largely arisen from the difficulty of obtaining accurate information at first hand regarding the most desirable species to grow in a given locality and from the lack of personal supervision by a competent tree-planter in the setting out and subsequent care of the plantation. The growing of forest trees for economic purposes cannot be successfully undertaken without some knowledge of trees, their habits, and their adaptability to the place where they are to be planted. The grower must know what to plant, how to plant it, and how to care for it afterwards.

The Value of Forests to Farmers.

Few persons comprehend in full measure the direct and indirect value of forests to farmers. In the humid portions of America, where nearly every farm has its woodlot, the total area of the woodland is more than two hundred million of acres. It is not possible to make an accurate statement of the value of the annual products from these lands, but when it is considered that nearly all the fuel used by the farmers of the region mentioned, together with most of the wood for fencing and a considerable portion of the timber for building purposes, is annually cut from the woodlots, their value begins to be appreciated.

For fuel and fencing, the woodlot and other forest plantings are equally desirable to dwellers on the plains. On Mr. E. T. Hartley's farm, near Lincoln, Neb., an acre of land set to willow has for several years provided all necessary fuel used on the farm, and today there is more standing timber upon it

than ever before. The planting is in a ravine of little value for general farming. A plantation of hardy catalpa, near Hutchinson, Kan., planted in the spring of 1892 began a year ago to reimburse the owner. The trees taken out at that time in thinning the plantation, were cut into fence posts. They were cut at the level of the ground and each tree furnished two posts. The trees removed averaged eighteen feet high, one of the tallest measuring twenty-one feet nine inches.

Forest plantations are valuable not only for the purposes above indicated, but in addition they have great indirect value. By conserving the moisture and tempering the wind, they modify the local climate to a very marked degree.

As the farmers of the plains come to recognize more fully the great indirect, as well as direct, value of forest plantations, woodlots, shelter-belts, and windbreaks scattered over the agricultural treeless regions, and undertake to grow them in greater numbers, even if individual plantations are small in extent, the total result will be of vast importance.

An Incidental Value of Forest Plantations.

To the majority of people there is nothing else so attractive about a home as trees. A well planted woodlot, in two or three years after its establishment, will provide the farmer with a supply of trees to plant along roads and for ornamental purposes about buildings and gardens. As the trees in a plantation begin to crowd each other many may be removed with material advantage to those that remain, care being taken not to interfere with the shading of the ground. The superfluous trees often pay the cost of cultivation and care for the plantation after it is once established.

Cost of Planting and Cultivating Forest Trees.

The cost of planting and the subsequent care of a forest plantation varies greatly. Much depends upon the kinds of trees planted, the cost of labor, and the character of the soil. In most places trees can be bought very cheaply. Deciduous trees of one season's growth, which under most conditions is

the best age for general planting, can be purchased in quantity at prices varying from sixty-five cents to five dollars per thousand. But even at this price it is much more convenient and usually cheaper for the farmer to grow his own seedlings.

Conifers are more difficult to grow from the seed, and most farmers will find it better to buy trees of this class from nurserymen. If, however, conifers are purchased directly from the seedbed, the more common species will cost from \$2.50 to \$5 per thousand. Such plants must be grown for two or three years in beds or nursery rows before transferring to the plantation.

The stock for a mixed plantation of desirable species, one year old, set four feet apart each way, should be obtained at the cost of from \$4 to \$9 per acre. For older stock and for species difficult to grow from seed or rare in nurseries the cost will be much greater.

After the first year the cost will depend very greatly upon the success of the first planting. Thorough cultivation will be required until the trees are sufficiently large to shade out grass and weeds. In treeless regions the same care that a successful farmer gives his cornfield should be given forest plantations for the first two or three years. Not only should weeds and grass be kept down, but the surface soil should be frequently broken during the driest portion of the year to prevent excessive soil evaporation and consequent injury to the trees.

When and How Long Plantations Pay.

The immediate value of the woodlot for fuel will depend largely upon the rapidity of growth of the trees planted and the fuel value of their products. Under favorable circumstances, after the woodlot has reached the age of from eight to twelve years, some trees suitable for fuel and posts can be taken out yearly without injury to the rest. If the plantation be correctly managed young trees will often come up of their own accord to take the places of the older trees as they are removed. This is true already in many of the better managed among the older plantations.

But if sheep or other stock are allowed to graze in or overrun a plantation, undergrowth is prevented from coming in, and no provision is made for the perpetuation of the forest condition. The soil becomes packed by the trampling of the stock, the natural mulch is destroyed, and the trees suffer.

After a woodlot has begun to provide fuel, posts, and other material for farm uses it should continue to supply such products indefinitely. To secure this result, however, only a limited amount may be taken out in any single season.

The many failures on the timber claims of the West should not be discouraging. Much of the poor success has been directly due to the selection of undesirable species, poor judgment in planting, and to the lack of proper care of the plantation after its establishment.

Planting on Worn-out Farms.

Many of the worn-out farms in humid regions may be brought back to their original fertility by growing forest trees upon them for a series of years, and very many of them contain land better suited to the production of wood than to any other purpose. Such land should never have been cleared. It is fortunately true that throughout the regions once wooded worn-out farm lands will usually revert to their previous condition if protected from fire and stock. This result may be very materially hastened, and usually more desirable species grown, if some attention be given to forest planting.

The Plan of Co-operation.

Applications for assistance under the terms of this circular will be considered, as already stated, in the order in which they are received, but precedence will be given to the lands most likely to furnish useful examples, after the study on the ground has been made. The plan formulated for establishing and developing the forest plantation, woodlot, shelter-belt, or wind-break will not be put into effect unless it be satisfactory both to the Division of Forestry and to the owner. The specific agreement which the Department of Agriculture is prepared to make is as follows:

Tree-Planting Agreement.

WASHINGTON, D. C.,, 189 .

The Department of Agriculture of the United States and, of, county of, state of, mutually agree as follows:

1. The Department of Agriculture, in pursuance of investigations in forestry, and in order to disseminate a knowledge of improved ways of planting and developing forest plantations, woodlots, shelter-belts, and windbreaks, shall, after personal study on the ground by its agent or agents, prepare a plan for planting and caring for a forest plantation, woodlot, shelter-belt or windbreak on acres of land of the said, situated in the town of, county of, state of

2. The said plan shall be prepared for the purpose of promoting and increasing the present value and usefulness of said land to its owner, and to develop and perpetuate a plantation of forest trees upon it.

3. Upon the completion of the said plan and its acceptance by the said, the Department of Agriculture shall supervise the execution thereof so far as may be necessary.

4. If the area described in paragraph 1 does not exceed five acres in extent, the Department of Agriculture shall render all services under this agreement wholly without charge to the said, but it shall not participate in any case or in any degree in the expenses of planting and caring for the said forest plantation, woodlot, shelter-belt, or windbreak, except to defray the pay and expenses of its agent or agents, or in any profits or returns which may arise from its growth.

5. If the area described in paragraph 1 is larger than five acres, the cost of executing the provisions of this agreement shall be paid as follows:

(a) A preliminary visit of inspection, if required, shall be wholly at the charge of the department.

(b) Actual and necessary expenses for traveling and subsistence of the agent or agents of the department working under this agreement, except as provided in the foregoing

paragraph (a), shall be paid by the said In the present case these expenses are estimated at \$ What are "actual and necessary expenses" shall be determined by the printed regulations of the department.

6. The Department of Agriculture shall have the right to publish and distribute the said plan and its results for the information of farmers and others whom it may concern.

7. This agreement may be dissolved by either party upon ten days' notice given to the other.

(Signed)

Owner.

(Signed)

Secretary of Agriculture.

The working plan above mentioned, being completed, is now accepted, and will be carried out under the conditions and during the validity of the above agreement.

(Signed)

Owner.

Hints to Applicants.

Persons desiring the assistance of the division as here indicated should make application as early as November of each year, or earlier if possible, so that ample time may be afforded the agent of the division to visit the farm of the applicant and formulate plans under which the work is to proceed in time for the planter to order the nursery stock or seeds for spring planting. Applications which do not reach the office by November 15 are likely to go over until the following year. In this, as in the foregoing plan of co-operation, applications should be made to Mr. Pinchot.

STATE OWNERSHIP OF FORESTS.

It may be that, with all these widely separated agencies and influences at work to bring about a rational treatment of the forest cover by individual landholders, the necessity for public or state action will be eliminated. This board, however, cannot believe this to be the case. The relation of the state to forestry is most intimate, and has never been more

clearly summed up than in the words of the Hon. Joseph B. Walker of this state, being a member of previous forestry commissions, who, in discussing this phase of the topic, says:

"Thus far there has been no such thing as forestry in this country. Until recently the need of it has been but little felt. Statistics show that our primeval timber supplies have not yet been exhausted. Nature, too, has been and is reforesting many sections formerly denuded, wholly or in part. But the time is not distant when a more rational treatment of our forests will be absolutely essential to a home supply of wood and timber.

"The states should be the first to see this fact and to provide means to secure it. One or more schools of forestry like those abroad should be instituted by each or special courses for the teaching of its principles and practice established in existing institutions. This would result in a speedy improvement of the management of wooded property, and in season, perhaps, to save the country from the timber famine which it is sure to experience if the present reckless system of forest destruction is continued for another generation. Our woods are yielding under nature's tutelage but a fraction of what they might produce under skillful culture. It is as idle to trust for a satisfactory crop of timber to nature's capricious sowing of the necessary seeds as it would be if one sought in that way a crop of maize or wheat. God's primal curse of the ground evidently meant that it should thereafter yield its highest returns only in response to man's wise control of its potencies.

"We do not hesitate to urge the acquisition by states of tracts of forest to be held for the conservation of their water-power, the amelioration of their climate, the preservation of their scenery, and for the instruction, largely by object lessons, in good forestry, of their people. Aside from the benefit thus derived, these may be made to yield a fair return upon their cost and maintenance.

"Some years ago a bill passed the New Hampshire senate, but failed in the house, directing the Forestry Commission to consider and make a report to the legislature at a subsequent

Schools
forecasts

Timber famine
forecasts

State land
to be acquired

session upon the advisability of devoting to a state park that part of the White Mountain region known as the Presidential Range, in which are situated Mount Washington, Mount Jefferson, Mount Adams, and Mount Monroe, with their foothills and intermediate valleys, occupying an area of some thirty square miles. While to many the proposition may have seemed chimerical, its realization at a date not distant should not be surprising to such as are cognizant of the fact that ten millions of people and more live within a twelve hours' ride or less of this locality.

MANIFEST ADVANTAGES.

Recreation forecast

"Were all the scenic attractions of this region made accessible to view by additional paths and roads, the present large number of visitors would be greatly increased. Were the principles of an enlightened forestry applied to the management of the great forests concealed in its recesses, they would yield fair pecuniary returns and continue to serve the other offices which they now render.

"In each state suitable forest reserves, in which well-kept roads and paths render accessible fine views and streams, quiet valleys and mountain summits, as well as dense forests kept perpetually attractive by intelligent care, might be made very largely, and perhaps entirely, self-sustaining, and would furnish a blessed sanitarium to the thousands who would be sure to frequent them. But such must, in most cases, be established and maintained by the particular states within whose limits they are situated, and as state possessions.

Forest Law forecast

"Every state should have a well-digested code of forest law. Until such has been provided, the treatment of its wood and timber lands will be irregular, and very often adverse to the interest not only of the public, but to that of the private owner as well. But such a code cannot be devised and enacted at once. It must embody the suggestions of local experience and grow to perfection by degrees, just as the irrigation codes of southern Europe and the railroad codes of this country have done.

"The devise of such a code is the more difficult inasmuch as our forests are generally the property of private owners, and to a small extent only belong to the state. The state of New Hampshire does not own a single forest acre. When, therefore, individual owners see fit to pursue a course of management which may be detrimental to the other great interests of the state, and its protection is invoked, intricate questions will be likely to arise, to the temporary perplexity, perhaps, of its courts. And just here it may be said that this association will confer an inestimable benefit upon the forestry interests of this country by preparing and scattering broadcast a digest of the forest laws of the several states, so far as such exist today. Imperfect as these may be, they are American and suggestive. Side by side with those of older countries, they would aid greatly in the construction of a system for general use with us. It would be unwise to copy without careful examination laws that have grown out of the experiences of peoples living under different traditions and differently ruled. Ours must be American and answer the demands of the new environments of a new people."

FOREST PARKS.

In the absence of state appropriations for the creation of a forest preserve such as Mr. Walker suggests, the forestry commission is empowered to receive gifts of money for the purchase of land to be used as forest parks. Two such funds have been promised, as outlined in a previous report, but no accretions have been made to them since then, and the legal steps necessary to complete the state's title to the lands specified have been held in abeyance for legal and other causes.

Gifts solicited

PRESERVATION OF SHADE TREES.

The commission is now able to supply a limited number of tree tags, authorized by the legislature for the protection of shade trees along the highway, and requests for them should come through the selectmen of towns, addressed to the Forestry Commission, Concord, N. H.

For the Commission.

GEORGE H. MOSES,

Secretary.

CHAPTER 44, LAWS OF 1893.

AN ACT FOR THE ESTABLISHMENT OF A FORESTRY COMMISSION.

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

SECTION 1. There is hereby established a forestry commission, to consist of the governor, *ex officio*, and four other members, two Republicans and two Democrats, who shall be appointed by the governor with the advice of the council, for their special fitness for service on this commission, and be classified in such manner that the office of one shall become vacant each year. One of said commissioners shall be elected by his associates secretary of the commission, and receive a salary of one thousand dollars per annum. The other members shall receive no compensation for their services, but shall be paid their necessary expenses incurred in the discharge of their duties, as audited and allowed by the governor and council.

SECT. 2. It shall be the duty of the forestry commission to investigate the extent and character of the original and secondary forests of the state, together with the amounts and varieties of the wood and timber growing therein; to ascertain, as near as the means at their command will allow, the annual removals of wood and timber therefrom, and the disposition made of the same by home consumption and manufacture, as well as by exportation in the log; the different methods of lumbering pursued, and the effects thereof upon the timber supply, water-power, scenery, and climate of the state; the approximate amount of revenue annually derived from the forests of the state; the damages done to them from time to time by forest fires; and any other important facts relating to forest interests which may come to their knowledge. They shall also hold meetings from time to time, in different parts of the state, for the discussion of forestry subjects, and shall make an annual report to the governor and council, embracing such suggestions as to the commission seem important, fifteen hundred copies of which shall be printed by the state.

SECT. 3. The selectmen of towns in this state are hereby constituted fire wardens of their several towns, whose duty it shall be to watch the forests, and whenever a fire is observed therein to immediately summon such assistance as they may deem necessary, go at once to the scene of it, and, if possible, extinguish it. In regions where no town organizations exist, the county commissioners are empowered to appoint such fire wardens. Fire wardens and such persons as they may employ shall be paid for their services by the towns in which such fires occur, and, in the absence of town organizations, by the county.

SECT. 4. 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 park. 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 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 park. The persons furnishing the money to buy such 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.

SECT. 5. This act shall take effect upon its passage.

[Approved March 29, 1893.]

CHAPTER 85, LAWS OF 1895.

AN ACT FOR THE PROTECTION AND PRESERVATION OF ORNAMENTAL AND SHADE TREES IN THE HIGHWAYS.

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

SECTION 1. The mayor and aldermen in cities and the selectmen of towns are hereby authorized, as hereinafter pro-

vided in this act, to designate and preserve trees standing and growing in the limits of the highways, for the purposes of shade or ornament, and to designate not more than one such tree in every sixty-six feet where such trees are growing and are of a diameter of one inch or more.

SECT. 2. Said mayor and aldermen and selectmen shall, at such seasons of the year as they deem proper, designate such trees as are selected by them for the purposes set forth in this act, by driving into the same, at a point not less than four nor more than six feet from the ground, and on the side toward the highway, a nail or spike with a metallic washer hung thereon, on which shall be stamped the seal of the state of New Hampshire, together with such numbers or figures as will enable said officers to keep a correct record of said trees. Said washers shall be procured by the secretary of the forestry commission, and furnished by him to said officers as may be required by them for the purposes of this act; but nothing in this act shall prevent said officers from removing said trees whenever in their opinion the public good requires it.

Said mayor and aldermen or selectmen shall, at least once each year, renew such nails or spikes and washers as shall have been destroyed or defaced, and may also designate, in the same manner as hereinbefore directed, such other trees within the limits of the highway as in their judgment should be preserved for ornament or shade.

SECT. 3. Whoever shall wantonly or intentionally injure or deface any tree thus designated, or any of said nails, spikes, or washers affixed to said trees, shall forfeit not less than five nor more than one hundred dollars, to be recovered by complaint, one half of which fine shall go to the complainant, and one half to the city or town wherein the offense was committed.

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

[Approved March 28, 1895.]

CHAPTER 110, LAWS OF 1895.

AN ACT FOR THE PROTECTION OF FORESTS FROM FIRE.

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

SECTION 1. It shall be the duty of the forestry commission, upon application by the owner or owners of any tract of forest land situated in a locality where no town organization exists, to appoint a suitable number of special fire wardens for said tract, to define their duties, to limit the term of employment and to fix their compensation. The expense attending the employment of said special fire wardens shall be borne one half by the party or parties making the application for their appointment and one half by the county in which said tract of forest land is located.

[Approved March 29, 1895.]